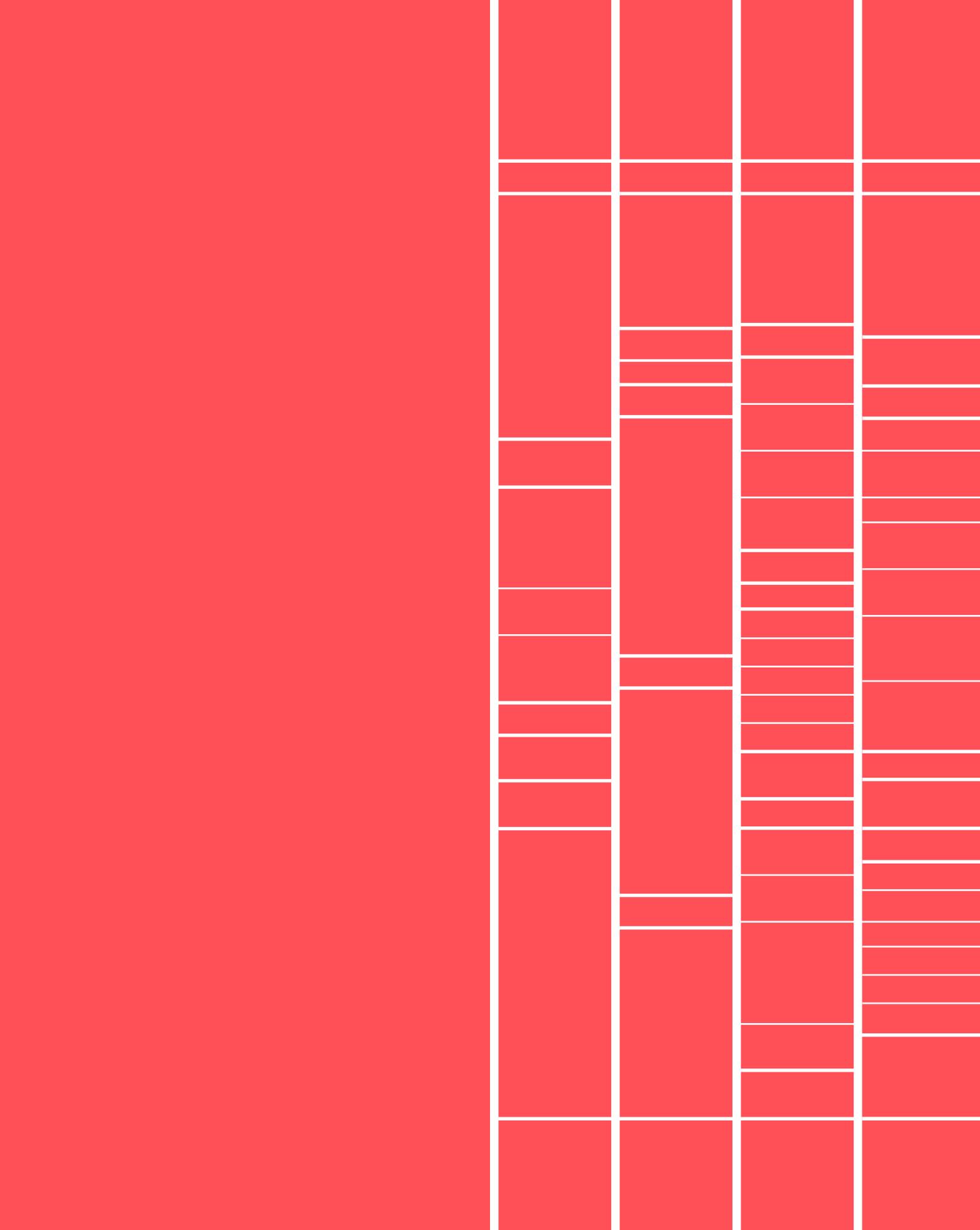


Dimensions



Dimensions

Dimensions is the annual, student-produced journal of architecture at the A. Alfred Taubman College of Architecture and Urban Planning that seeks to contribute to the critical discourse of architectural education by documenting the most compelling work produced by its students, fellows, and visiting lecturers.

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Foreword

In a year filled with online education across time-zones, *Dimensions* reminds us that print might be the original asynchronous medium. In fact, *Dimensions 34* could prompt multiple ruminations on time: on how one year ago feels like yesterday and also like a decade past; on how a twelve month duration of pandemic, police brutality, activism, and attacks on democracy has been filled with abrupt temporal ruptures for some and cruel continuities for others; on how our discipline should address its colonial past and forward visions for a better future; and more. Every year, the editors of *Dimensions* have the difficult challenge of curating what is mostly year-old work to constitute a statement on the present. This is already tricky in the context of the rapid clip of contemporary architecture culture. The task is radically more challenging in a year in which, day-by-day, the disciplinary and societal grounds beneath us have shifted. How does the work in this volume hold up? It's probably too soon to say. To be sure, *Dimensions 34* is filled with pressing concern. Herein, find projects and narratives about architecture's entanglements with climate, the nation's carceral apparatus, colonial regimes of land ownership, quarantine, digital culture, the material and the immaterial, and worldmaking—just as it seems like we might need a new world. But in a few years, with the benefit of hindsight, will this work seem important or peculiar in its preoccupations? We don't know. What I think is most unique about the present societal and disciplinary moment is that we are called to turn our attention to architecture's role in society's most pressing concerns, and in some cases we simply don't have time to proceed with caution. We have to move quickly, but with humility, and hazard mistakes.

It's worth noting that most of the projects, events, and conversations chronicled here originated on screens and online. Or, as in the case of Wallenberg and Thesis, abruptly transitioned to an online environment in the middle of the Winter 2020 semester. This might be the first time much of the work has been in print. Especially by comparison to the digital environments that have consumed our lives for most of the past year, print is an enduring medium. You can be sure that the book in your hand will look pretty much like it does now in ten years. I, for one, will be looking back once a decade has passed to see how we did. I thank the editors for the opportunity to do so, and for their great work on behalf of the program.

McLain Clutter
Associate Professor and Chair of Architecture

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Letter from the Editors

The circumstances of the past year have given *Dimensions 34* time to pause and reflect upon what it means to produce a print journal in a uniquely digital moment. This volume seeks to position itself, not as a rejection of the digital, but as an affirmation of the enduring value of a slower form of media—as a brief respite from crowded browser tabs and the allure of endless scrolling. For many of us, the journal is also bound up with the physicality of holding a book in one’s hands, an act charged with unusual significance after months spent engaging with the world primarily through our screens.

Like most of the projects contained within, *Dimensions 34* is a product of the transition to remote education, a seismic shift in our shared modes of working that very quickly became banal. Although our routines were upended and the *Dimensions* meeting room at Taubman remained empty, virtual collaboration allowed us to produce something tangible that will continue to exist beyond the Zoom calls and Miro boards in which it was created. Many of our collective conversations drifted into the strangeness of time and the discontinuity of memory that marked the past year. Assembling the journal offered us a way to put the pieces back together while processing the ruptures that had transpired.

Dimensions 34 is divided into four parts: Wallenberg, Thesis, Fellows, and ASRG. Each of these “books” can stand on its own as a curated selection of the work completed during the 2019–20 academic year. However, viewed as a singular volume, the projects are unified in their urgency and resilience in the face of life-changing disruptions.

It was easy for 2020 to escape us, when connecting, exploring, and learning no longer meant sharing space with one another. And yet, connections, exploration, and growth happened nonetheless, fragmented across time zones and digital platforms both novel and familiar. It is our hope that this journal will serve as a record of a particular moment in time, one which we can now recollect with some distance and begin to interpret together.

Austin Ehrhardt
Pilar O’Hara
Libby Owen
Francesca Romano
Rachel Skof

WALLENBERG

	COORDINATOR:	MIREILLE RODDIER	“FROM THE MARGINS”
	<p>Mireille Roddier is Associate Professor of Architecture and teaches in the design and the history and theory curriculums. She also holds a joint appointment with the Women's and Gender Studies Department and a faculty affiliation at the Institute for Research on Women and Gender.</p>		<p>In her essay, “Choosing the Margin as a Space of Radical Openness,” bell hooks argues that exclusion from dominant discourses and structures can generate a powerful capacity for resistance. Existence in a context of repression, hooks observes, can enable the invention of “spaces of radical openness.”</p>
			<p>Centering bell hooks’ essay, the 2020 Wallenberg Studios investigated margins—undergrounds, alleyways, shadows, backstage, pochés, spaces of disinvestment, and irregular spaces—as sites of creativity and power that hold the capacity to foster freedom of action, of being, and of becoming.</p>
	FEATURED PROJECTS		
	Storyed Ground	Phillip Allore	W2
	New Kids on the Block	Gian-Paolo Anover & Jessica Yu	W10
	Irrational Territories	Clare Coburn	W18
	The Reformatorium	Jamie Johnson & Peyton Stimac	W26
	Alternating Duality	Natsume Ono & Cayman Langton	W34
	Memorial to the Weather of Fray Bentos	Kay Wright	W42
	Depth of Panels: A Quiet Revolution in Our Homes	Yangtian Yan	W50
			<p>Can we, as architects, operate in the margins without rendering them center stage? And if the dominant order reinforces oppressive hierarchies, how can the margins offer shelter from these power structures? Spaces in which the rules are written by the communities who define and inhabit them? Spaces of autonomy and potential emancipation from the colonizing order?</p>
			<p>To honor Raoul Wallenberg’s legacy is to embrace the spirit of his work. In 2020, the six distinct Wallenberg studios (Radical Vernacular by Mireille Roddier, Matrix to Parts by De Peter Yi, Securing Shelter: Design for Domestic Inclusion by Jonathan Rule, The Dream is Real: Common Matters . . . From the Margins by Dawn Gilpin, Power Shifts by Gina Reichert, and De-Commission by Matiss Groskaufmanis) interrogated, as broadly as possible, our discipline’s capacity to effect change under a common theme: “From the Margins.”</p>

STORIED GROUND

RECIPES FOR A RELATIONAL ONTOLOGY OF LAND

Phillip Allore

Wallenberg Critic: Dawn Gilpin

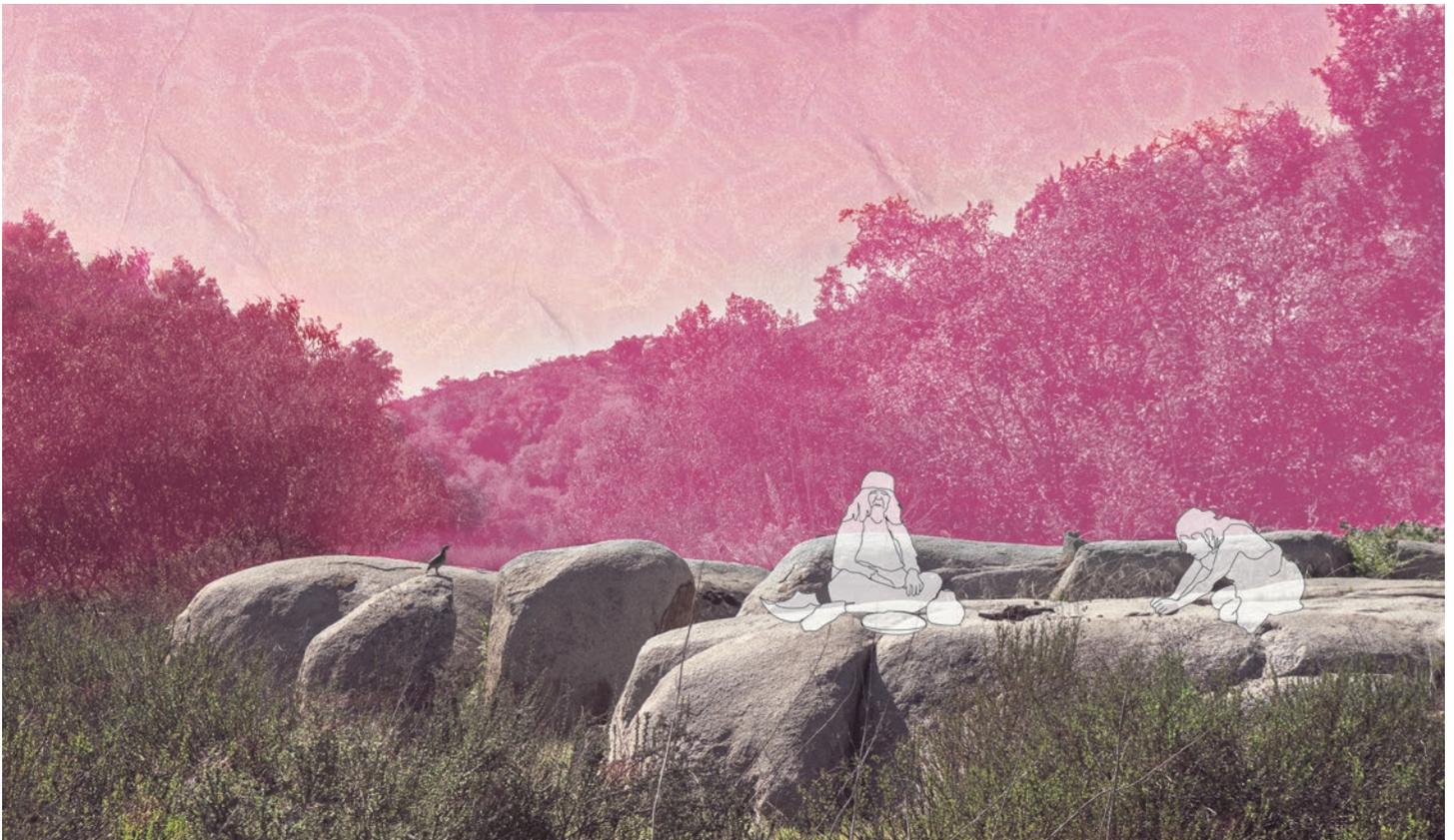
Architecture engages with the representation of intentions and the design of meaningful spaces, but the present paradigm of architectural thinking limits designers to contemplating glass, steel, and concrete. The result is a field locked into a schema of the world that has outlived its ability to serve architects in their mission. A paradigm shift is necessary to transition from defuturing practices of capitalism and extractivist ideologies to practices of relational worldbuilding.

It is necessary to see through the eyes of those who cannot speak and design with the diverse intelligences that make up our world. Architects design from the ground up, and the way in which we construct ground within our worldviews dictate how we are able to think and create. They influence not only which decisions we make, but with whom and for whom we make them.

As a material-cultural practice, architecture must recognize that to design is to bring worlds into being.

Storied Ground reimagines architectural practice through the lens of ritual as recipes for land-based practices that attune the participants to the ontologically disparate, co-constitutive intelligences of the land. Through this lens, unseen intelligences may emerge from the past and present to inform the design of the resilient communities we so desperately need for the future.

The project is divided into three sections: ontological mappings, recipes, and the designed ritual of land.





LIFEWORLDS: A RELATIONAL ONTOLOGY OF LAND

This land, east of San Diego, CA, has a 12,000-year history of human occupation. With every culture that has possessed this territory comes a unique ontology of land. The question, “What is the nature of land?” is answered by the lifeways enabled within each worldview.

To the Kumeyaay, the first human residents of this region, land is living and mutually constituted by the physical, biological, and spiritual entities that inhabit it. Human participation with these forces is inalienable from the elements that constitute ground. The Kumeyaay tended their home like a garden, selecting and amplifying certain capacities within the landscape suitable to a flourishing ecosystem.



garden fork

Groundwork

Working with topography lines carve swales on contour with water retention

Remove sand and clay from foundation site. Save

Use what technology is available. Earth moving equipment is good.

Don't underestimate the power of the shovel and mattock with a good work song



a wheelbarrow will be necessary



mattock & swale on contour

Ronnie & others preparing garden beds



caterpillar

groundwork can take from one day up to multiple weeks depending on the scale of the project. any project schedule should account for days set back by poor weather conditions

hydration is key. make sure all everyone has roughly a gallon of water to drink during a days work



Constructing Ground: Substance

Collect Yucca leaves. Cook down with wood ash (alkaline) Grind out fibres in metate (if unavailable a blender will do)

Collect love letters Shred

Combine with enough water to achieve a pulpy fluid texture



Yucca filamentosa



1 batch

cook time: 6 hr
1.5 gallons of water
3 big scoops of ash
(wear gloves, the ash is caustic)



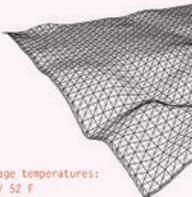
32°57'29.4"N 116°55'29.0"W

Taking measure

Using all available technology begin to model the land in your mind.

Walk the land. Smell its smells, feel the breeze. Take note.

Avail yourself of existing geospatial data. All informational inputs have a place in constructing our ground.



san diego average temperatures:
Jan-April: 67 / 52 F
May-Aug: 75 / 63 F
Sept-Dec: 71 / 57 F

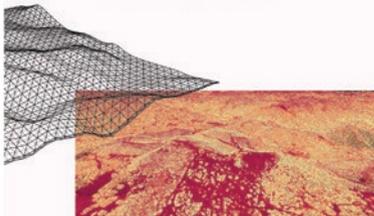
daytime walk:
protect from the intensity of the sun, wear a shade hat & long sleeves

evening walk:
temperature drops at least 10 degrees. wear layers



32°57'30.3"N 116°55'15.2"W

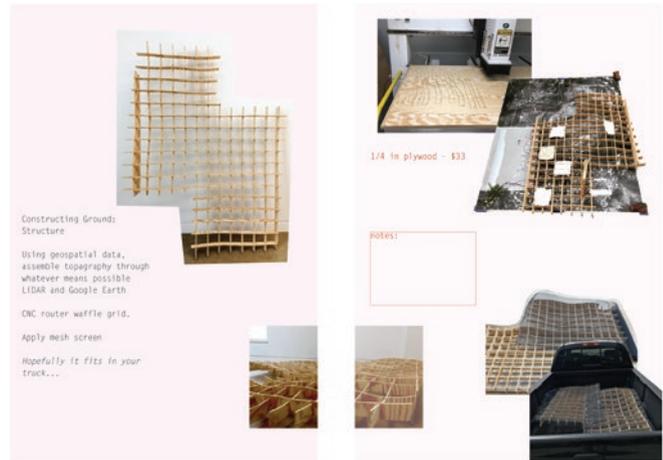
In one hour you can traverse the oak meadow and a few surrounding niches
keep an eye out for eagles, quail, insects, snakes, mountain lions, etc



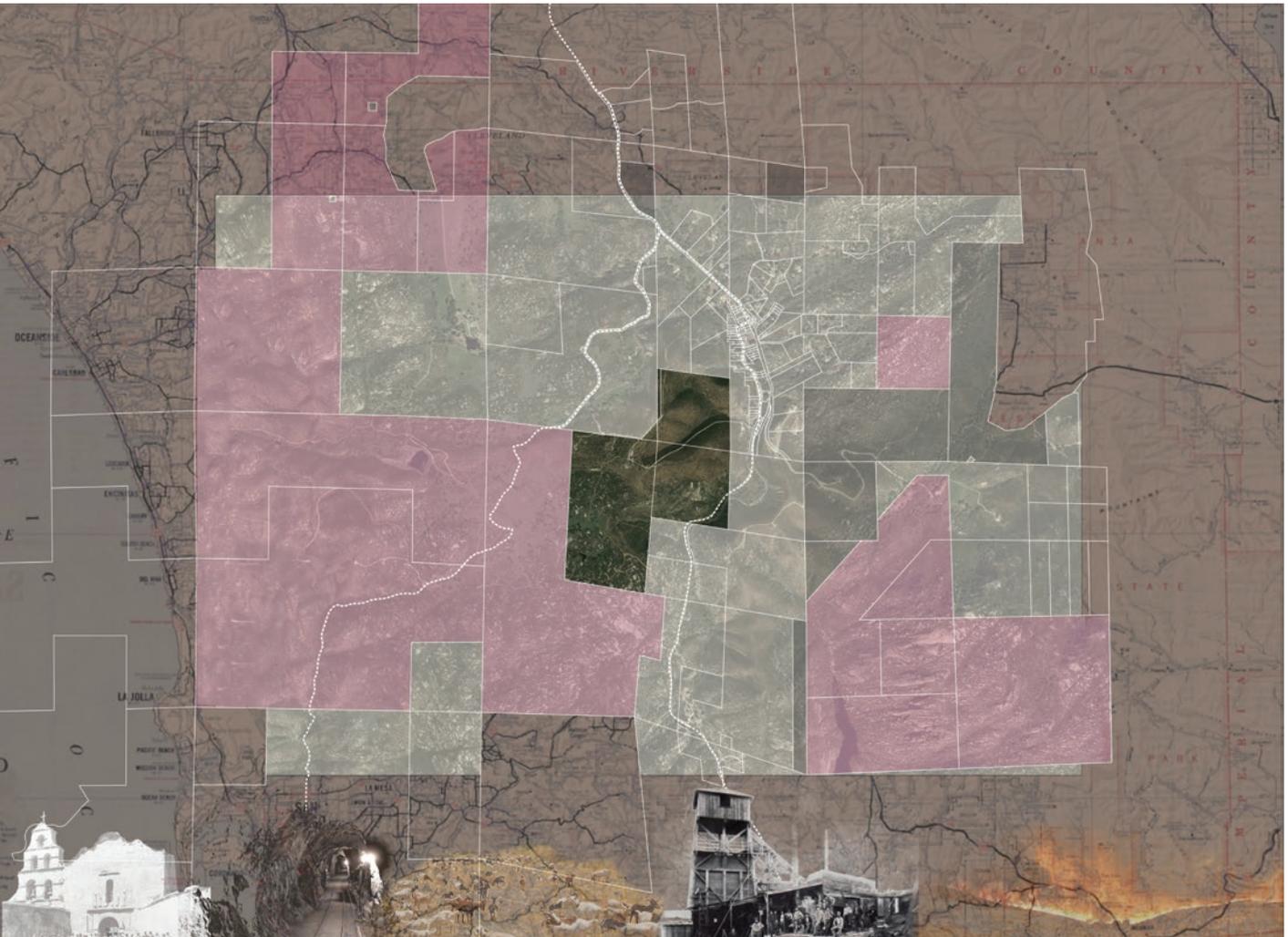
**PROPERTY:
A SETTLER ONTOLOGY OF LAND**

As Spanish missionaries colonized the territory, perception of land shifted from the relational ontology of the Kumeyaay to an ontology of resource and ownership. The reciprocal bonds between human culture and a flourishing ecology were severely damaged.

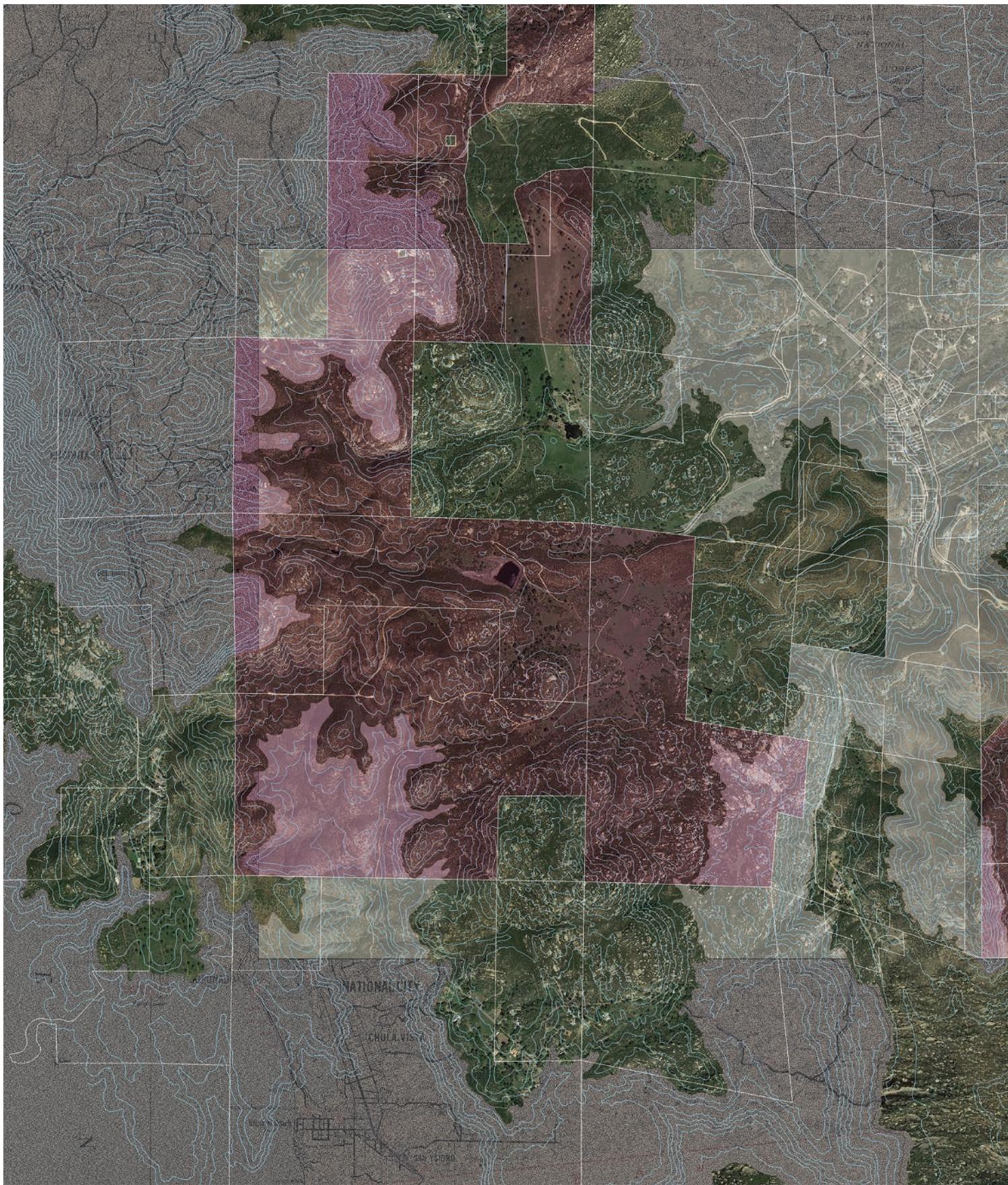
The secularization of land that followed, enforced by the newly established United States government, further removed land from its people by subdividing it through property lines, public-private parcels, and zoning laws. Land was newly defined as a regulated space more suitable for extraction of profit than flourishing of life.



W5



ALLORE





STORIED GROUND: A HYBRID ONTOLOGY OF LAND

Elements of the contested history of this territory exist today as the mutually co-constitutive forces of the land. To design spaces for a meaningful life, we must equally engage the living meshwork of lifeworlds and the regulatory space we have inherited.

Perhaps, most importantly, we must understand that the practices in which we engage with our minds and bodies lead directly to the worlds we imagine and inhabit.

W7



Summer Solstice Sunrise
5:41 am (GMT-7)

Equinox Sunrise
6:52 am (GMT-7)

Winter Solstice
6:50 am (GMT-7)

32°57'25.97"N
116°55'00.27"W

Early Spring (flowering)
gather yucca leaves for
fibers

6:50 - 7:00 am (GMT-7)
Face due East

7:30 (GMT-7)

cook blue yucca

High Noon (GMT-7)
gather around Juuca site

32°57'25.17"N
116°55'10.07"W

6:40 - 7:10 am (GMT-7)
Face due West

High Noon (GMT-7)
Summer Solstice

High Noon (GMT-7)
Equinox

High Noon (GMT-7)
Winter Solstice

Late Spring (seed-wet)
Earthenworks

32°57'25.17"N
116°55'04.97"W

Late Spring
gather seedling dead oak

Equinox Sunset
6:53 pm (GMT-7)

Summer Solstice Sunset
7:59 pm (GMT-7)

Winter Solstice Sunset
7:58 pm (GMT-7)



This ritual is designed to pattern the minds of the participants to think through the intelligences of the land. It is a practice and technology of orientation, requiring a performance of the elements to inculcate a design sensibility rooted in a relational ontology of land. The construction of the site, and the actions taken within and without the structure, are conceived as ritual—precisely timed and choreographed to align with the forces of the land.

The structure is sited at the intersection of elements in the landscape. Here, water, wind, animal pathways, and the motion of the sun converge.

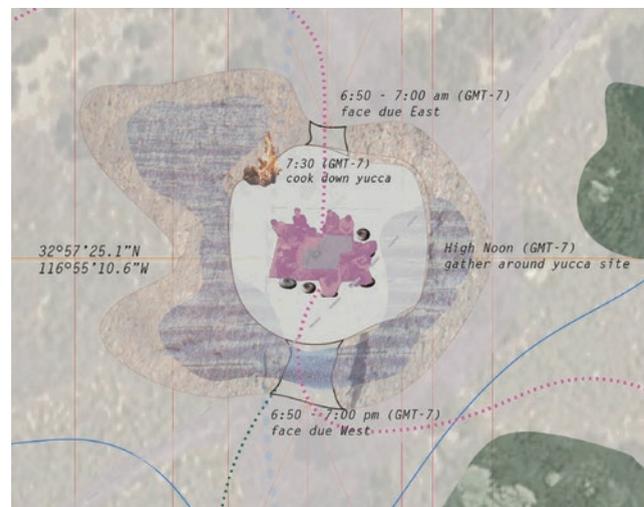
The ritual space is a container for the intelligences of the land. It is where constituents are combined, constructing ground from elements carefully gathered around the site. When complete, the structure exists as a cosmic clock, weaving participants into the timings of the celestial tapestry.

In spring, when the yucca is flowering and near the end of its life, it is prepared for its leaves to be gathered in order to form the fibrous substance of the ground construct. As always, the gatherer should seek permission first.

At noon, on the equinoxes and solstices, apertures in the structure illuminate the ground construct. Every day from 1:00-3:00 p.m. the wind hums throughout the site.

Sited in the landscape, so as not to interrupt the myriad movements of the fauna and elements of the earth, this microcosm of the land amplifies the terrestrial cycles of water, soil, and life.

Like any recipe, this is a framework, a blueprint, and a set of practices. It is open-ended, meant to be shared, amended, and added to. It reflects a way of seeing and performing architecture that respects the reciprocity and relationships required to live on storied ground.



Acknowledgments: Erik Hjerstadt, Centehua Deneken, Chris Meador, Mary Moriarty, Mitchell Lawrence, and Mohammad About El Ainan



NEW KIDS ON THE BLOCK

A METHODOLOGY FOR HEALTHY REINTEGRATION OF THE POST-INCARCERATED

W11

Gian-Paolo Anover and Jesica Yu

Wallenberg Critics: Jonathan Rule and Ana Morcillo Pallarés

When there is a crime in society, there is no justice.
—Plato

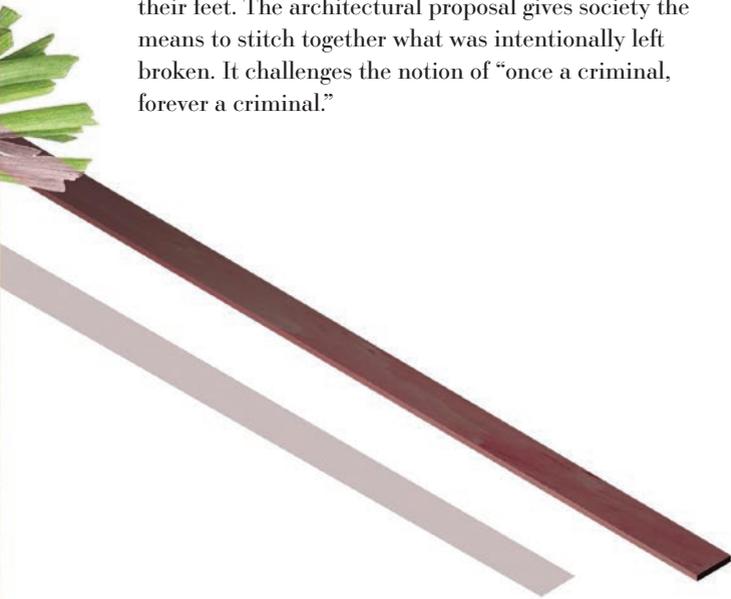
It's easy to be repulsed by those who are deemed criminals when one is fortunate enough to be unacquainted with an offender. We recoil at the thought of people whose behavior has been ruled unlawful, and we regard them as an aberration to civil society. Criminals, however, are not the only ones to blame.

Are we, as a society, also guilty?

Our project crafts connections and breaks boundaries through a pilot program of transitional housing in New Orleans, LA. Rather than addressing prisons themselves, the project focuses on the post-incarcerated, specifically those that have already served their time and are struggling to get back on their feet. The architectural proposal gives society the means to stitch together what was intentionally left broken. It challenges the notion of "once a criminal, forever a criminal."

While the United States espouses growth, opportunity, and hard work, it forgets its self-proclaimed values when laying judgment towards those that need the most understanding. Year after year, the United States ranks highest in incarceration rates around the world. Additionally, it holds the highest rates of recidivism, with 76.6 percent of released prisoners rearrested within five years. Either the American population has a problem, or the justice system does. We decided to address the latter. If prisons are meant to rectify criminal behavior to reduce future offenses, they are clearly failing.

New Kids on the Block offers a more immediate solution than institutional reform by engaging with those that have been broken by the system yet no longer stand behind bars. We propose a methodology for reintegration through an architectural framework that seeks to encourage both recovery and growth.



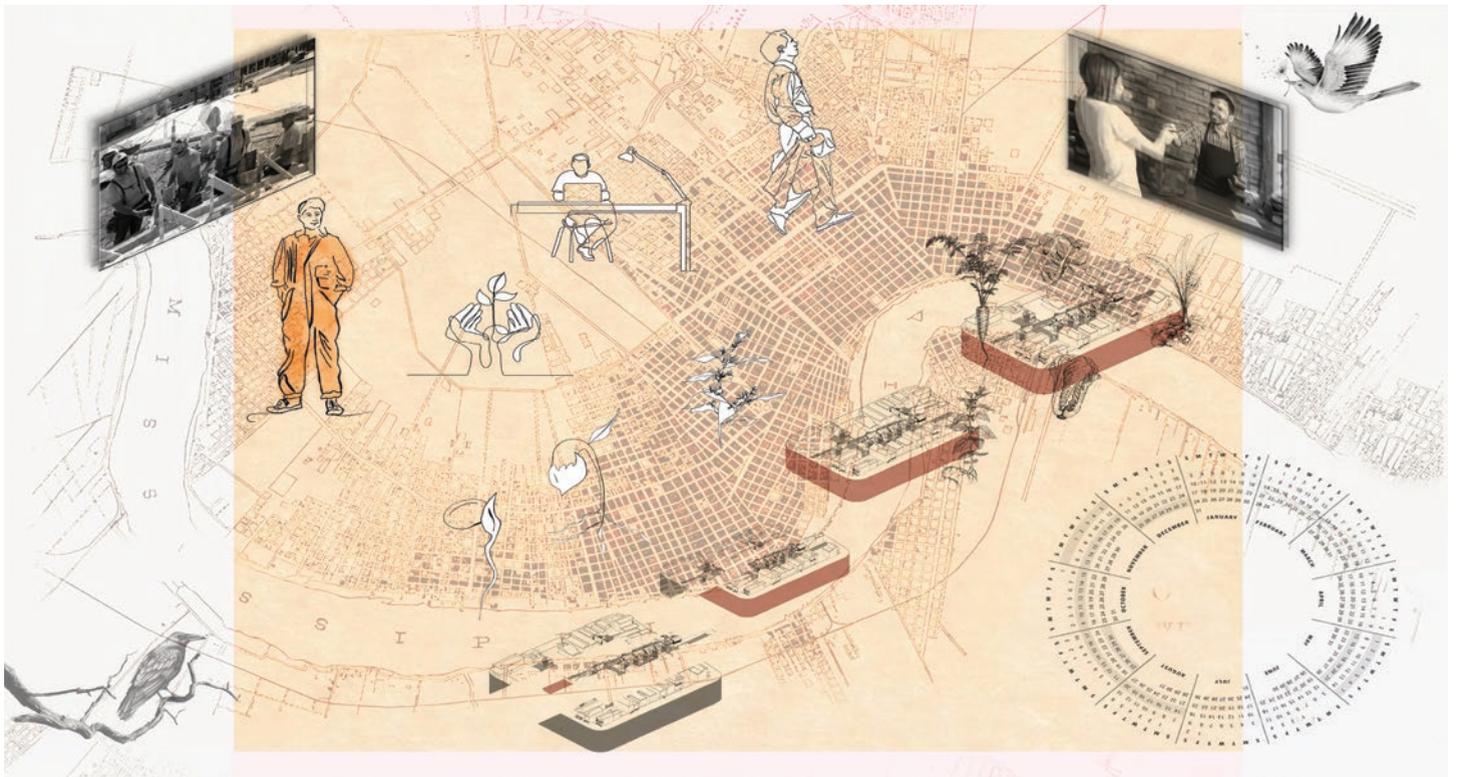
METHODOLOGY

Our methodology focuses on building a network of transitory shelters that help the formerly incarcerated heal from post-traumatic stress, navigate the workforce, and foster healthy relationships within society while providing the support of a community of people participating in the same process of reintegration. When reintegration is successful, individual benefits will extend beyond the block, producing a thriving social ecosystem.

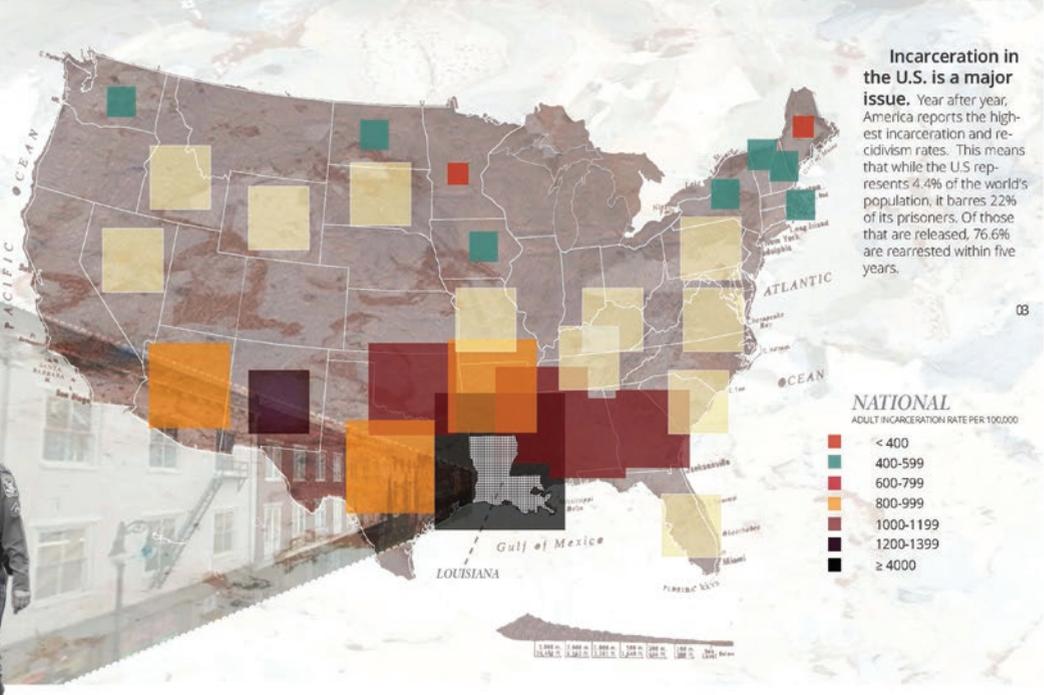
1. Understand prisoner demographics
2. Locate C- to C+ neighborhoods in the city that are emerging or offer employment opportunities suitable for individuals who were recently released from prison
3. Identify potential natural hazards
4. Realize the most common types of mental illnesses
5. Recognize the local culture and history
6. Design small housing units that are interconnected at multiple levels

PILOT

Our pilot program focuses on New Orleans, the city in Louisiana with the highest incarceration rate. More specifically, the project takes place in the Seventh Ward neighborhood. Segregated by political boundaries and torn by economic and social divides, New Orleans is a city of intangible frontiers. Thus, embedded in our proposal is an ecosystem that questions the boundaries nested in what we know as “the block.” By positioning the housing system in the backyard of residents, we challenge the “Not In My Back Yard” (NIMBY) phenomenon, ultimately encouraging interactions between the existing community and newcomers.



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Incarceration in the U.S. is a major issue. Year after year, America reports the highest incarceration and recidivism rates. This means that while the U.S. represents 4.4% of the world's population, it bars 22% of its prisoners. Of those that are released, 76.6% are rearrested within five years.

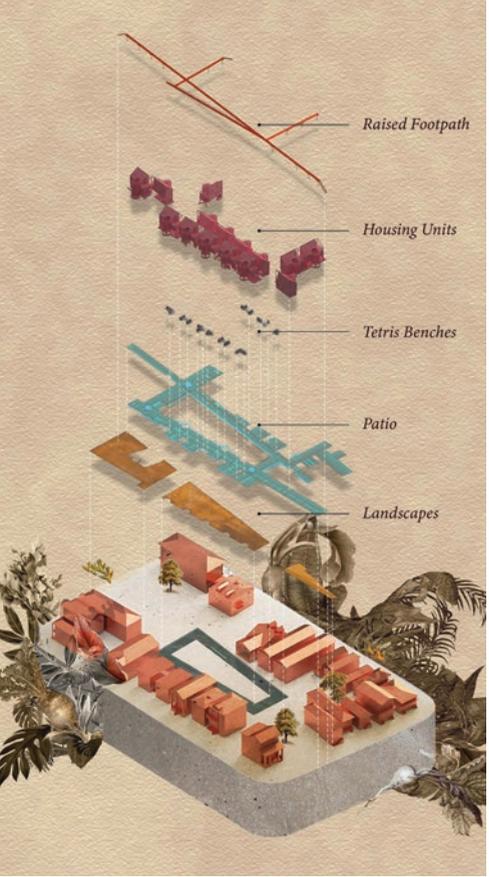
NATIONAL
ADULT INCARCERATION RATE PER 100,000

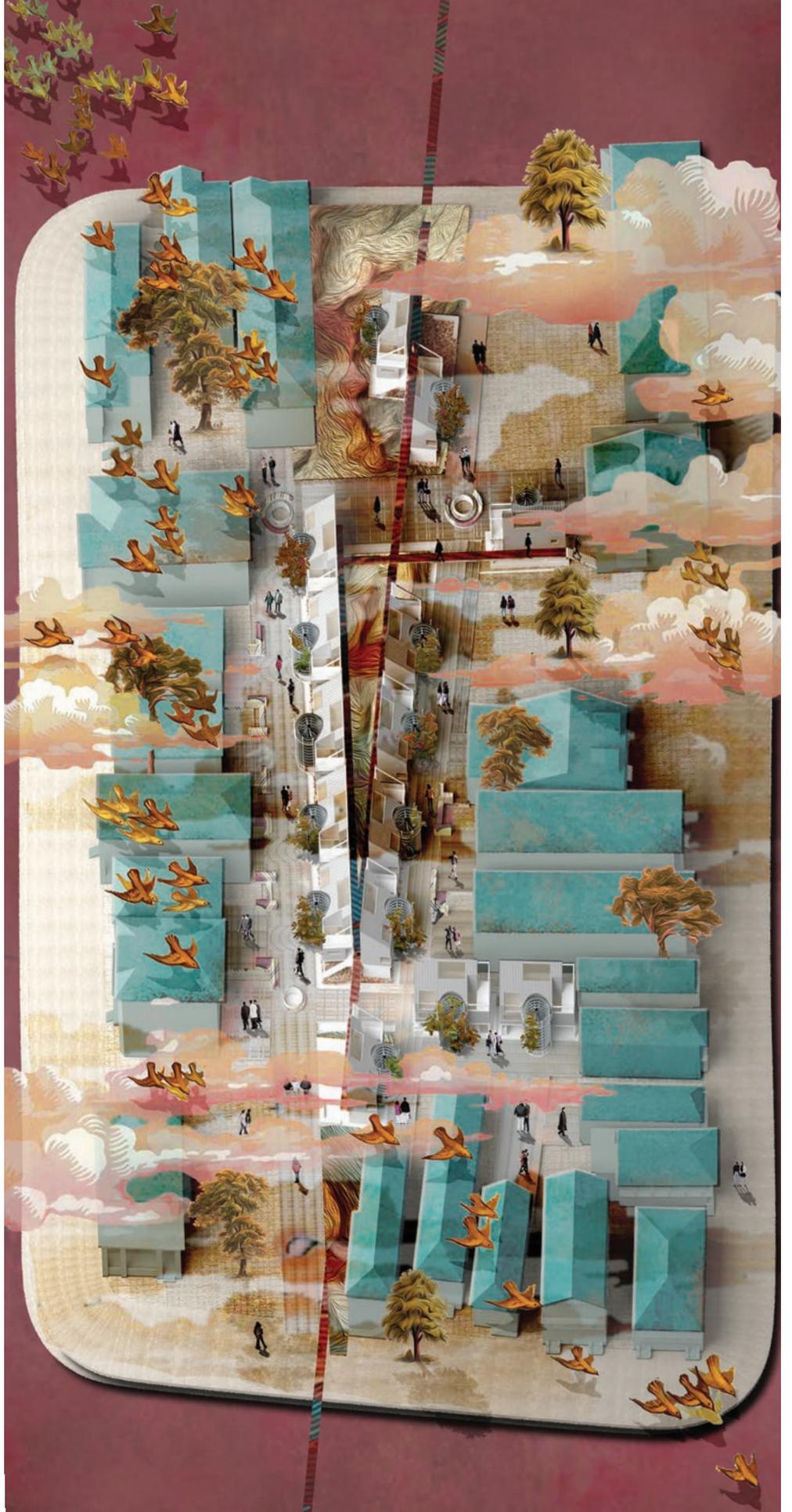
- < 400
- 400-599
- 600-799
- 800-999
- 1000-1199
- 1200-1399
- ≥ 4000

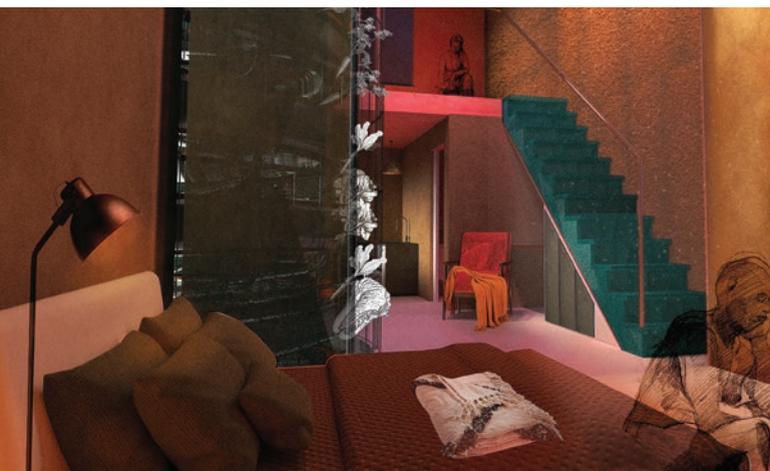
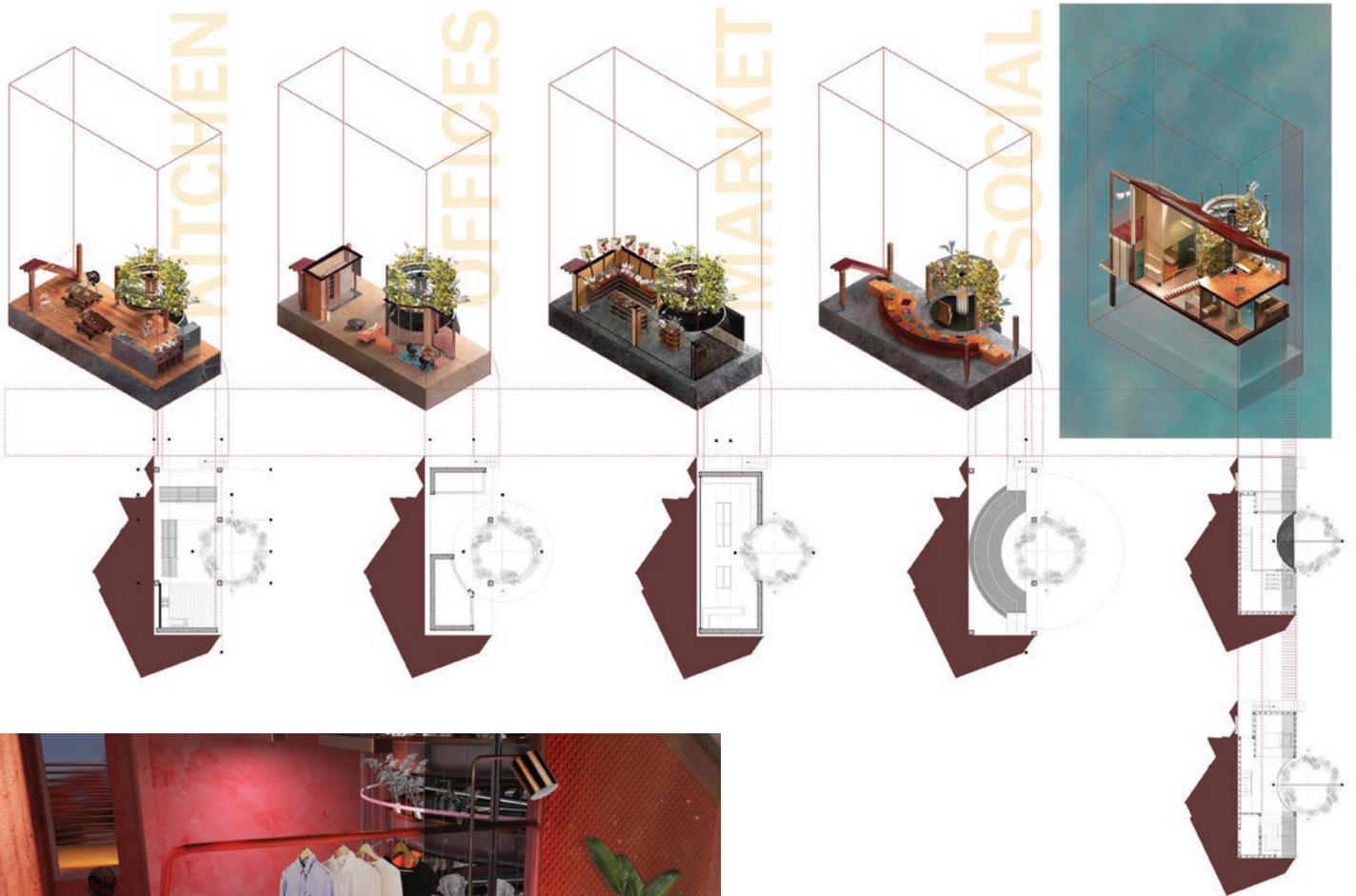


STRATEGIES FOR BREAKING AND REBUILDING THE BLOCK

- Reactivate the landscape with vegetation and topography
- Reconnect the homes at the ground level
- Reintroduce ownership through designed outdoor furniture
- Implement garden units for increased interactivity
- Link units with a raised footpath for interconnectivity

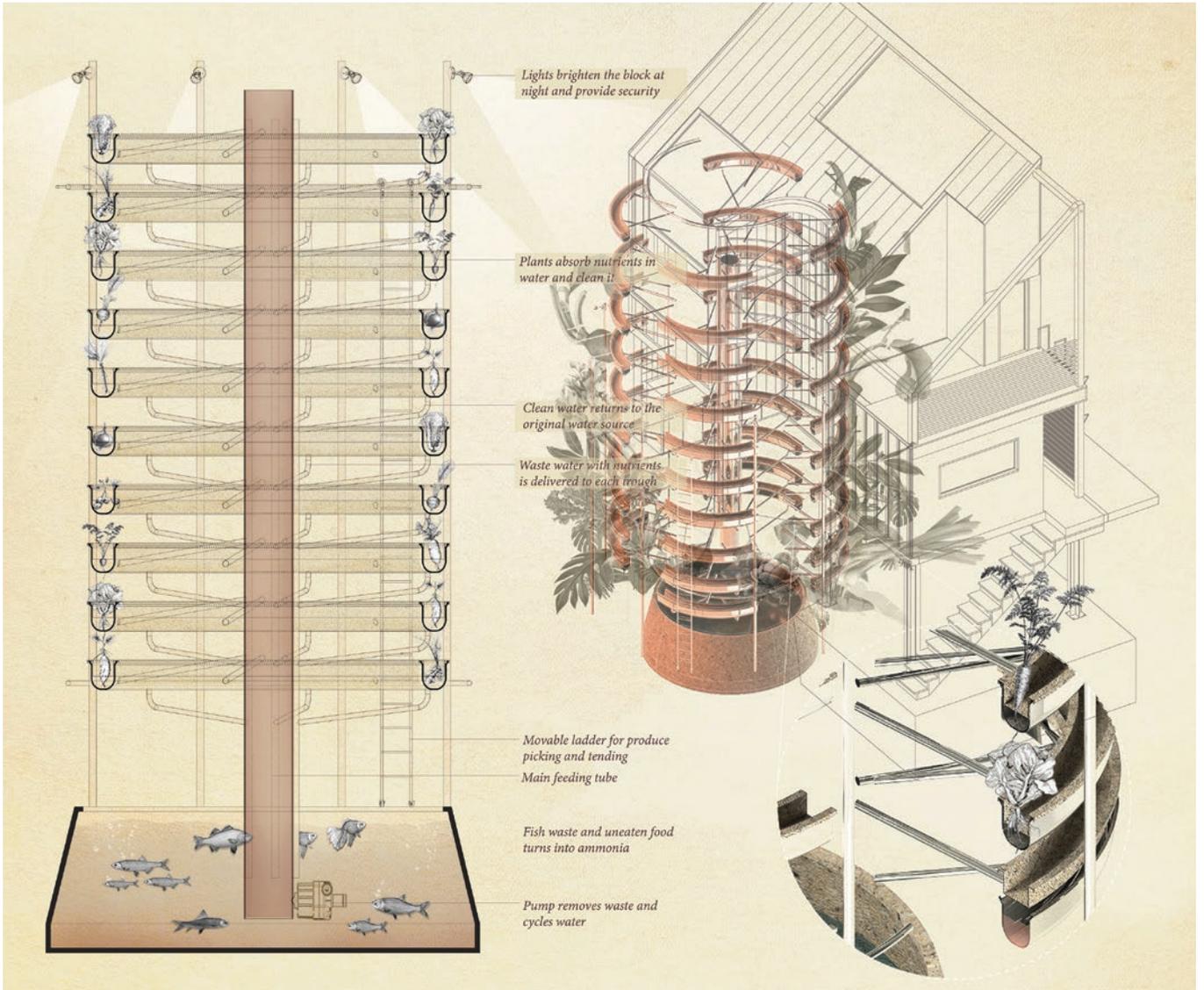






PEACEFUL CO-LIVING

To promote both privacy and cooperation, each house accommodates two people. The units have two bedrooms—one on the first floor and one on the second. Each bedroom contains a large skylight to allow ample natural light accompanied by a sliding panel system to create a sense of personal space. Beyond the sleeping areas, each unit contains a shared bathroom, working desk space, and storage pantry. In the warmer season, new residents can enjoy a New Orleans sunset on the rooftop, which is accessed through an outdoor ladder.





SHARED RESPONSIBILITY

Constructed around the idea of the block as a micro ecosystem, a vertical aquaponics system is integrated into every new housing unit to generate life on the site. It takes a village to raise a garden, so its growth depends upon the collaboration of the residents. By assessing the new ecology, one can gauge the success of the transitional housing development. By marketing these homegrown crops, visitors from neighboring blocks are inspired to incorporate similar networks within their own backyards.



IRRATIONAL TERRITORIES

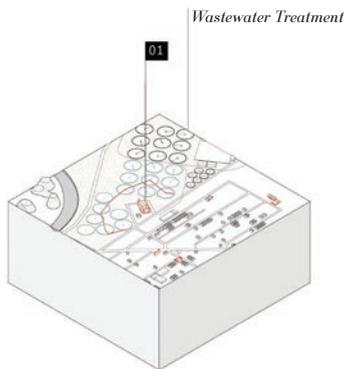
COUNTER-TACTICS FOR A POST-PETROLEUM FUTURE

Clare Coburn

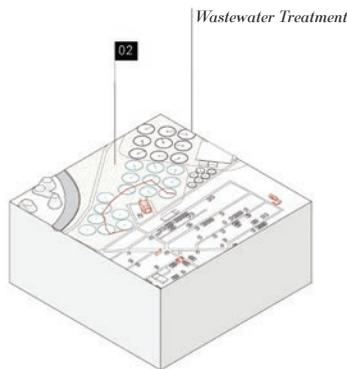
Wallenberg Critic: Gina Reichert

The industries that drive the climate crisis—oil, steel, and automotive—have dominated landscapes and determined the accessibility of information. This concentration of power has left the public in the dark regarding industries’ global impact on the surrounding environment and public health.

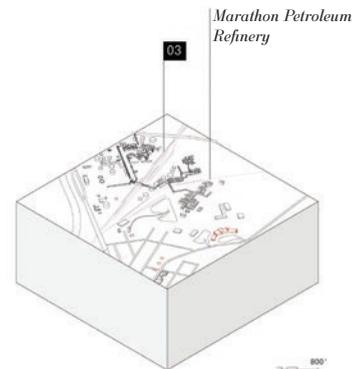
Working towards a post-petroleum future, *Irrational Territories* antagonizes capitalist modes of knowledge production in order to redistribute agency through community-driven information networks. The project focuses on three unique tactics that emphasize digital and environmental justice in an active critique of the latent politics of land and industrial legacy within the Detroit River watershed.



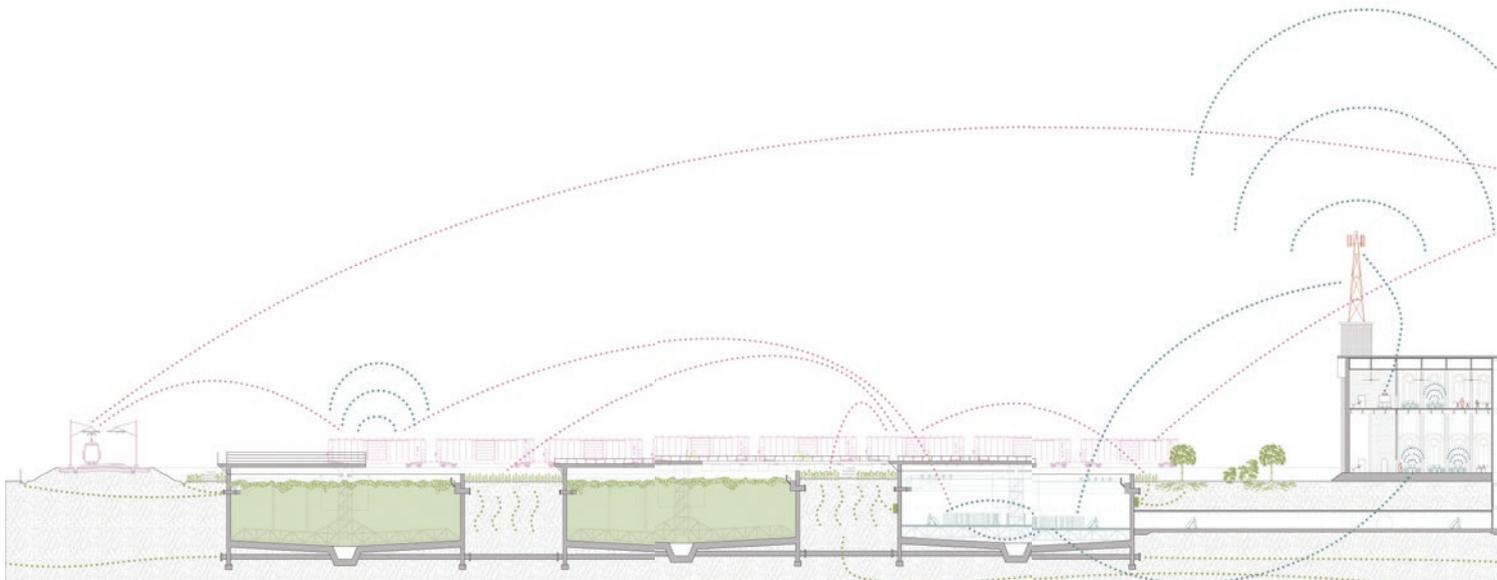
Digital Justice Community Center
Wastewater Clarifier Data Farm
Pollution Monitoring
Radio Information Distribution
Printing Press Information Distribution

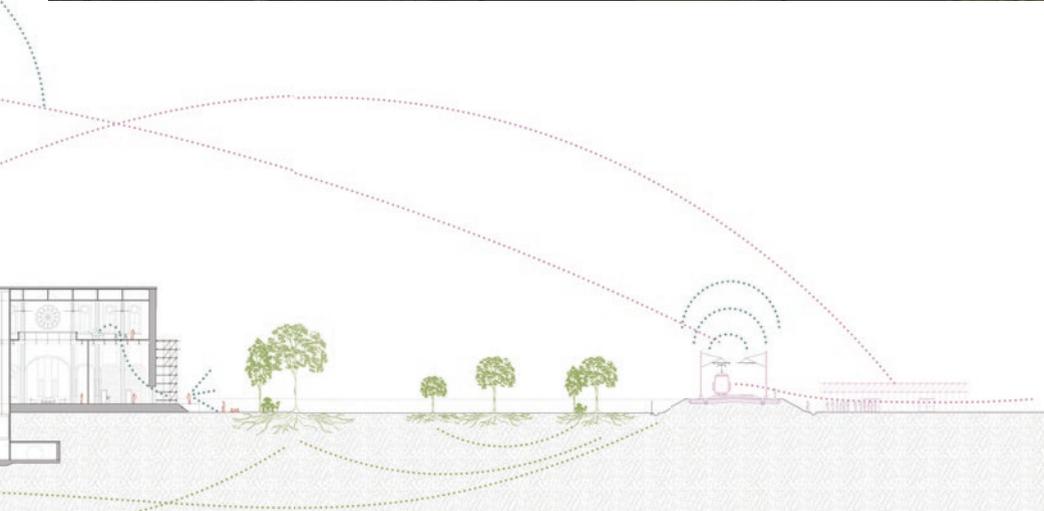


Water & Sewerage Bioremediation Fields
Wastewater Clarifier Data Farm
Algae Clarifier Ponds
Pollution Monitoring
Elevated Boardwalk



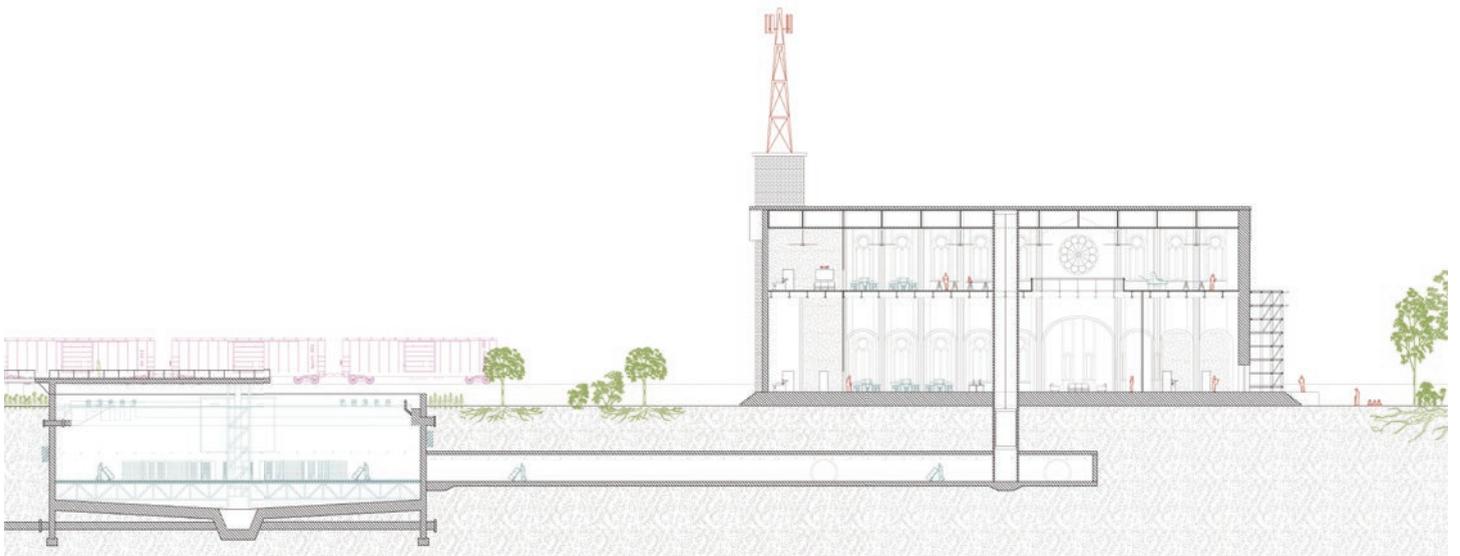
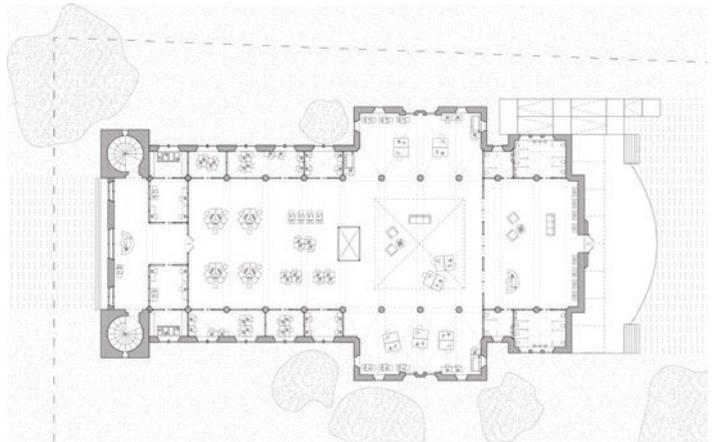
Mobile Healthcare Rail Network
Healthcare Access
Public Transportation
Fragment Industrial Footprint





TACTIC 01: HIDE IN PLAIN SIGHT

The first tactic establishes a hub for digital justice networks disguised by an existing church located between residential neighborhoods, open-air wastewater clarifiers, and steel manufacturing facilities. This strategy draws upon the historical role of Detroit's churches as nodes in the Underground Railroad that served to shelter enslaved African-Americans escaping to Canada. By appropriating steel parts from surrounding infrastructure, the façade of the church is reoriented to face the neighborhood. The interior is transformed into a space for work, education, and information distribution through programs for digital literacy, radio broadcasting, printing, pollution monitoring, and connections to a private data farm inside empty wastewater clarifiers.





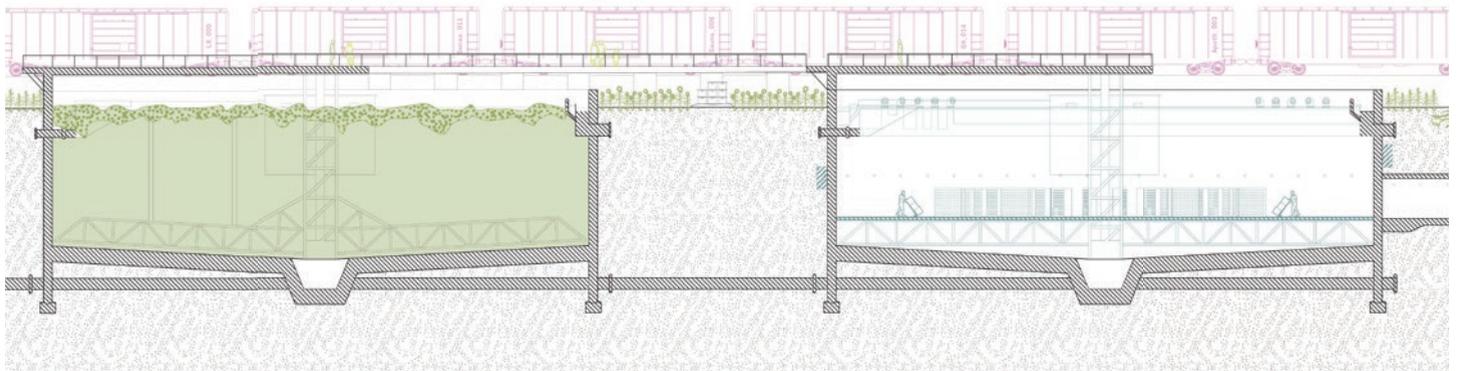
The renovation of an existing church into a hub for digital justice, education, and work empowers communities to antagonize climate crisis industries.



TACTIC 02: FROM THE GROUND UP

Industrial waste has polluted the air, bodies, and ground of this landscape. The data farm provides a secure space and network to monitor ground pollution that can be subsequently broadcasted by radio and distributed via print. The remaining wastewater clarifiers are transformed into algae and duckweed ponds to leverage natural wastewater filtration.

Bioremediation fields and apiary habitats fill the space between clarifiers, removing heavy metals and other pollutants from Detroit's failing sewer system. A boardwalk extending over the wastewater clarifiers serves to educate users about environmental justice strategies within the network.





Bioremediation and environmental justice education mitigate human impact on the landscape and watershed.

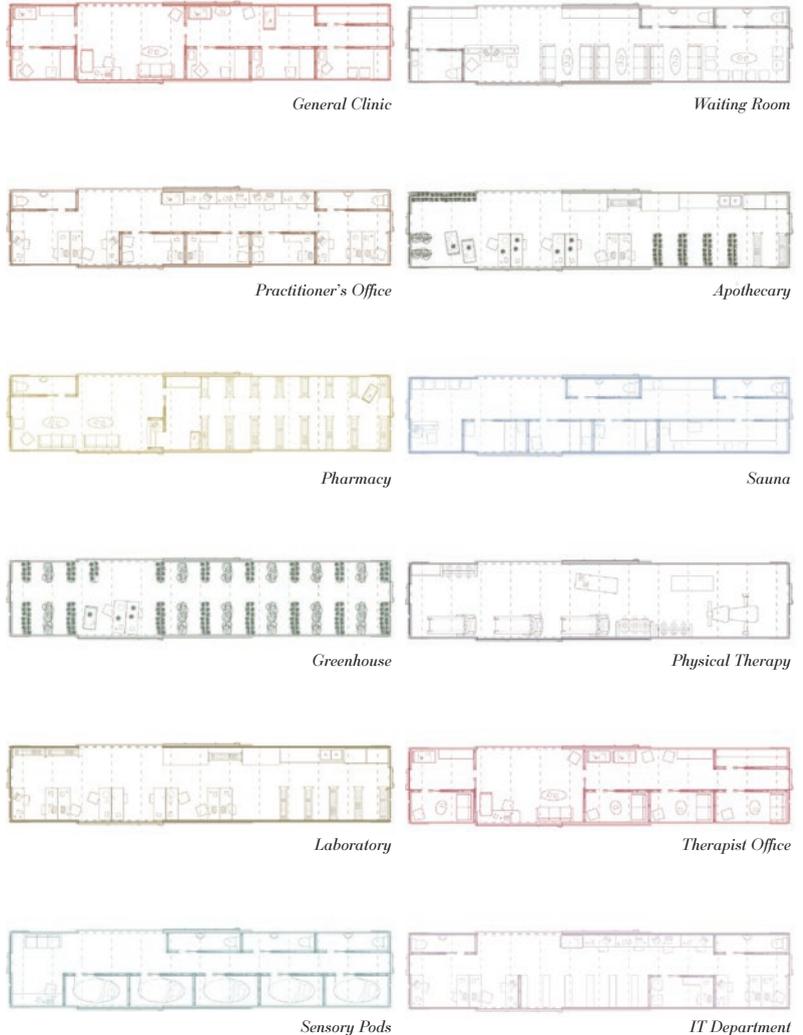
TACTIC 03: DIVIDE AND CONQUER

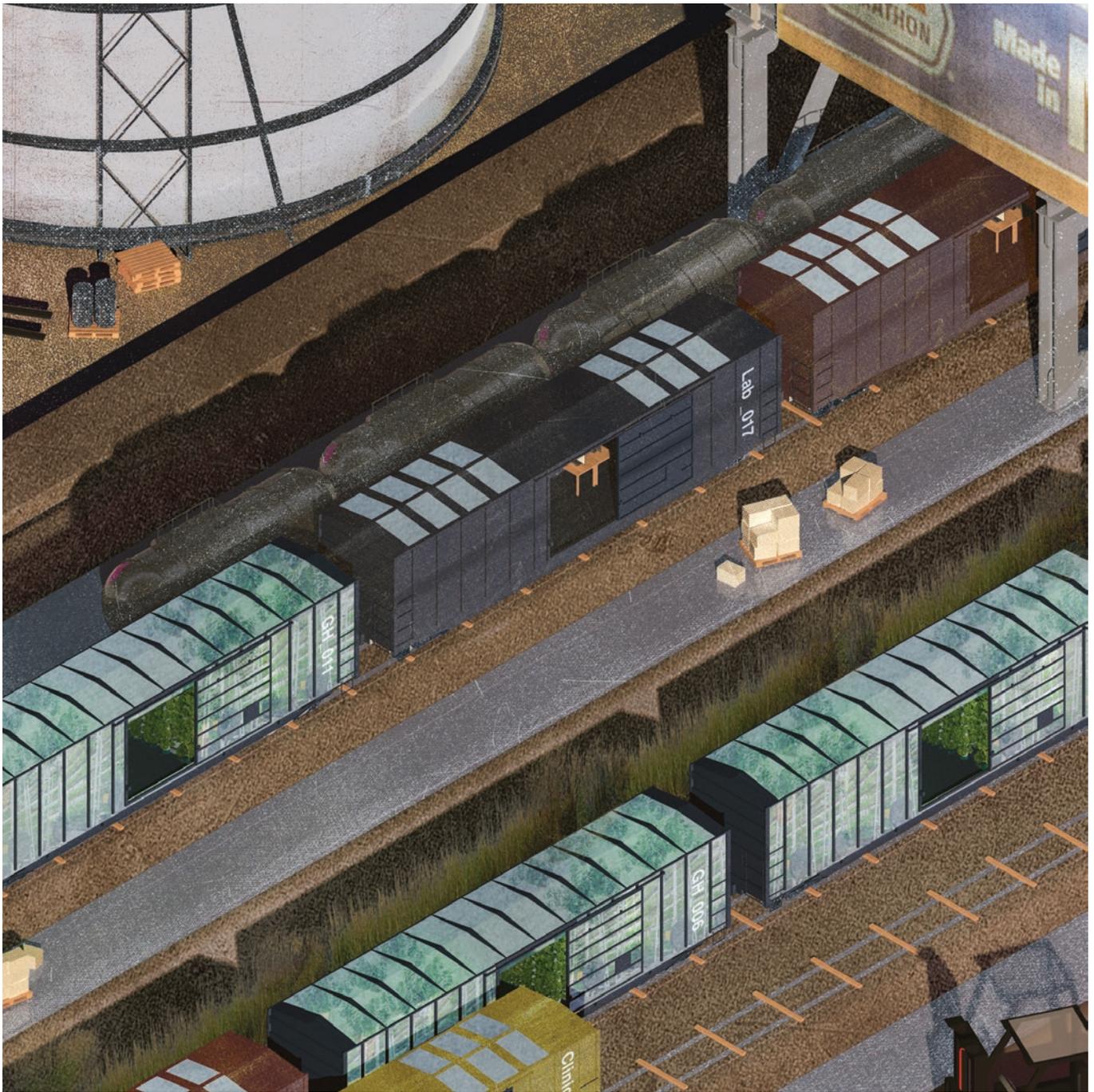
The detrimental impacts of industry will persist long after deindustrialization, especially with regard to the devastating harms inflicted on the human body. Climate crisis industries possess an extensive network of railroads that transport products across the city. Hijacking this system to create a mobile healthcare network, along railroad lines, will distribute medical services to residents while also fragmenting destructive industries through a process mirroring the decimation of neighborhoods via urban renewal construction projects.

This network will focus on all aspects of health—physical, mental, and emotional. The modular system allows for variability in train car assembly according to need. Beginning with spaces for general health such as clinics and pharmacies, the sequence can expand further to include other holistic forms of medicine. Plants grown in the bioremediation fields, including sunflowers for medicinal properties, facilitate local production of wellness treatments. Additionally, spaces for emotional healing, such as sauna, sensory engagement, and therapy, create a versatile mobile healthcare system.

These strategies seek to hold climate crisis industries accountable for their actions and create strong resilient networks that work towards a post-petroleum future.

Acknowledgments: Jacob White, Mitchell Lawrence, Leah Hong, Phillip Allore, and Arthur Todd





Hijacking industrial railroad networks to distribute healthcare systems to communities mitigates climate crisis industries' impact on public health.

THE REFORMATORIUM

Jamie Johnson and Peyton Stimac

Wallenberg Critic: Mireille Roddier

The Reformatorium is an architectural graphic novel based on Michel Foucault's account of Jeremy Bentham's panopticon in *Discipline and Punish: The Birth of the Prison*.

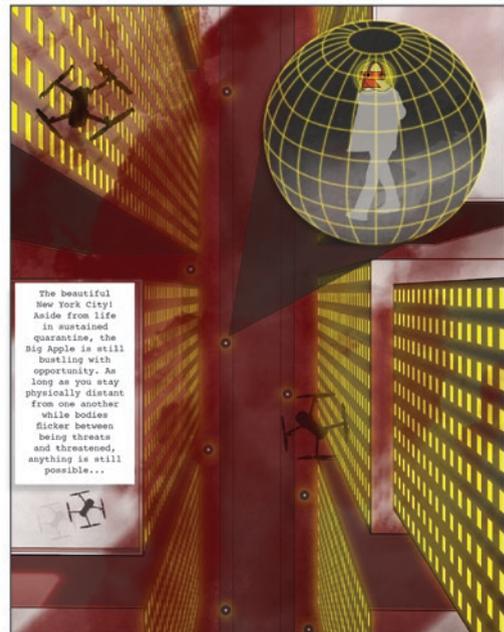
In a world of sustained quarantine, human connection is nearly impossible. Emotion is obsolete, leaving human bodies flickering between threatened and threatening. As existing infrastructure fails to account for the logistical and emotional impacts of quarantine, developers advertise The Reformatorium. This experimental living complex facilitates human connection while maintaining control over the spread of disease, allowing humans to "rehabilitate" to a reminisced state of emotion.

By examining the nonphysical ways in which humans have connected to one another in the past, the developers reduce human connection to three spatially translated methods: delayed connection, direct connection, and connection via third party. Delayed connection is that of shared materiality over time. Direct connection corresponds to real time. Connection via third party is that of a shared experience or object. Additionally, *The Reformatorium* embeds theories of rhizomatic and arborescent structures to entertain architecture's relationship with control, autonomy, and the built environment as container or protector.

The [Reformatorium] is a marvelous machine which, whatever use one may wish to put it to, produces homogeneous effects of [connection].*



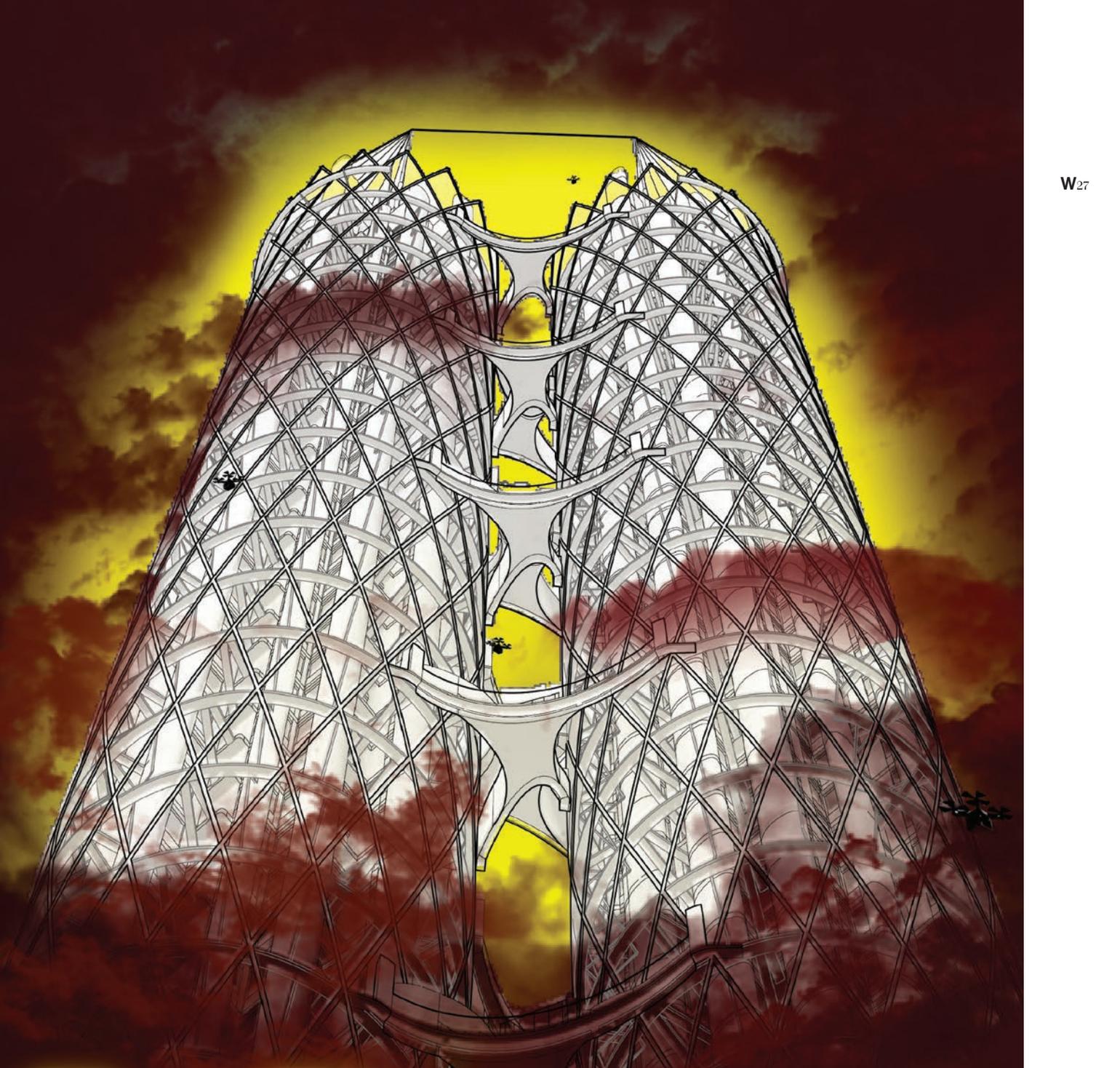
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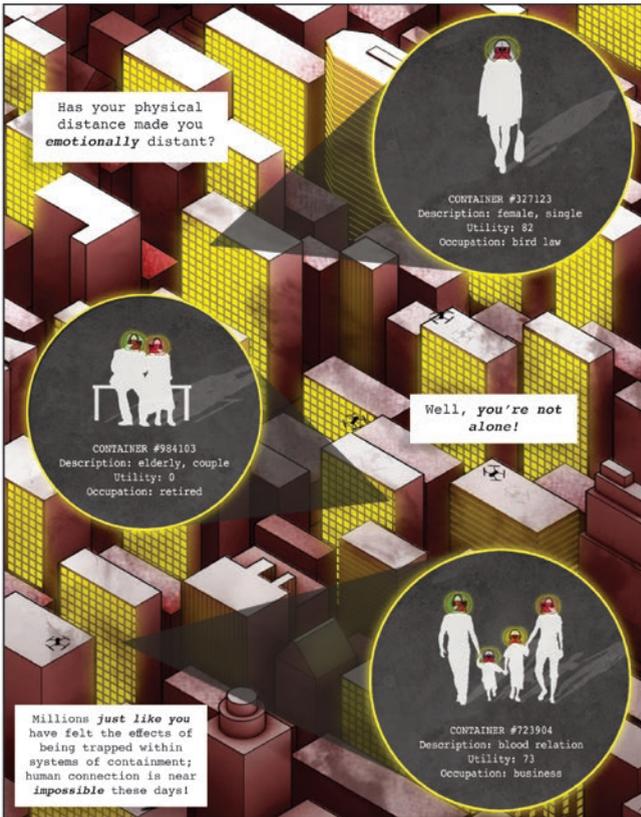
* "The Panopticon is a marvelous machine which, whatever use one may wish to put it to, produces homogeneous effects of power."

—Michel Foucault, *Discipline and Punish: The Birth of the Prison*



The Reformatorium

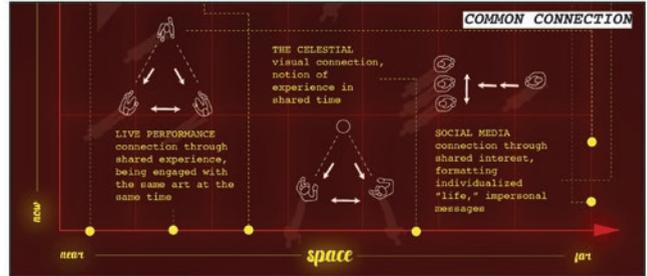
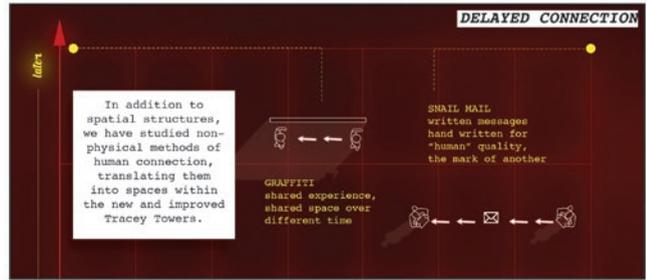
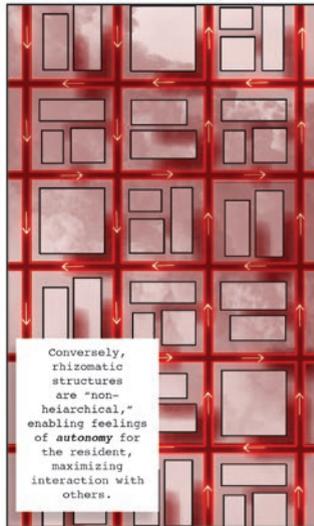
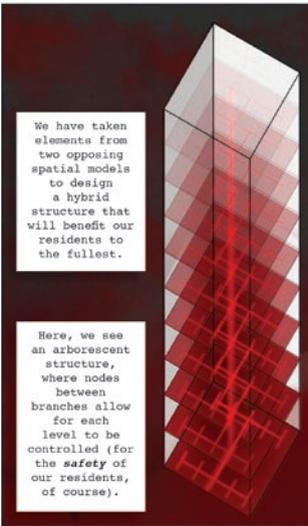
Jamie Johnson & Peyton Stimac

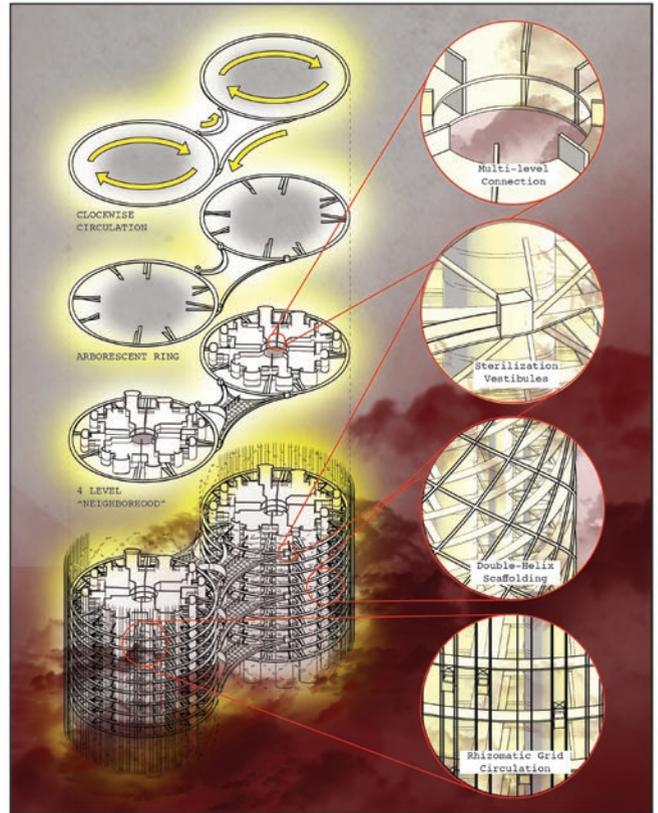
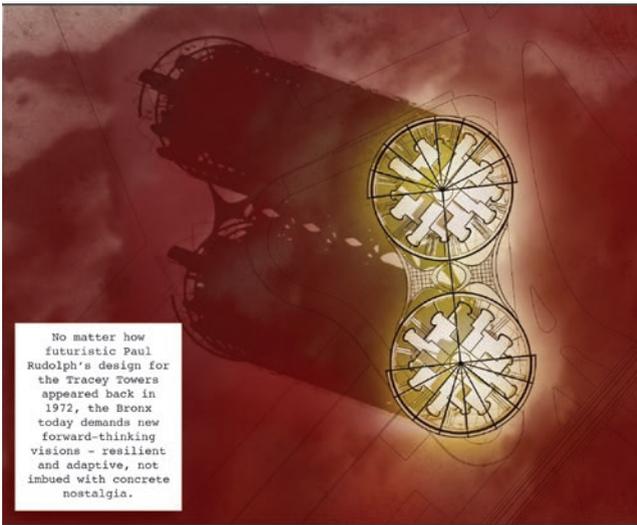


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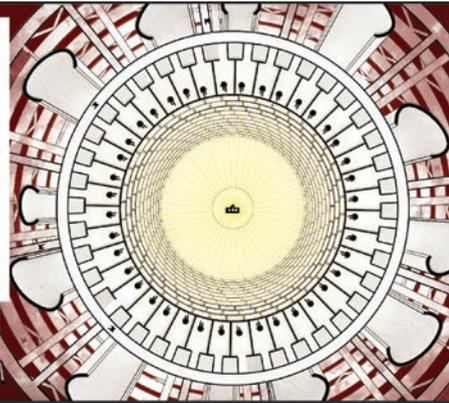




The Reformatorium features all new models of connection!

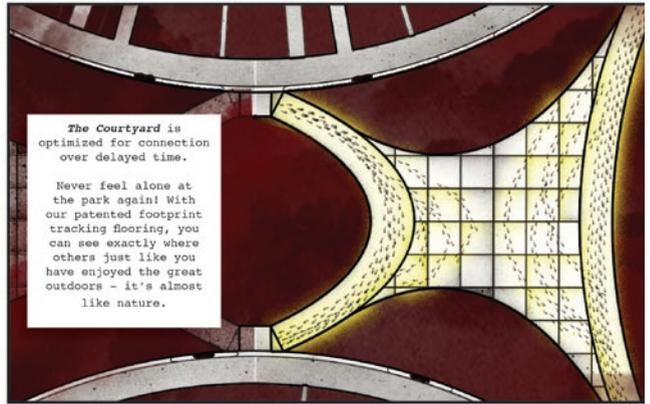
The Opera is optimized for human connection via a common object of attention.

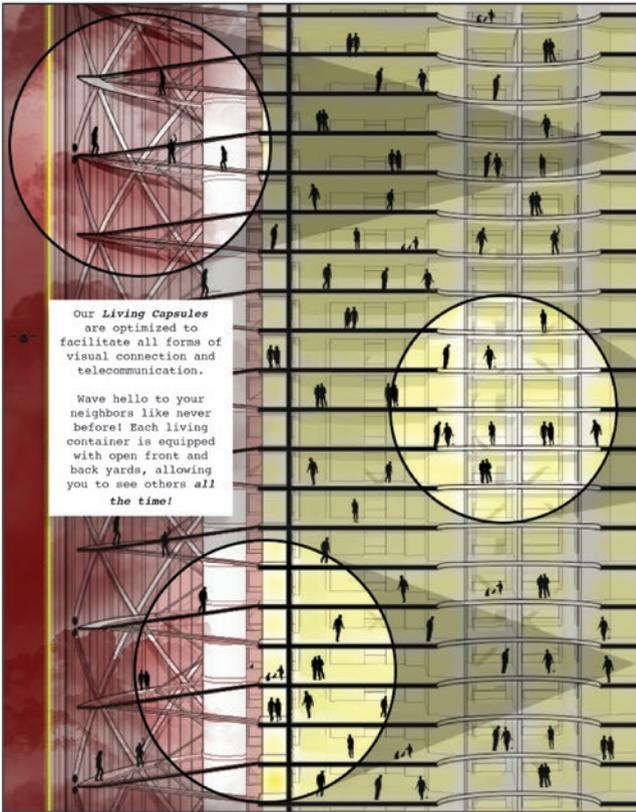
What better way to connect with your neighbors than with live entertainment! Absorb that life force from the performer every weekday from 5-7PM.



The Courtyard is optimized for connection over delayed time.

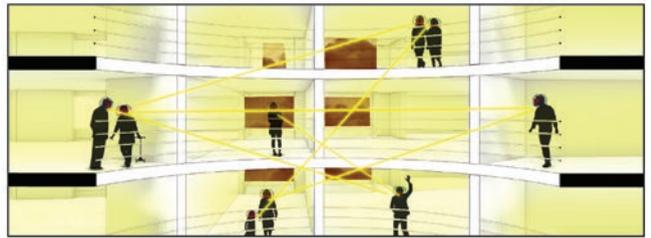
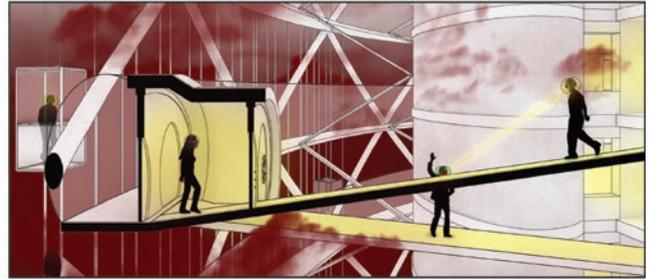
Never feel alone at the park again! With our patented footprint tracking flooring, you can see exactly where others just like you have enjoyed the great outdoors - it's almost like nature.

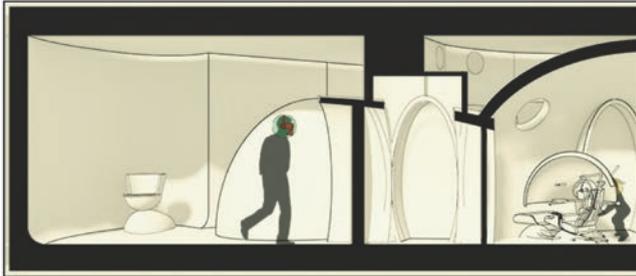




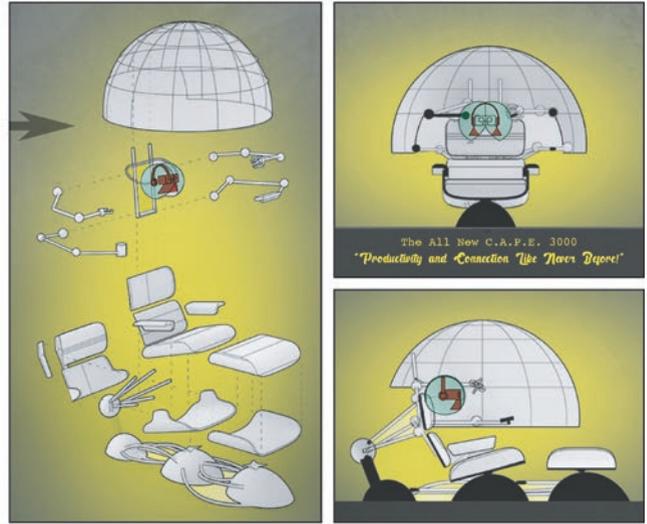
Our Living Capsules are optimized to facilitate all forms of visual connection and telecommunication.

Wave hello to your neighbors like never before! Each living container is equipped with open front and back yards, allowing you to see others all the time!





B



B

ALTERNATING DUALITY

Cayman Langton and Natsume Ono

Wallenberg Critic: Matiss Groskaufmanis

Spaces can be real and imagined. Spaces can tell stories and unfold histories. Spaces can be interrupted, appropriated, and transformed through artistic and literary practice.

—bell hooks

In order to avert climate collapse, identifying and eliminating key contributors to environmental harm is crucial. In this studio, we looked at modes of decommissioning—taking apart existing buildings to prioritize ecological health. The proposal is premised on the irony of the refinery's unknowing participation in its own obsolescence. The project appears to commemorate the refinery through an ethereal mesh installation; however, on the ground level, protective gear provided to visitors undermines this monumental portrayal by visualizing the negative impacts of industry through augmented reality. Thus, our goal is to engage the empathy of individuals to encourage a movement towards environmental values.

Initiating a revaluation of ecology requires exposure to the history, process, and exploitation of petrochemicals. In the context of a global pandemic, with oil prices

plummeting, the production of petrochemical products is finally straining the profits of corporations. The time for intervention is now.

Oxbow Corporation, one of the largest petroleum coke producers in the world, is considering shutting down half of its system at the Texas City Marine Terminal. Petcoke is a byproduct of an oil refining process called “coking,” and though visually resemblant of coal, it emits 30–80 percent more CO₂. As an alternative to low-grade coal, cheap petcoke is exported from the United States to over 50 countries at the expense of hazardous air quality conditions.

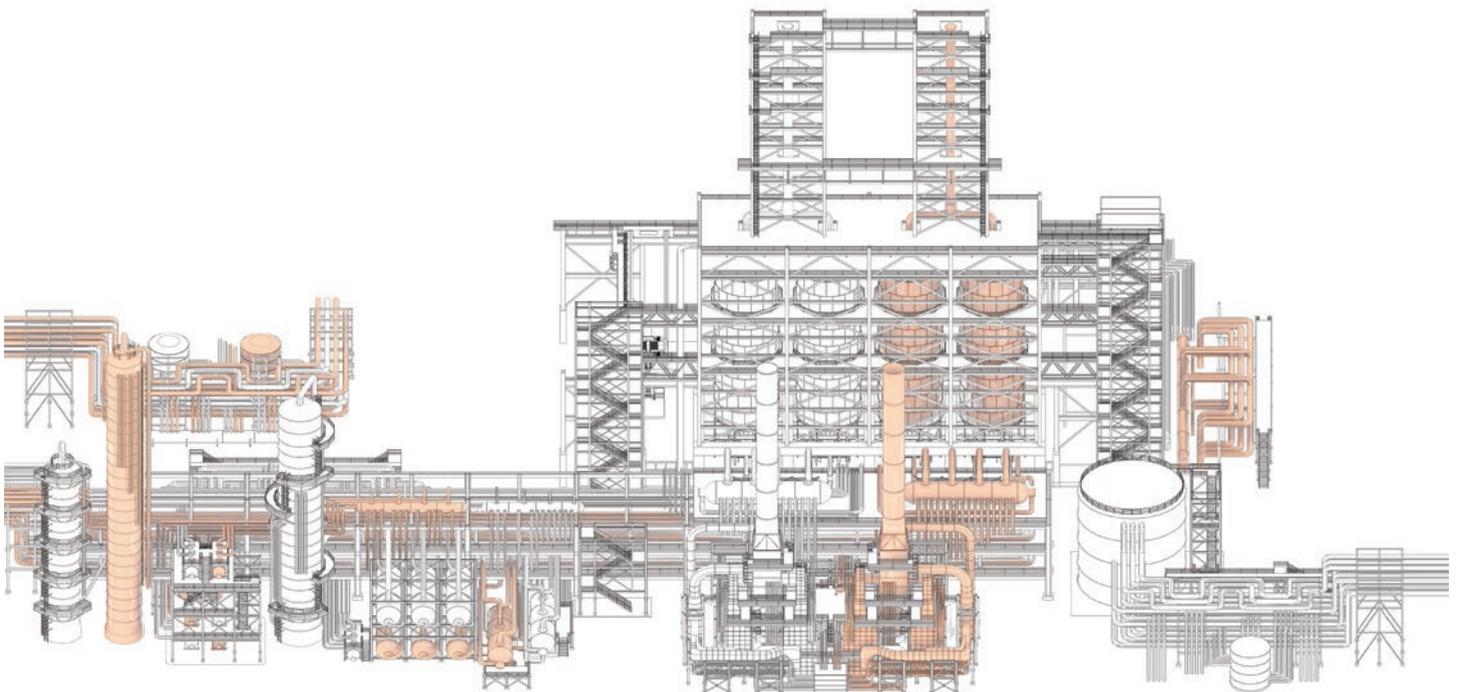
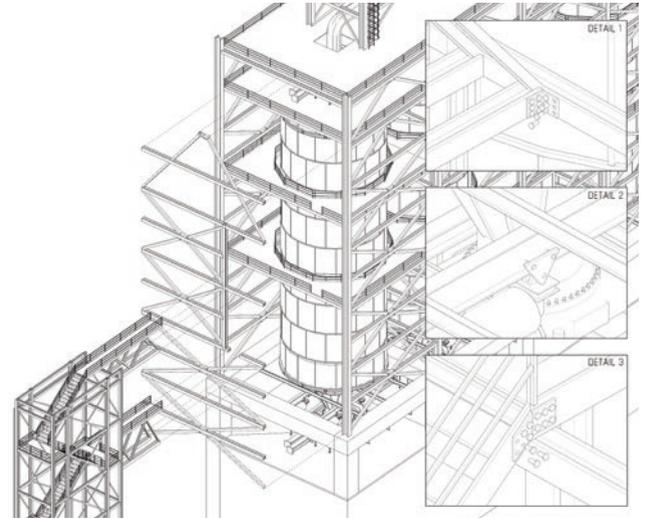
The degrowth of the petcoke industry will benefit vast populations across the United States. In Southwest Detroit and Southeast Chicago, low-income neighborhoods house petcoke storage facilities where the byproducts are contained in open piles, exposing the local population to higher risks of cancer relative to the rest of the city. For decades, nearby residents have lacked the political leverage to prevent these facilities from impacting the health of their communities.



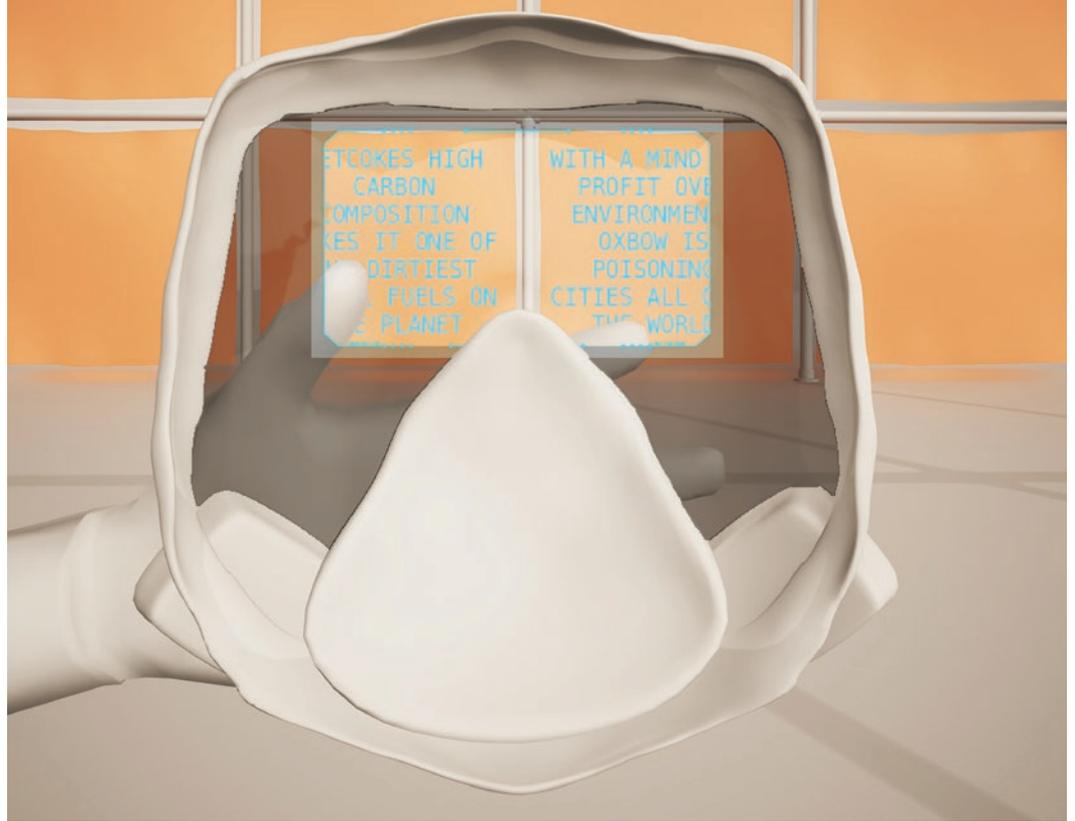


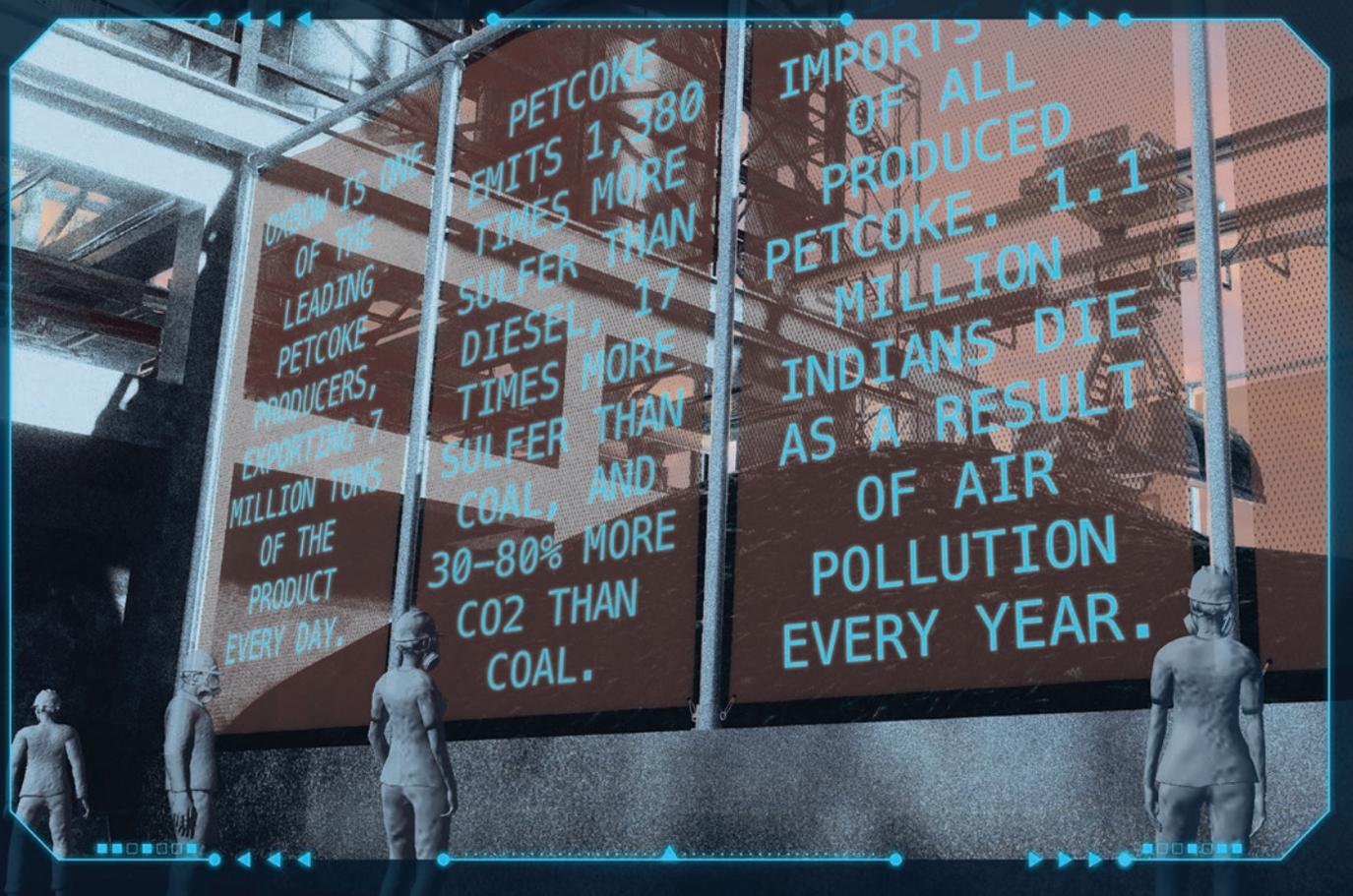
The project begins as an installation for Oxbow, substituting the newly obsolete elements with mesh replicas. Many of the units exist in pairs on the site, which allows independent decommissioning of half of the site. The halves create a dialogue between the functional and the ethereal through the dissolution of the parts into mesh. The mesh structure brings beauty to the site and appears to celebrate the capital that Oxbow has accumulated allowing visitors to marvel at the scale.

Orange fabric serves to clarify the divisions between accessible and prohibited spaces to ensure a level of safety for visitors. The visitors are immersed in a world that exists between two states: the transparent trace against the impenetrable machines and the employees against the visitors. In these moments, visitors can observe workers on the other side of the orange fabric.









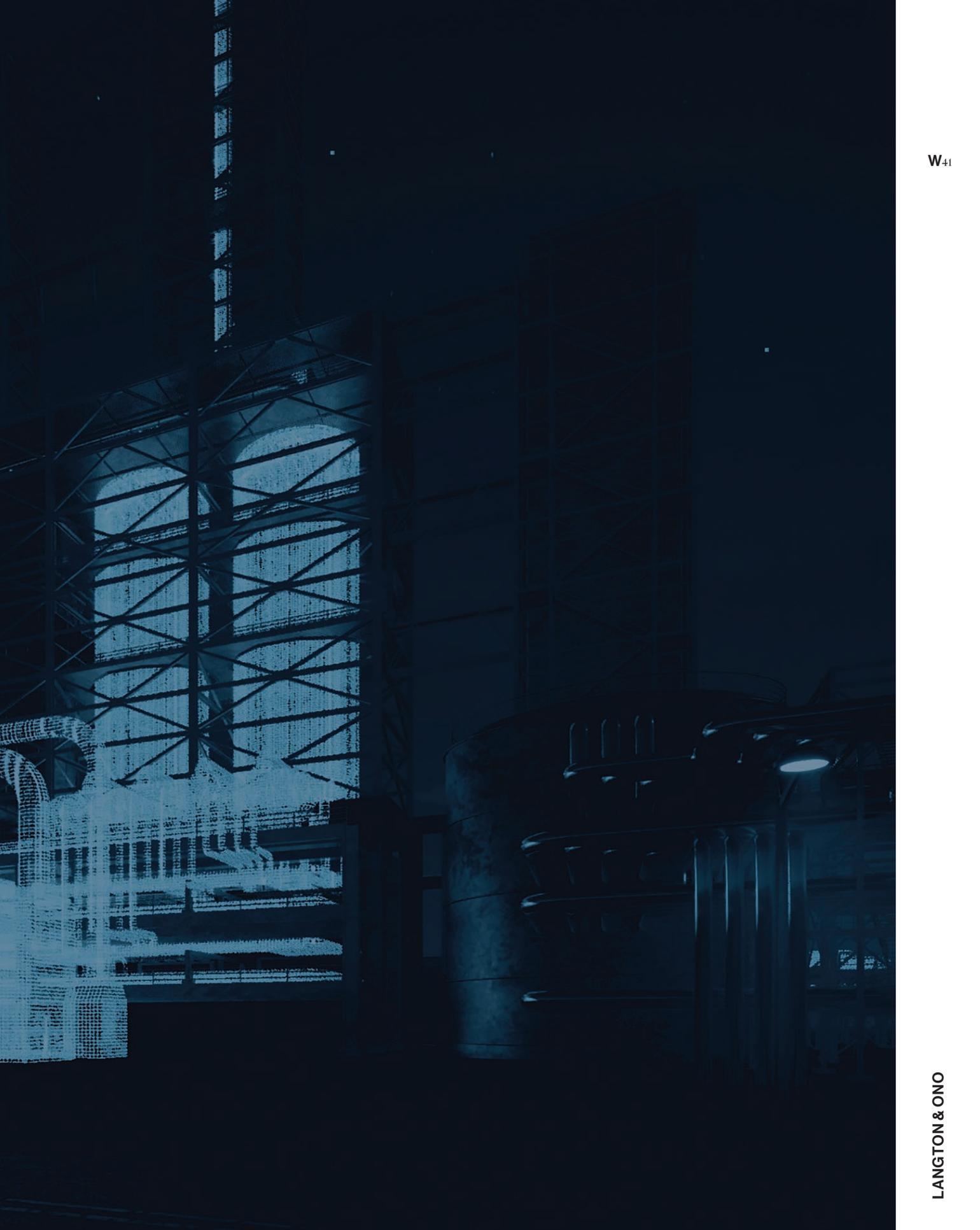
Beneath this beautiful façade, a layer represents the marginalized communities who have endured the harms of petcoke. This component is embedded in augmented reality technology, concealed within the protective gear that is mandatory apparel for visitors. An AR interface converts the orange fabric on the site into informational banners through the mask's screen, revealing subversive messages invisible to the Oxbow Corporation.

The AR overlay serves to demonumentalize the industry by visualizing the environmental costs of its operation. As visitors approach the petcoke piles, they learn of their detrimental nature to both human health and ecology.

We use this space to begin working at the smallest scale of intervention—individuals and their ability to empathize. By observing the tragedies and unseen dangers of the petcoke industry, visitors can create a movement for change. This challenge to the petrochemical industry can only emerge from the corporation that overlooks these marginal spaces but unknowingly aids in their growth.

Special thanks to Mattss Groskaufmanis, Dawn Gilpin, and Mireille Roddier, as well as Leah Hong, Mitchell Lawrence, Jacob Pyles, and Megan Silverman.



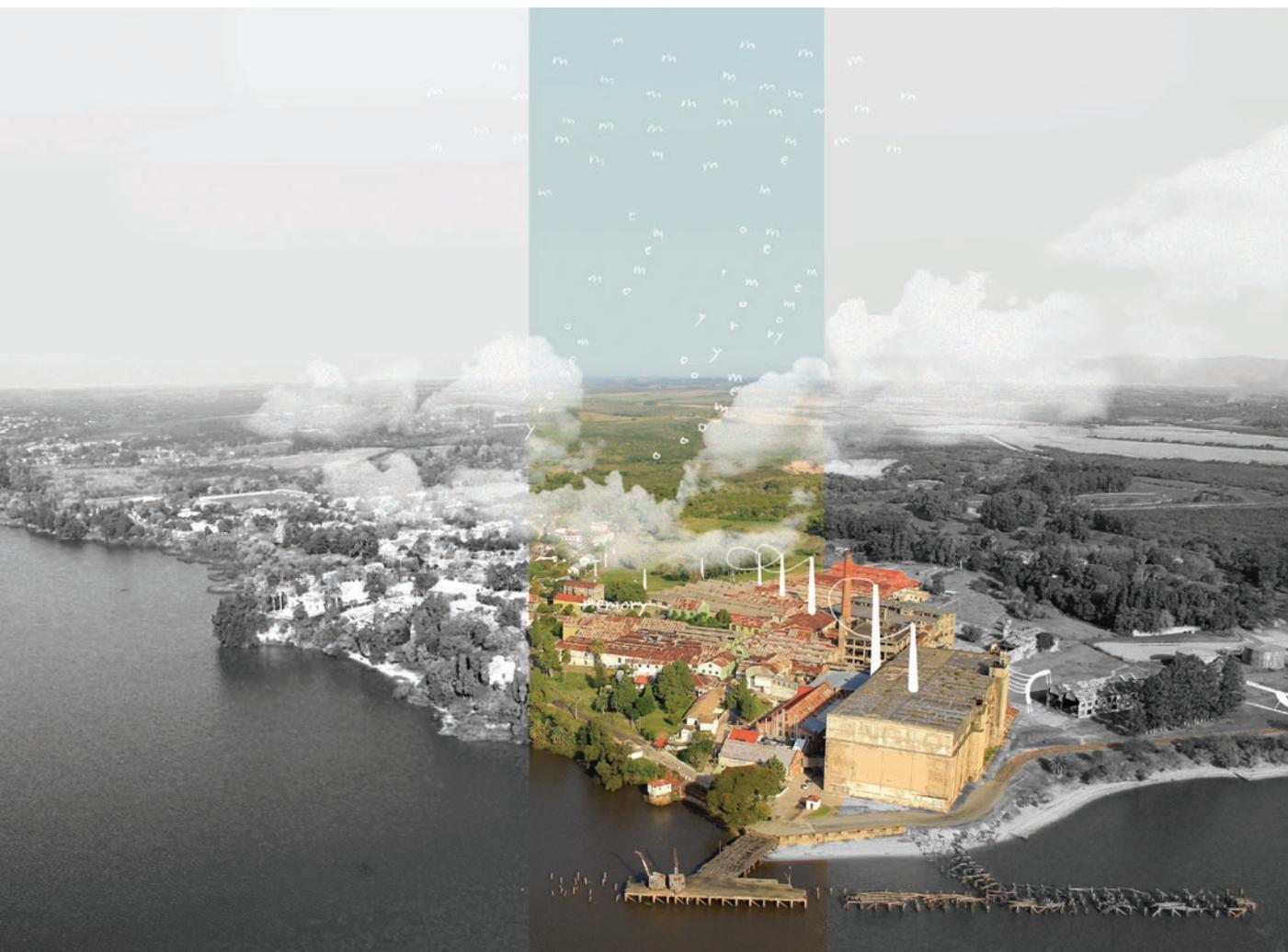


MEMORIAL TO THE WEATHER OF FRAY BENTOS

Kay Wright

Wallenberg Critic: Mireille Roddier





The industrial landscapes of Fray Bentos, Uruguay, are complex sites of memory, experience, and space. The celebrated heritage of Fray Bentos' weathered meat-packing factories illuminates the multiplicity of experiences overshadowed by the colonial hand of hegemonic palimpsest.

Memorial to the Weather of Fray Bentos is a triangulation of climatic specificity, contemporary representations of Fray Bentos, and reflections on chronometrical memory and the preservation of the mind via Jorge Luis Borges' "Funes el memorioso." Ephemeral monuments are inserted as moments of reorientation into the industrial landscape, bridging the real and the invented, imperfections and the imagination, to attenuate wind, temperature, rain, light, and celestial narratives. Materials of the old factory—roofs, smokestacks, and building fenestrations—are repositioned as the theaters of perception and play, fragmented vessels of remembering and misremembering.

Traditional strategies of memorialization incise histories, inappropriately modulating the complexities of "identity" and "place." *Memorial to the Weather of Fray Bentos* proposes a strategy which allows for the "weathering" of "the architectural regulatory":

1. An attention to the expressions of cultural, spatial artifacts
2. An arrangement of observatories for the weather and the sky, mineral incarnations, and planetary cycles (i.e., evidence of history, common ground, and common air)

Characters assemble in a memorial for dwellers, opacophiles, pluviophiles, anemophiles, and other solists. Elements of the industrial site are relocated, re-membered, not as a control of the weather, but as reorientations and moments of change in speed.

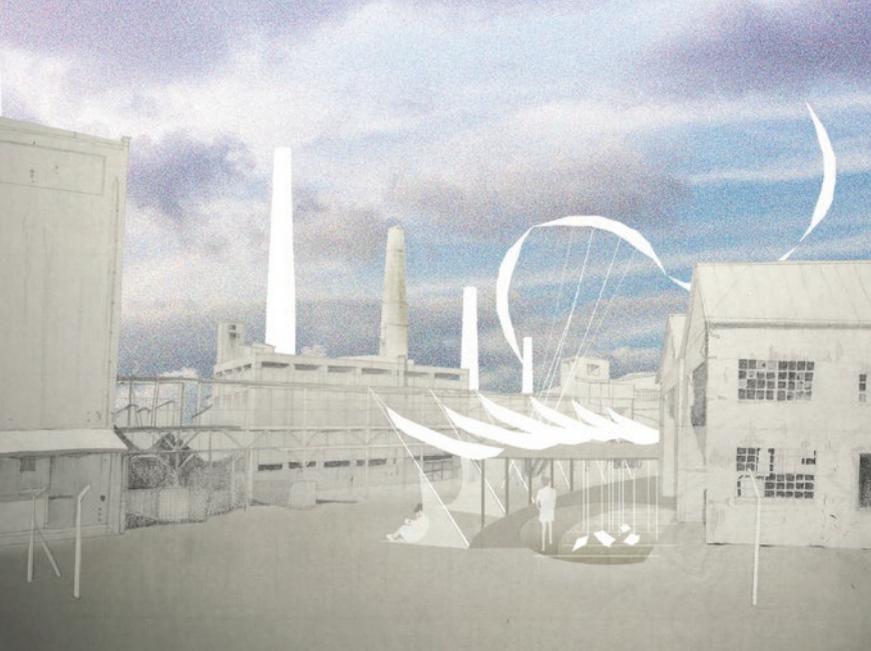
PAVILION FOR THE ANEMOPHILE

Re-collecting a device of mechanization and climatization . . .

The smokestack is simultaneously a device of mechanization, a condensed vernacular that dissipates the entropic byproduct of the industrial, and a device of memorialization and climatization.

The pavilion for the amenophile re-collects the chimney—building fenestrations are placed strategically according to the dominant climatic systems. The smokestack absorbs the heat of the sky, while differences in pressure and temperature help generate a cooling effect on the ground.





PAVILION OF KITES

An element of "play" is re-membered as an element of "environmental autonomy . . ."

The kite pavilion is an invitation to the people of Fray Bentos to install kites in a scaffolding between the existing bridge and a pavilion on the ground, to feel the wind, to adapt to climate through the alleviation of collected heat, and to lend visitors environmental autonomy. Kites travel between home and the landscape for play.



FAÇADE FOR THE HELIOPHILE

A theatre of sun and sound . . .

The façade for the heliophile re-members cables and linear members of assembly—old and new—as a response to the darkness of the interiors, introducing a gradient of light qualities, a polyphony of the sun within the industrial landscape. Sun, people, and windchimes dance on the façade.

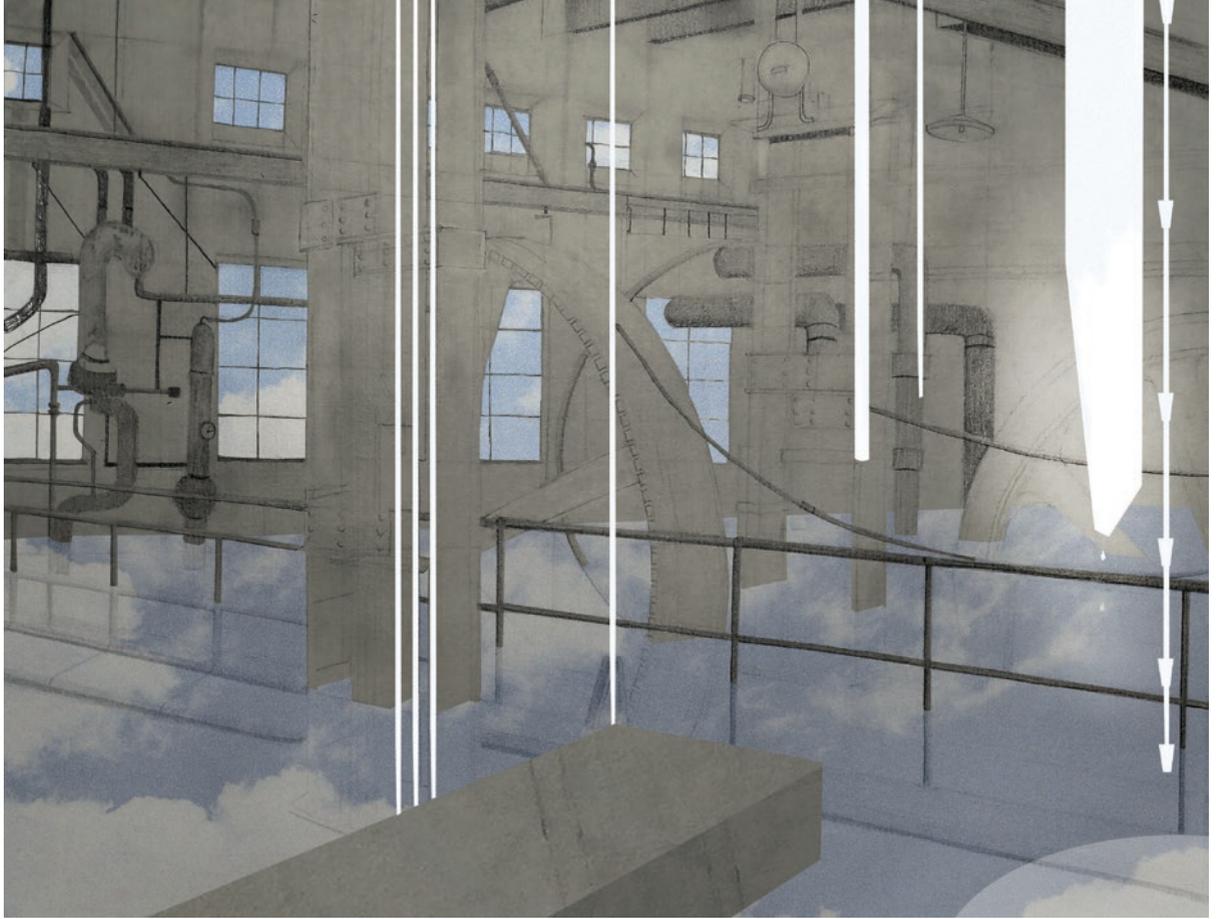
TABLE FOR THE NEPHOPHILE

The clouds sweep over our plates . . .

The table for the nephophile recasts rooftops, decommissioned smoke vents of the past, as dining tables for people to gather and share a meal or just observe the clouds.

Tents shield radial windows which capture sunlight and heat the industrial interiors when the Pampero brings cold air from the south during the Uruguayan winter.





PAVILION FOR THE PLUVIOPHILE

The rain will sing tomorrow and today . . .

The rain archive is a re-collection of the airtight chambers of the frigorifico as cisterns, a repository for the memory of rain. Rain collecting devices aurally and visually gather light in a chamber to amplify the sound and sight of the weather of Fray Bentos. On sunny days, visitors and architecture play with the sounds of rain accumulated in the vessels.

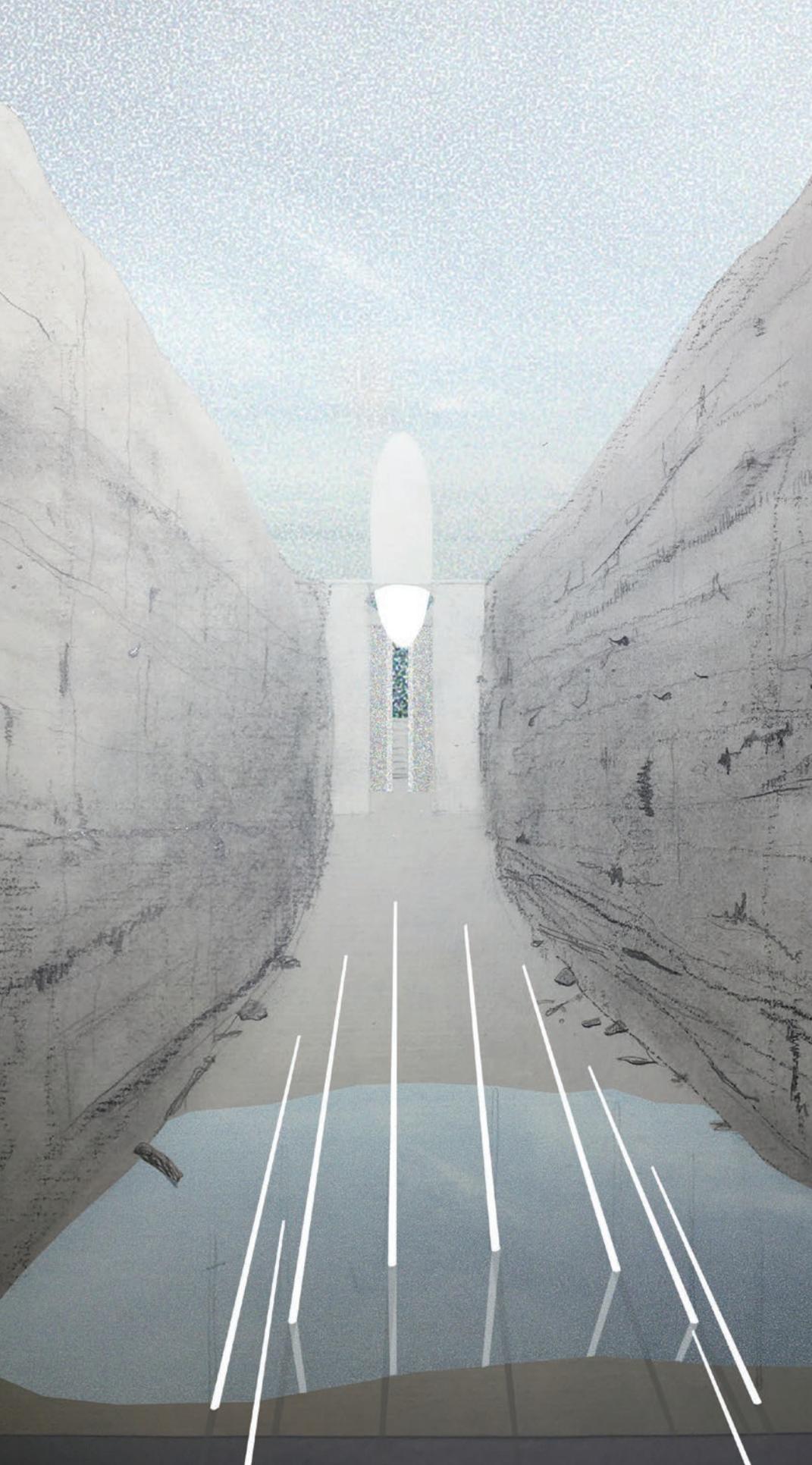
THE ANALEMMA OBSERVATORY

The sun illuminates patterns of place . . .

The observatory is an excavation of the ground and a registration of the rain, where incarnations of the rio generate changing shelters over our heads....

The sun is captured by an elliptical disk. Here, sunlight travels through the apparatus at the same time each day, cast upon a new wand, and crowned by a prism, while the surrounding shadows of the others collectively point towards it. Together, they trace an infinity that reflects the changing location of the sun over the course of a year, capturing the recursive narrative of the earth.

Special thanks to Mireille Roddier and Dawn Gilpin, for bringing voices forth; Olivia Howard, Talia Clarick, Henry Peters, and Jackie Pothier, for intermediate conversations; and Connor Cain, Morgan Mohr, Kaya Ramirez, and Wendy Zhuo for assistance with final arrangements and submission to the Wallenberg reviews.



DEPTH OF PANELS

A QUIET REVOLUTION IN OUR HOMES

Yangtian Yan

Wallenberg Critic: De Peter Yi

Contributors: Leonard Clayton Artz and Bilal Fawaz

Despite recent waves of technological advancement, modern architecture stubbornly demands static solutions, restricting the vision of architects to passive and unresponsive spaces. Consequently, the individual's agency and ability to pursue freedom within architectural space has been limited.

As inhabitants, we live in the margins—in the modernist's utopian dreams in which thinness of space is zealously pursued. While modern lifestyles have been marginalized into stagnation, various panels also occupy the physical margins of our rooms (i.e., walls, floors, and ceilings), though their presence recedes with the advancement of technology. Increasingly, the panels are perceived as two-dimensional elements despite their structure.

A quiet revolution must happen within the domestic environment—one directed by us, the inhabitants.

Depth of Panels, an architectural oxymoron, attempts to create spatial depth by operating on three of the

thinnest panels in a typical domestic setting—the wall, the floor, and the ceiling.

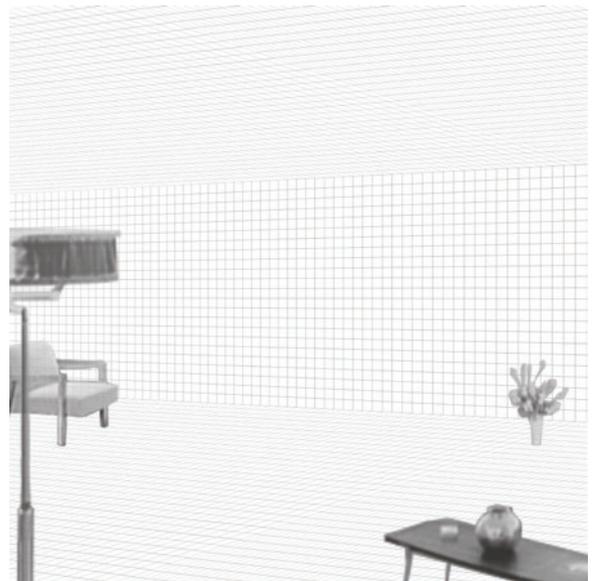
Panels are inherently spatial but exist in buildings as units or modules. In many parametric or modular designs, the spatial volume is perceived as an accumulation of two-dimensional panels. In these instances, the panels, mere components of our physical space, have been reimagined as generators of spatial experience itself.

This thesis consists of two parts: a physical model of architectural diagrams and speculations on the augmented experiences created through the assembly of panels.

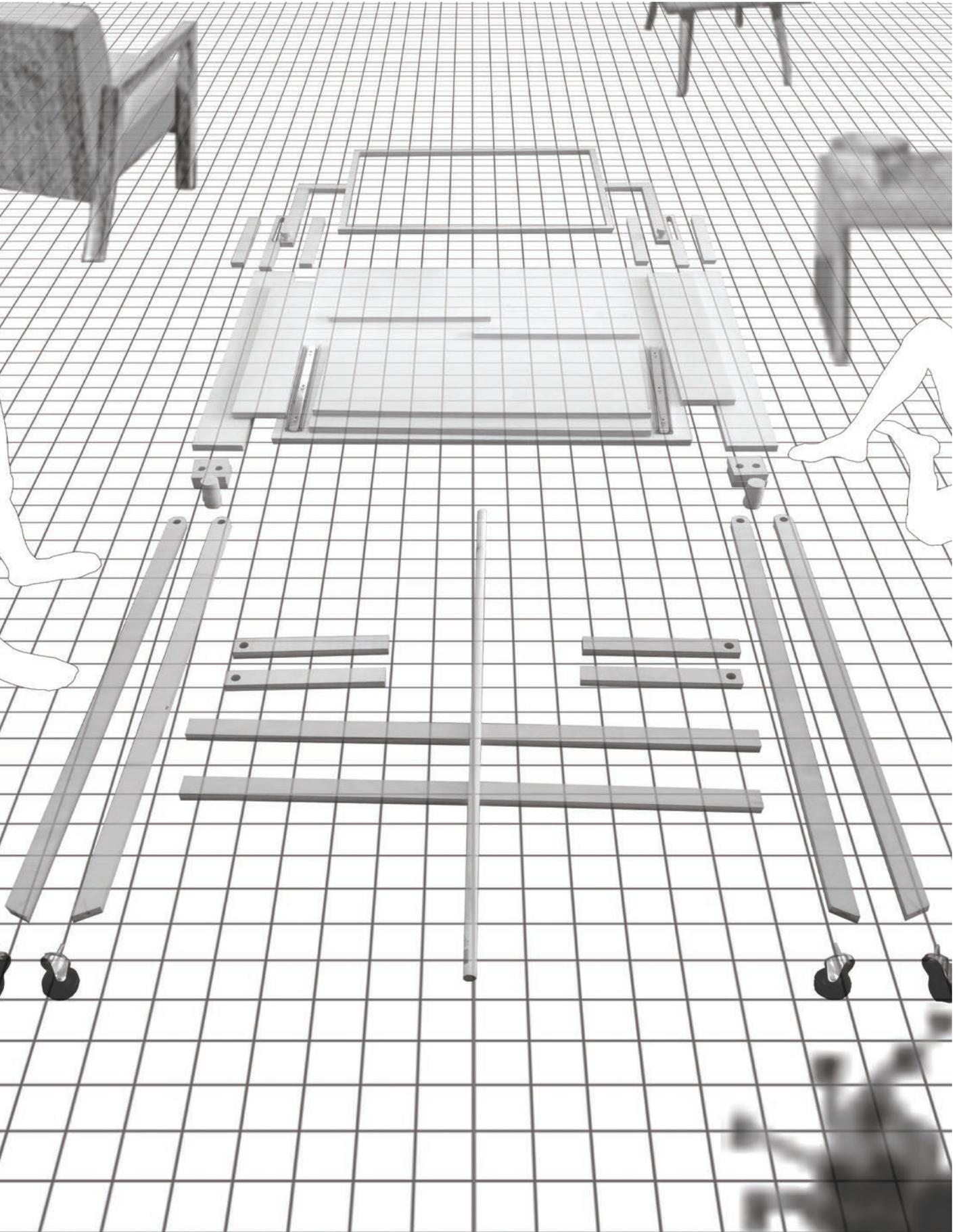
The physical model, a desk assembled from 3/4" plywood panels, changes form as part of a spatially interactive installation. The structural design and adaptability of the desk seek to embody the quality of thinness observable in modern furniture.



A room that we all live in



A room without panels



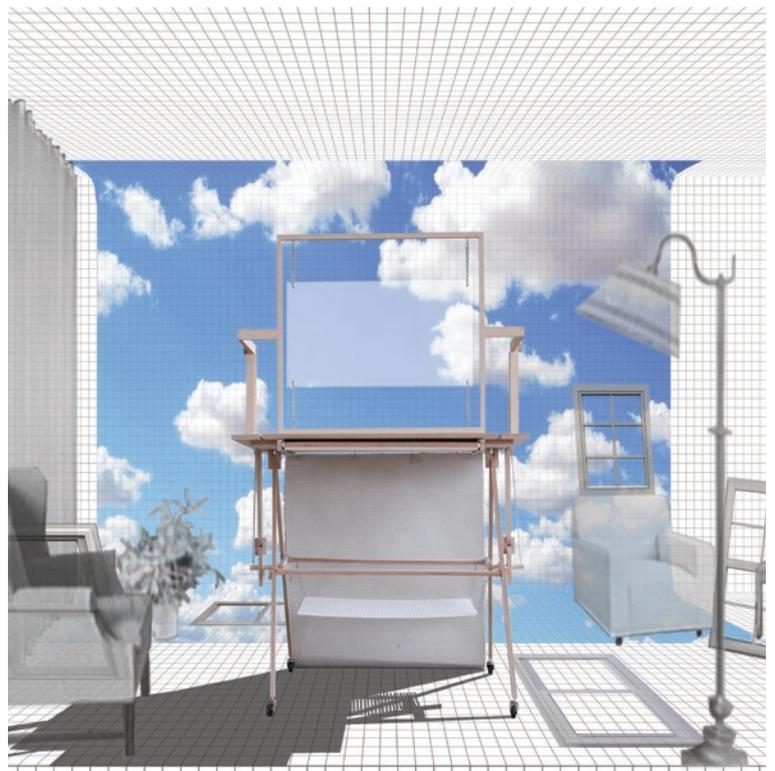
The speculations on the augmented experiences use digital collage to represent spatial experiences projected from the thinnest panels to the domestic interior. This speculative exercise reimagines the architectural possibilities of the existing domestic environment.

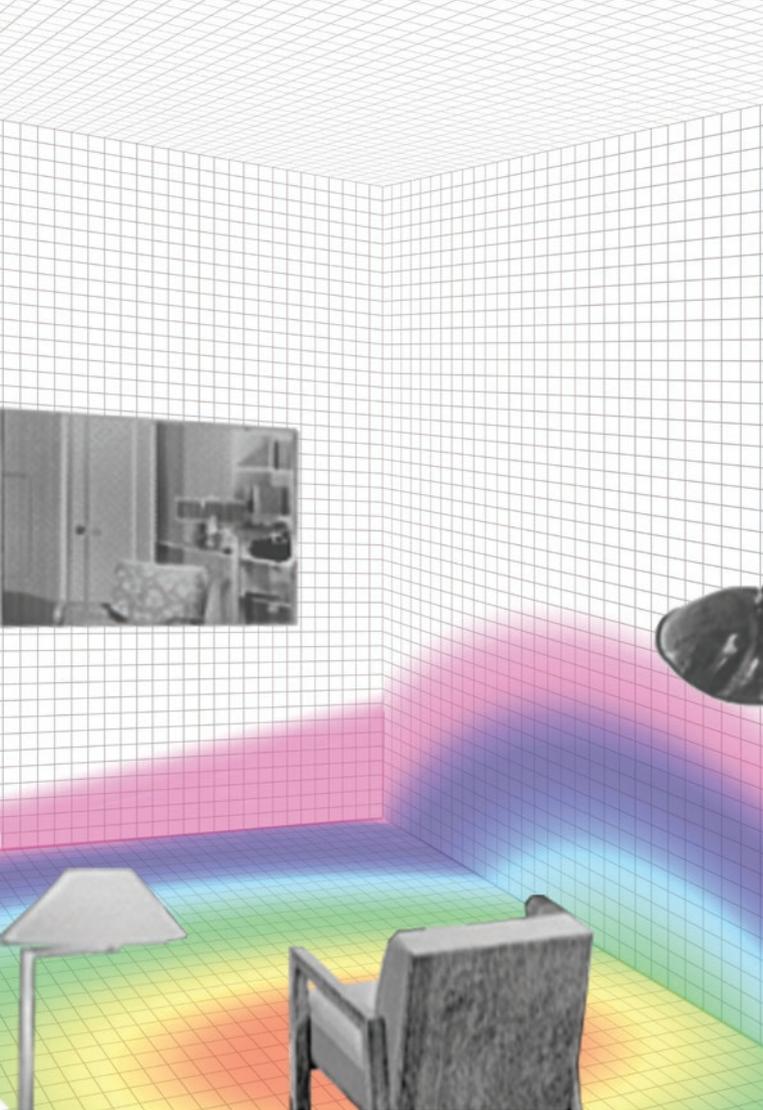
Following in the footsteps of visionary twentieth century architects and designers, we ask for spaces, emancipatory and dynamic in atmosphere, composed of adaptable and interchangeable parts. We desire to live in spaces where the needs and happiness of inhabitants are paramount.



WALL (Margin)
WINDOW (Panel)
FLUID WALLPAPER (Depth)

Windows are the interface between the interior room and outside surroundings. As a transparent feature, windows allow our vision to pass through and perceive the depth of nature. The first spatial retrofit, inspired by the camera obscura, transforms a window from a spatial divider into a tunnel through which visual information travels and projects into the interior as a wallpaper with fluid and constant motion.





CEILING (Margin)
LIGHT DIFFUSER (Panel)
INDOOR RAINBOW (Depth)

Ceilings, for a long time, have been primarily decorative. Nonetheless, in the era when “decoration is a sin,” such ornamentation has nearly vanished. Accordingly, the commodification of ceiling tiles has slowly erased their three-dimensionality. The second spatial retrofit aims to use the prism as an apparatus to refract light into its constituent spectral colors. The panel takes the form of a light diffuser commonly placed under large ceiling lights.

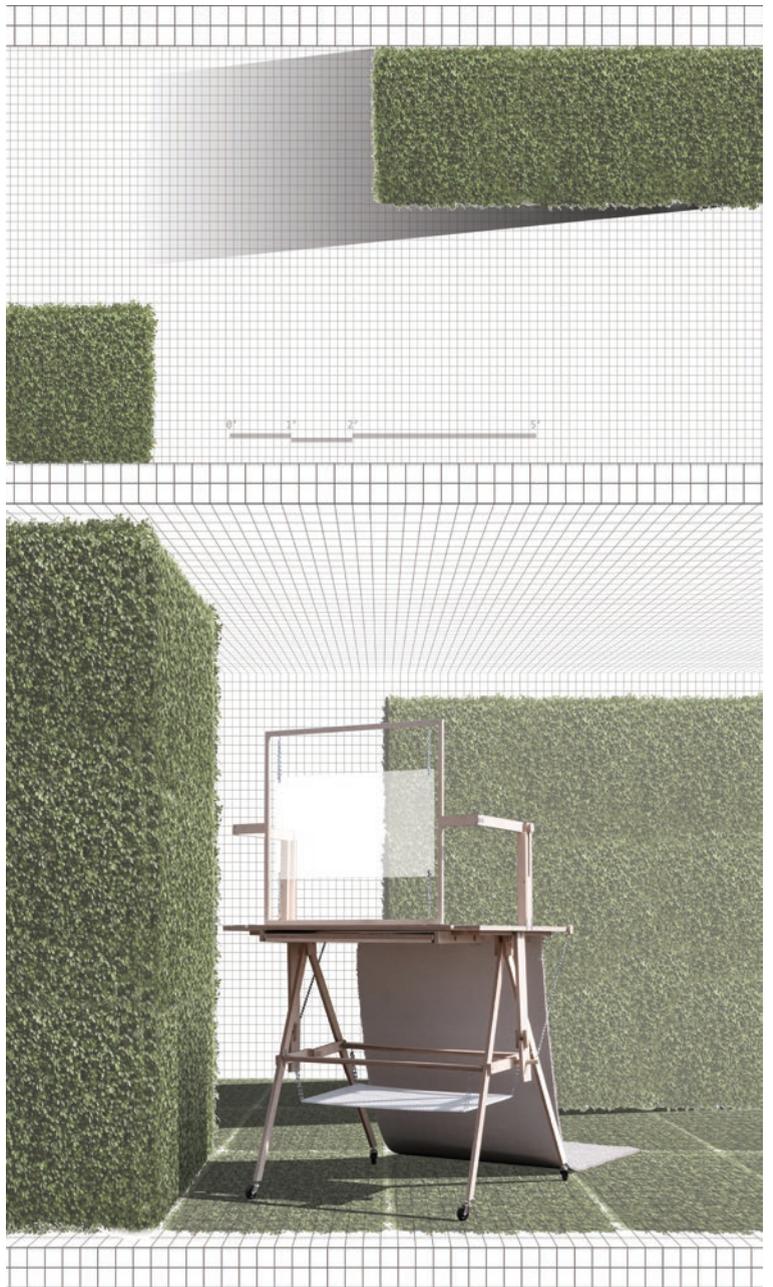
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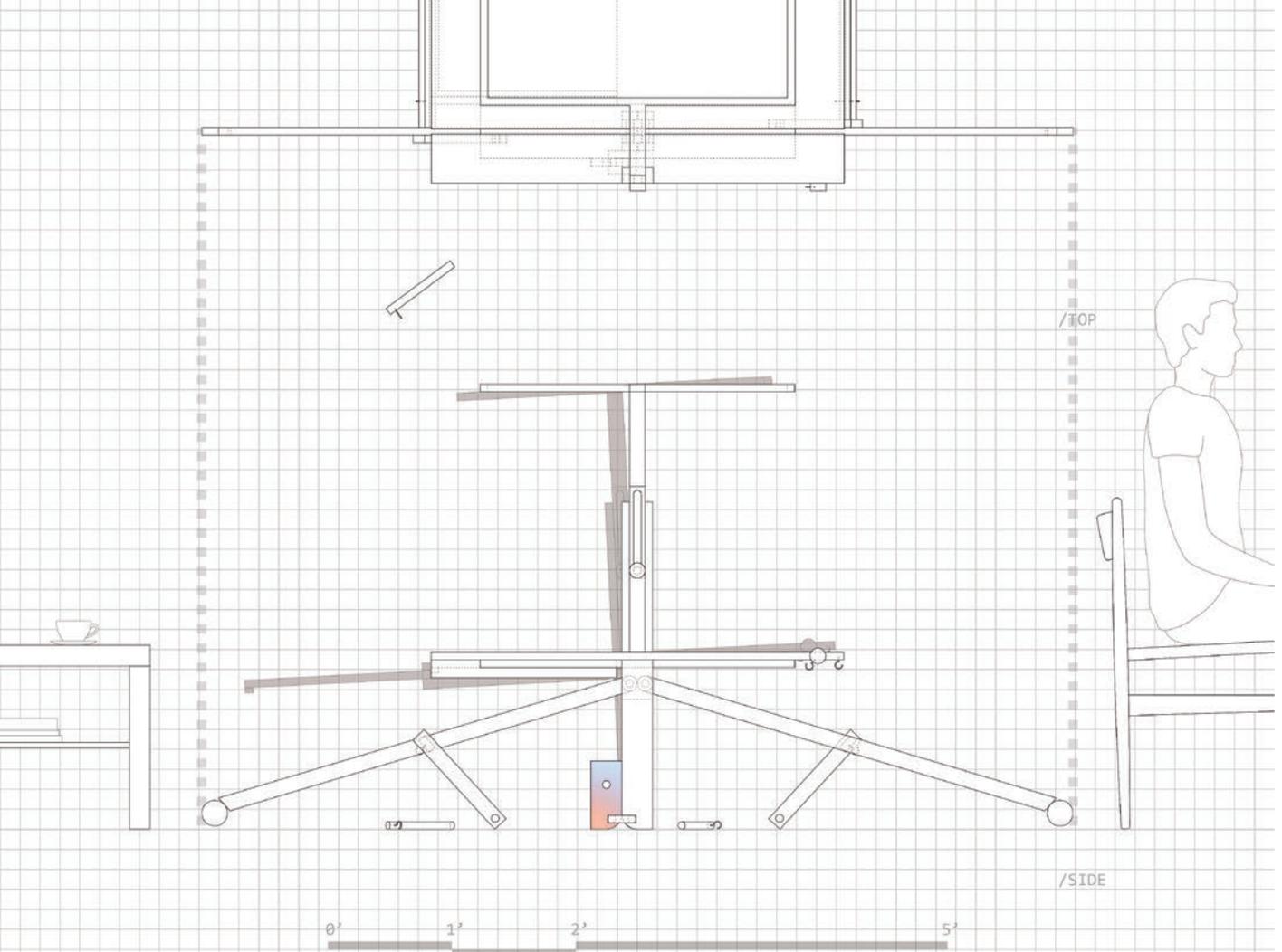


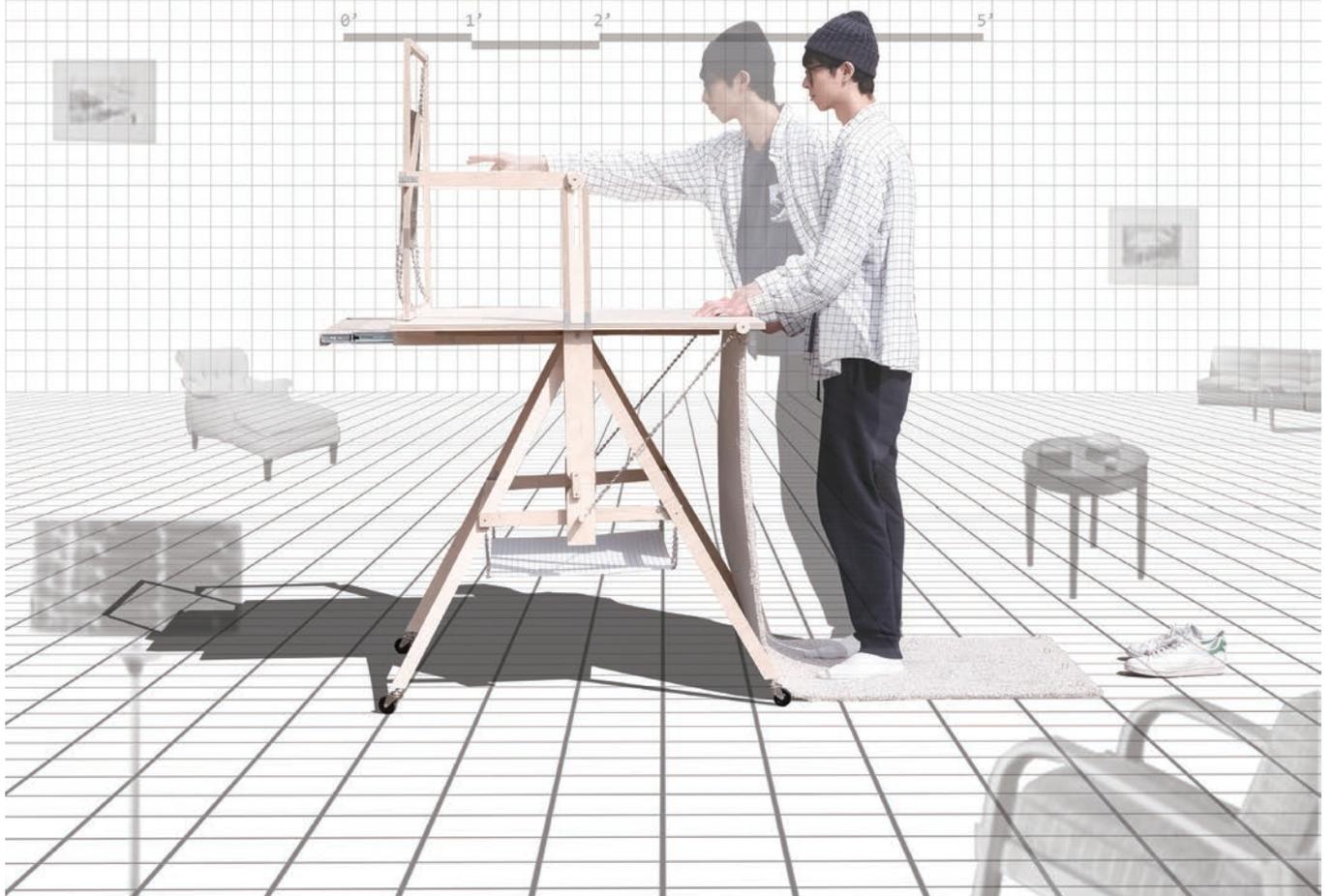
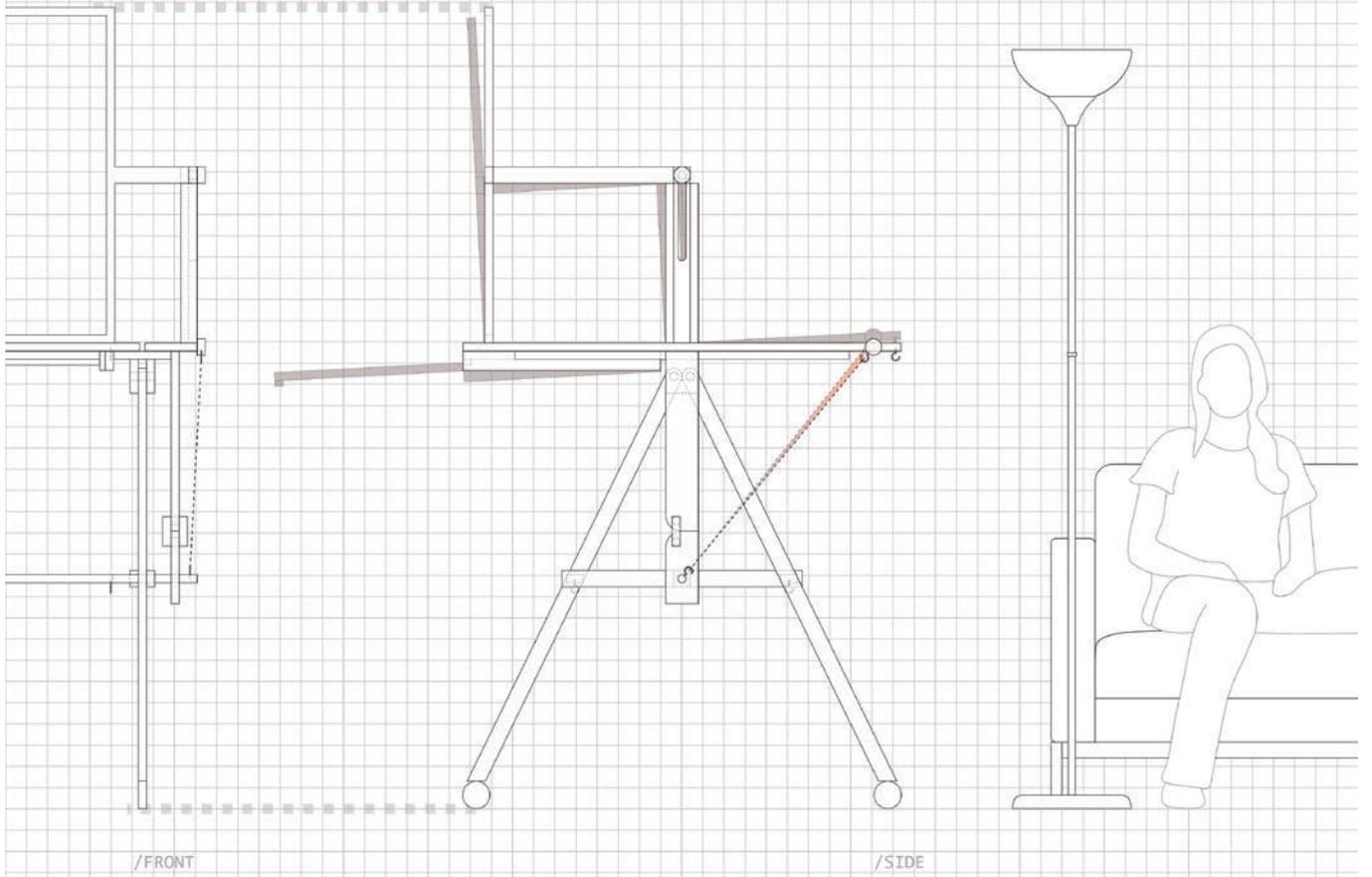
FLOOR (Margin)
CARPET (Panel)
GROWING CARPET (Depth)

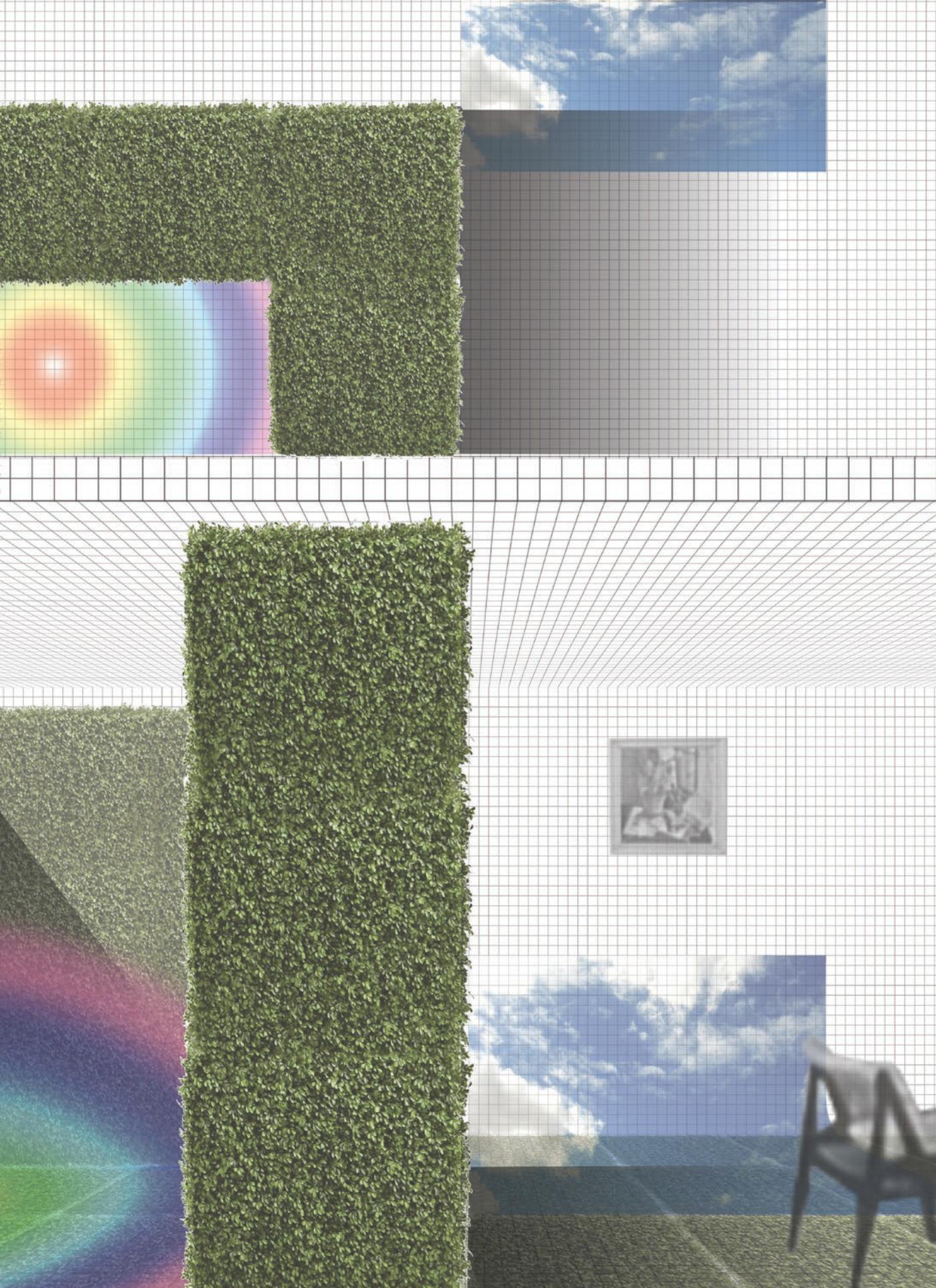
Carpet is a plush textile that has also been panelized. The soft sensual experience of the carpet panel inspired the third spatial retrofit in which the static state of carpet is modulated to a dynamic form. It recasts the carpet as vegetation, imagining plant growth that generates spatial depth from the floor.

I would like to thank my instructor, De Peter Yi, for his insights and support, as well as his encouragement in expressing creative freedom. This project also would not have been possible without the assistance of Leonard Clayton Artz and Bilal Fawaz in the assembly and documentation of the physical model.









ABOUT RAOUL WALLENBERG

Raoul Wallenberg is commemorated for saving tens of thousands of Jews in Nazi-occupied Hungary during the Holocaust in the latter stages of World War II. In January 1945, Soviet authorities detained Wallenberg in Budapest, marking the last known record of his activities. In October of 2016, after a representative of the Wallenberg family pleaded with the Swedish government to issue a death certificate, Sweden declared Raoul Wallenberg deceased—seventy-one years after his disappearance.

Raoul Wallenberg graduated from the University of Michigan with a degree in architecture in 1935. In honor of his memory, the Raoul Wallenberg Endowment was established by the Benard L. Maas Foundation (David Engelbert, Director). In addition to gifts from the foundation, alumni also made donations to acknowledge Wallenberg’s incredible courage.

Wallenberg’s legacy is “architecture as a humane social art.”

RAOUL WALLENBERG STUDIOS

Each year, the architecture program exhibits and juries the best work from the final undergraduate design studio. Awards, funded by the Raoul Wallenberg Endowment, are offered in the form of a stipend for international travel to a country of the student’s choosing.

In establishing the travel award, it is hoped that students will engage in the country they visit, explore its architecture and culture, and return with a broadened understanding of the world.

2020 WALLENBERG AWARD WINNERS

Jamie Johnson & Peyton Stimac

Yangtian Yan

Phillip Allore

Clare Coburn

Gian-Paolo Anover & Jesica Yu

Natsume Ono & Cayman Langton

F-ARCHITECTURE

The feminist architecture collaborative is an architecture office, a feminist collective, a CCCP (The Masters of Science in Critical, Curatorial, and Conceptual Practices in Architecture at Columbia GSAPP) sleeper cell, a shared alias, an outfit worn simultaneously, a fake temple to the feminism that architecture forgot or never had. Composed of friends, Gabrielle Printz, Virginia Black, and Rosana Elkhatib, f-architecture aims at disentangling the contemporary spatial politics of bodies by traversing theoretical and activist registers to locate new forms of architectural work through critical relationships with collaborators across continents and an expanding definition of Designer. f-architecture is based in Brooklyn, New York.

The 2021 Raoul Wallenberg Lecture was delivered remotely to Taubman College of Architecture and Urban Planning on February 2, 2021.

Welcome to our bedroom, a site of recuperation, planning, and primordial teenage rebellion. We are delighted to be here together in this digital boudoir.

Under the covers, we'd like to articulate a sense of resistance that is immediate, interpersonal, and shared between us, just as it is attuned to the systems of power, which are difficult to breach, especially as individuals. Our coming together in resistance is a way of providing the support that makes a certain kind of political and precarious practice possible. The story of f-architecture is a story of surviving in New York City after we left Columbia, where we met and fell in love. We were trying to figure out what it looks like to have an activist, or political, or critical, or feminist spatial practice in one of the most expensive cities on the planet. Who can afford to do that work? Well, not us! But we managed to do something and we should start by recognizing the privileges granted to us by our advanced degrees, our working partners, our freedom from dependence, and our physical ability to hustle, suffer, and put work out into the world.

Our resistance is first directed to a condition of capitalism that makes it impossible to survive outside of one's appearance and an extractivist, dehumanizing market. Racial capitalism and white supremacy, that long arc, has fashioned this present in which racism and fascism feel somehow new again, more urgent matters than the fabric of our world and discipline: the past and present of



settler colonialism and the occupation of Palestine, the persistence of cis-hetero patriarchy, and—you know what?—architecture, too. In the way that design, practitioners, and the built environment accommodate and sustain these compounding conditions of oppression.

In the way that architecture serves capital, is it possible to design a practice that works against these power structures? What are the ways of working, the interceding artifacts, devices, and scripts that allow for survival under and subversion of such truly busted circumstances? And can we configure other realities from this mess with sharper critique and greater care? To what degree must the work be directed against architecture itself? And finally, can resistance be activated as a mode of practice? We're not so sure, but we have at least been putting some forms of resistance to work.

Gabrielle Printz: f-architecture was born in the magical year of 2016. We ended up working at the outset of the Trump era, which, in a way, forced us to react not only to a more extreme political entity, but also to a wellspring of reactions to his taking office. We were interested in the aesthetics of political participation, but also of this new regime, which was, as we know, extremely tacky. The surface level luxe-ness of Trump branded interiors was meant to distinguish the dynasty as Very Rich™, perhaps in contrast to his populist base, for whom the TV oligarch embodies a kind of white American aspiration. All of that imagery and staging was actually within the realm of appropriation. We could take it, reproduce it, and use it as dressing for another kind of political speech.

We designed a set featuring wallpaper that borrows details from Trump's New York City penthouse. Taking Trump not as a leader, but as a flat layer in the bad décor of the new presidency, we devised this deployable installation that we called *#icalled*, a media apparatus that could see new performances of political speech.

The set was complete with furniture we found on the street and spray painted gold. We literally had to pack them to transport to three different venues where we staged the installation between election day, the inauguration, and after. As protest armature, its deployability was essential. It could be made to appear where it was needed and for people who might not be able to participate in the ritual of the real thing.

We first installed this public interior in a vacated American Apparel in an event with activists and community organizers, then at the New School on inauguration day, and later at the Morgan Library with the Municipal Art Society. One interest of this project was how the power of aesthetics, in addition to the power of space and occupation, might be appropriated to exert discourses against powers historically formalized by architecture—the penthouse or the White House. As an architecture of and for protest, the set appropriates signifiers of power to occasion, amplify, and recirculate the will of the people against the whims of the CEO, or our former president.

Rosana Elkhatib: As 2016's United States was debating whether to maintain its polished veneer of democracy or sand it off to reveal to us what we already knew, I flew to Amman, Jordan's capital city, to realize another kind of demonstration. In Amman, we planned an occupation of urban space that would give voice and power to those often denied the privilege of public appearance, let alone the right to protest. Our project, *Republic of Body*, was a two-act performance that sought to hack a bureaucratic maze, culminating in a final choreographed declaration march that took place on one of Amman's popular streets.

Part ritual procession and part gay pride parade, the event, which was modeled after royal processions, instantiated a public and symbolic space for feminist and queer artists in the city to assume a visibility



they are otherwise denied. This *Republic* was conceived of and by precarious bodies who unveiled their spatial autonomy in the schema of Jordan's nation-building narratives and by redeploying symbols of power of the Hashemite Kingdom of Jordan—symbols which in turn were borrowed from the colonial residue of the British mandate. New performances costumed by the multi-symbolic objects of this layered history are enacted by *Republic* to disrupt a gendered national inheritance. By appropriating these symbols, the members of *Republic* could express the intersection and mutual construction of queer, Arab, and gender identities, as well as assert the rights to space and legitimacy under a persistently masculine hegemony over the public sphere.

The sovereign symbols we analyzed and appropriated in *Republic* are drawn from a timeline that traces Jordan's early years, where the Hashemite royal family asserted its own sovereignty and integrated itself into Jordan's de facto narrative. They historicized the country's traditions, emphasized themselves as direct descendants of prophetic truth—descendants of Mohammed, the prophet of Islam—and assumed their rightful place on the throne of Arab nations.

What the nation state attempted to do, through its highly constructed narratives, was create a kind of ideal Jordanian citizen. It's not a blood relative to the descendants of the most prolific figure in Islam. Those allowed full admission into nationhood are symbolized by a high-end and performative masculinity that does not readily accept any other form of belonging to a place. Women, free people, refugees, and those without a neatly packaged claim to the nation state often find themselves existing outside of the domain of subjectivity.

Prior to the final performance of *Republic of Body*, we engaged in an image making exercise that put the production of the nation under scrutiny. In the photo series, *Tanasal* (تتصل), or *Disclaimer*, the femme body takes central focus on public steps of eastern Amman, the most historical part of the city—the private ritual of bloodletting made public.

In this exercise, we redeployed the artifact of the pith helmet. The nation and its sovereign symbols appear in photographs which stage them at the scale of the body and that interrupts the state's corporeal narrative, highlighting its instabilities and constructed histories.

To enable any of that, the project was also an intense bureaucratic exercise that involved seeking permission for a kind of public event that had not yet occurred in the country. This was an important step to ensure the safety of the artists marching on the street, but it was also a performance in its own right, a way to scam the system. Ultimately, we were granted verbal approval just two days before the performance was scheduled.

The performance paraded bodily armatures carrying local feminist and queer performers as they assumed visible orientation on the streets. Through the exploitation and clearing of state power symbols, *Republic* staged a temporary space of visibility for bodies to whom that is often denied.

Virginia Black: *Representative Bodies* was an occupation of f-architecture and the *achimamas*, or midwives, of AMUPAKIN (Asociación de Mujeres Parteras Kichwas del Alto Napo) at the UN Habitat III Conference in Quito, Ecuador. With these Amazonian Kichwa shamans as collaborators, we designed official appearances across multiple formats including an act of peaceful protest, a publication, a conversation, an active live drawing, and a place of economic exchange. All of these were efforts to assert the image and presence of an indigenous identity.

In 2016, UN Habitat approached its fortieth year of operation and proclaimed its intention to create a new urban agenda in Quito, Ecuador. AMUPAKIN originated from a governmental grant to support the integration of Western medicinal practices with indigenous medicinal practices. We considered whether or not AMUPAKIN, who operated within a spatial framework outside of the UN's definition

of “habitat,” might want to attend and offer their suggestions regarding the making of the city and its impacts on the rainforest. More than anything, this could be an opportunity for them to speak about their practice to a global audience and potentially attract financial support. In a series of drawings, we proposed to communicate Amazonian political life as expressed through the not exclusively human design and construction of the rainforest alongside the representatives of the new urban agenda.

We worked on a publication that considered how indigenous sovereignty in Ecuador and its governance models might be figured within the bureaucratic landscape of the UN. While the agenda claimed to prioritize recrafting habitats for those rendered vulnerable by situating the urban as the primary space of investigation, it failed to incorporate the ways in which the very extraction that fueled the city perpetuated violence to rural areas, causing indigenous people to move to cities and need assistance from governmental systems outside of their own. The UN Habitat Conference, reflective of the UN's broader multinational approach, marched in lockstep with Western ecological ideologies, where the city becomes the spatial, legal, and social organizational system that will carry humanity safely into a new sustainable future. Within it exists a dense configuration of people whose rights to live are “equally respected”—a false way to protect the natural by separating people from it. This ignores the fundamental fact that much of indigenous life, particularly in Ecuador and for the women of AMUPAKIN, is a life lived within the rainforest. To be forced to leave that life is a kind of violence.

This model city is a kind of biopolitical city, one of necessity built upon the logic of threatened woods and the finances of the World Bank. It's a hierarchical, vertical city in which economics, politics, and participation are also hierarchical and vertical. Thus, the city produced by and for capital is somehow also figured as the savior of those problems it produced.

Development is not only spatial, but political. How can you even speak about indigenous agency without talking about rights to land? The cover of the publication features the Ecuadorian constitution, which called for the implementation of *Sumak Kawsay*, a Kichwa term that roughly translates into

“beautiful living.” It’s a concept of life organized along a lateral, political field of action involving interspecies engagement and mediation.

Following our proposal, we received an acceptance letter. AMUPAKIN could present and sell their work from a booth priced at \$400 per unit, but the unit was not a booth. Rather, it was a square foot. As a reference, some penthouse apartments for Quito can be rented for around \$400 per month and midwives make \$15 per month. At that price, we ultimately couldn’t be accommodated by the UN’s preference for the urban, which essentially priced out the people who were least represented there—exactly the circumstances that incite protests.

Part of the project was to see what was possible in terms of representation, of being seen and heard, but minimizing the risk of retribution or violence. Because the women are shamans, they performed cleansing rituals on conference participants occupying the space, despite not being allowed to participate otherwise. We wanted to make an opportunity for them to sell their goods, which they sold in a park and also at an event in a local art museum called Arte Actual.

We hoped that by appearing in their traditional dress, the midwives might disrupt the space’s function and offer a kind of knowledge not present there. They received a lot of attention, but it wasn’t the kind that we’d hoped would sustain their organization financially or grant it the kind of support from the international community assembled in Quito.

Adela Alvarado, then president of AMUPAKIN, was interviewed by the evening news and wanted to speak in Kichwa to present indigenous language in the national media. But the news program removed her voice and spliced Georgia Ennis’ voice, the anthropologist we collaborated with, over hers. She wasn’t acknowledged as the president of AMUPAKIN, but rather as a Kichwa grandmother. Even as the midwives arrived in Quito with great knowledge of cultural medicinal and spatial practice, their appearance was subject to misinterpretation and their knowledge to a kind of erasure.

GP: During this time, our first year in practice, we were also writing a lot. At some point in early 2017, we were approached by *Harvard Design*

Magazine to contribute a text to an issue that they had dedicated to the teenager.

We happily used it as an opportunity to intellectualize our fandom for Miss Destiny, Wavy Spice—the Princess Nokia. But it was also a point at which we were able to sharpen some ideas around political futures, collective dreaming, and productive unreality. Thinking through dreaming and fantasy was a way to evaluate the fiction of the state and the business of the powerful that is often presented as the real, the authoritative, the only logical way forward, all contrary to the fantasies of teen dreaming. Fortunately, people read *Harvard Design Magazine*, including Cédric Fauq, then a junior curator at the Nottingham Contemporary, now at the Palais de Tokyo. After reading our piece, he successfully lobbied to have us join the curatorial team in devising a multi-act exhibition around feminist resistance.

VB: *Still I Rise: Feminisms, Gender, Resistance* explored the role that women have played in the history of resistance movements and alternate forms of living. Coinciding with the centenary of women’s suffrage in the United Kingdom, we wanted to see resistance across the world from a multiplicity of viewpoints, from the domestic sphere to large-scale uprisings, spanning the late nineteenth century to the present.

The exhibition included works from artists Joan Jett Blakk, Judy Chicago, Xenobia Bailey, Chiara Fumai, Jala Wahid, to name just a few, and photos and objects from key historic moments including the Civil Rights Movement, resistance against dictatorships in Latin America in the 1960s–70s, independence movements against colonial rule in Africa, the Women’s Liberation Movement, the AIDS crisis, and the Stonewall Rebellion. It was planned to have different stagings at three institutions in the United Kingdom: the Nottingham Contemporary, the De La Warr Pavilion, and Arnolfini in Bristol. We situated the content of *Still I Rise*, the speech acts and echoes of many women across space and time, in and between zones of action, declaration, broadcast, and reproduction. Mapped onto the different galleries of the three buildings, these conceptual zones created spatial relationships between the artworks and ephemera on view, but also set out to accommodate exhibition visitors in a meaningful way.



We proposed a series of body scale wall niches as aggregations—indicative of the crowd or the collective. Over the development of the design, those became large and small curved walls, freestanding, and able to be reassembled in the successive acts of the show. Fabric-covered, plastered, wall-papered, or covered with steel mesh, embedded with retractable curtains to change the space for events and other gatherings, we introduced a material palette to the curved partitions and niches that took cues from the works they supported, or provided a softness where necessary. Moving from the figure of the home to the street, we thought about the orality and echoes of past protest chants. We sought

to give space for listening, hearing each other, and speaking out together.

The work and reception of *Still I Rise* and its successive chapters was ongoing while we were also doing the research on the design of clinical spaces of feminine bodily modification. Back in New York, we were manifesting a project called *Post-Fordist Hymen Factory*, which ultimately took us to Beirut to visit the concentration of plastic surgery clinics offering vaginal rejuvenation and hymen reconstruction services.

RE: Remotely and in-site, we documented a series of connected landscapes where the cultural production of virginity and gendered notions of honor meet a kind of bodily belonging that underlies this construction of the nation, particularly, though not exclusively, in the Middle East and North Africa.

Where in the world is the production of virginity? It's a question that required constituting, inhabiting, and remaking all of these spaces where the hymen circulated, where this part of the anatomy is made to take on a visibility and a currency in the world.

Our research began by mapping that exchange between body and market, where something called the artificial hymen, the virginity pill (a suppository), or the hymen rejuvenation kit was invented in Japan and is now primarily manufactured in China.

The artificial hymen, whether made available as a suppository or dissolvable film, belonged to an economy of bodily modification that includes surgical options—the most expensive intervention. That took us to Beirut, a MENA capital of surgical tourism and the manufacturer of Arab pop star beauty.

GP: Mapping the geographic distribution of the clinics like the very expressive Dr. Nassar Hospital or the boutique stylings of the not-yet-built hotel clinic of Dr. Nader Saab, we started to assemble what we called the meta-clinic map.

In these projects, we navigated the tension between material artifacts and the affected dimension of virginity culture by reproducing what we were finding in our fieldwork. Through drawings and designed environments, we engaged in a larger conceptual investigation of what it means to

represent the set of conditions without placing undue pressure on the body and choices of Arab women.

Instead, we scrutinized the idiosyncratic designs of the interior environments where hymenoplasty services were vendored. Like that of the aforementioned Dr. Nassar, whose eponymous hospital included thematic suites for recovery: a classic suite or one for a rocker girl, as he says—the suite has everything.

The suite was represented in an exhibition at Gallery VI PER in Prague where we installed reconstructions of the clinic amalgam, including hymen objects that might be worn, or applied as perfumes, sat in like a chair, rolled out like a rug, such that the hymen itself, as something designed, becomes part of the design space of the clinic or lab where it's made and remade. We also fashioned our own reception space in the exhibition akin to the waiting rooms populated by women who would sit next to each other without speaking while Lebanese fashion television played in the background.

The third space in our reproduced clinic environment, a room for self-examination, where a chair allows you to recline and see yourself in a curved mirror below. It builds on a tradition of women armed with hand mirrors, specula, and the know-how published in feminist women's health center pamphlets to perform at-home examinations and menstrual extractions, a.k.a. abortions.

VB: We produced another level of access to the exam room—the VR component of the show. As you are reclined in the self-exam chair of the exhibition, you also see up from the stirrups of the virtual exam room, where surgical tools float above your head and you hear the voices of others in your ear, narrating their own experiences with such a procedure. The VR scene is one that heightens a sense of proximity to the embodied vision and intimate experience of another and not just the void of the user that VR assumes, but in our case, the position of actual women who have undergone these procedures. In trying to design a kind of sensitivity to the experience of another, we also have to understand the limits of empathy: it is impossible to “know” that experience, but it should not prevent us from seeking an ever-closer kind of understanding.



f-architecture carried on to describe their recent work around the design of citizenship and the gendered dimensions of belonging to the nation. Their research around the concept of *jus sanguinis*, or “right of blood,” and the patrilineal conferral of citizenship in 25 nations around the world culminated in a residency at the Lab at Darat al Funun in Amman, Jordan from December 2019 to January 2020. There, they led two workshops where participants were invited to scrutinize the language of the Jordanian constitution, its nationality codes, and personal status laws, and to present personal artifacts of belonging and material tethers to the nation, counter to the authority of official national identity documents. The residency resulted in the exhibition, *Paper Machine* (آلات ورقية), on view at the Lab until March of 2020, and later re-installed remotely at Magazin gallery in Vienna in August 2020.

The full recorded lecture is available for viewing on YouTube.

THESIS

ON THESIS

Thesis is the final studio in the Master of Architecture degree program at Taubman College. Under the guidance of their faculty advisors, students conduct research and create works that engage the ever-changing cultural landscape shaping our discipline. Some schools have eliminated thesis from their curricula in favor of alternatives under the monikers “capstone studio,” “advanced research studio,” or “terminal studio,” but our program believes in the form of independent thinking and practice that is unique to a “thesis studio.” In particular, I think that thesis offers students the opportunity to apply their design skills toward questions and issues that matter to them. Compared to previous cohorts, this group of students is experiencing and confronting global challenges that outpace and exceed the scope of research proposed in the fall. This context makes the discursive space and experimental spirit unique to thesis more relevant and urgent than ever. Ultimately, this year-long experience helps young designers develop ideas and intensities that they will hopefully carry with them into future work.

Number of students:	122
Number of faculty advisors:	11
Number of sections:	9
Number of first-time advisors:	4
Number of super jurors:	3

FEATURED PROJECTS

The Last Aquarium	Anhong Li	T2
The Gap	Delaney McCraney & Reed Miller	T12
Autopsia in Absentia: A Post-Mortem Examination of a Post-Nuclear Landscape	Marco Nieto	T20
Our Moments	Jenny Scarborough	T32

COORDINATOR:

CYRUS PEÑARROYO

Cyrus Peñarroyo is a designer and educator whose work examines architecture's entanglement with contemporary media and digital culture. He is an Assistant Professor at the University of Michigan's Taubman College of Architecture and Urban Planning and a partner in the Ann Arbor-based practice EXTENTS.

ON FORMAT

The college has “guided theses” around faculty-selected topics, methods, and sites. Each year, faculty interested in teaching thesis submit proposals to the Chair of Architecture. Based on the submissions and the size of the graduating class, the Chair selects anywhere between nine to twelve sections. This year’s offerings are wide-ranging: there are groups studying the capacities of digital fabrication; addressing climate change; exploring computational futures; and pursuing the limits of representational systems. Some sections are more self-directed while others ask students to develop projects under a shared, studio-wide thesis. Regardless of placement, I believe there is space in every section for students to define their own research trajectories.

Student placement is determined through a lottery. Faculty present their sections at the start of the fall semester, and each student indicates their preferences on a ballot. Unlike other studios, students have a few days to meet with instructors and ask questions before submitting their choices. When creating the rosters, the motivating factor is faculty ranking—we do our best to give as many students their highest choice possible while maintaining a 12:1 student-faculty ratio and diversity across sections.

The year is split into two parts: a seminar in the fall and a studio in the winter. The seminar can include a mix of exercises, workshops, reading discussions, and individual research. The studio provides space for students to develop ideas from the fall into design propositions, with midterm and final reviews as key benchmarks. Each instructor has a different approach to the pair of courses and how they are interrelated.

THE LAST AQUARIUM

Anhong Li

Thesis Advisor: Keith Mitnick

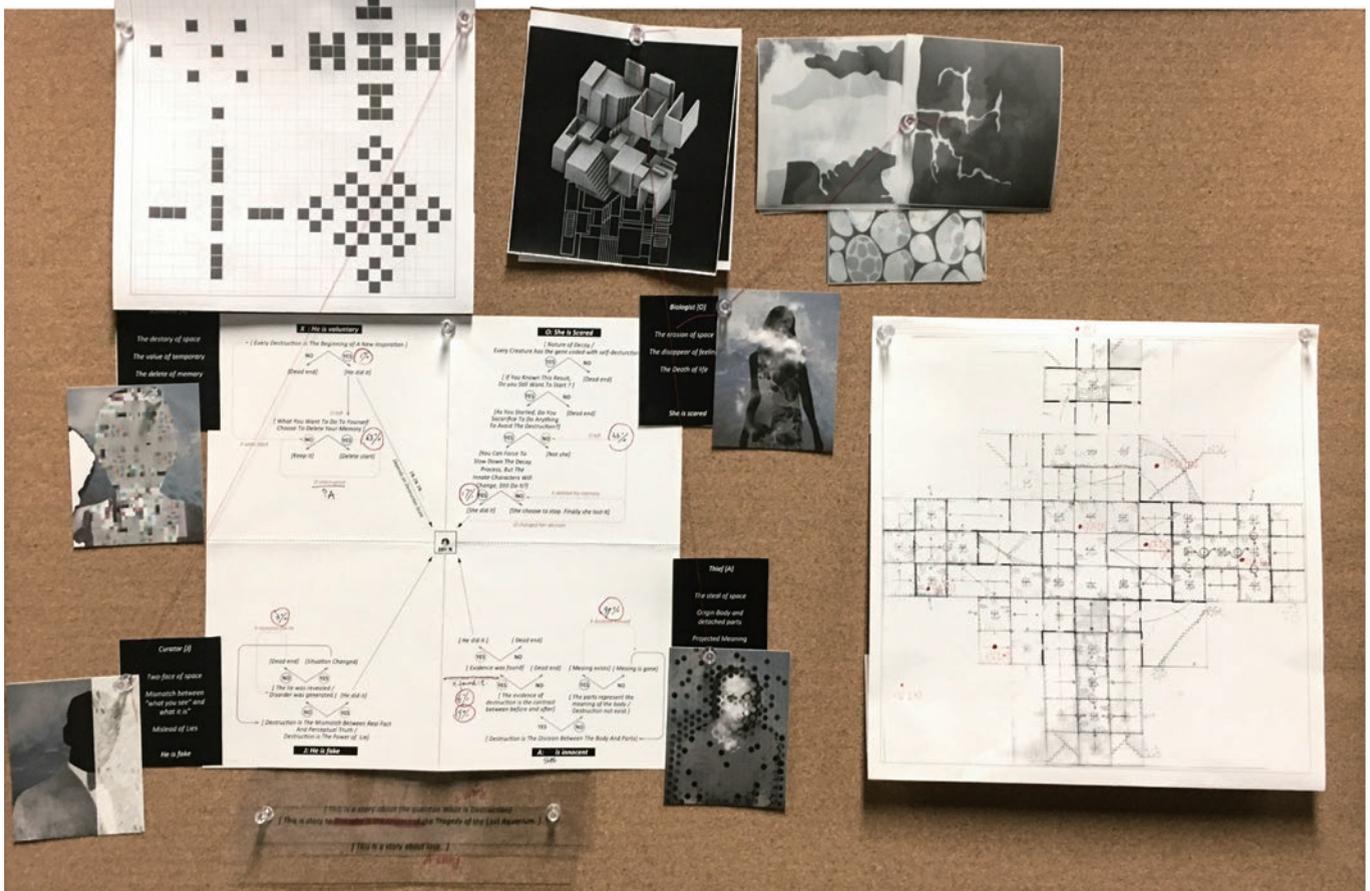


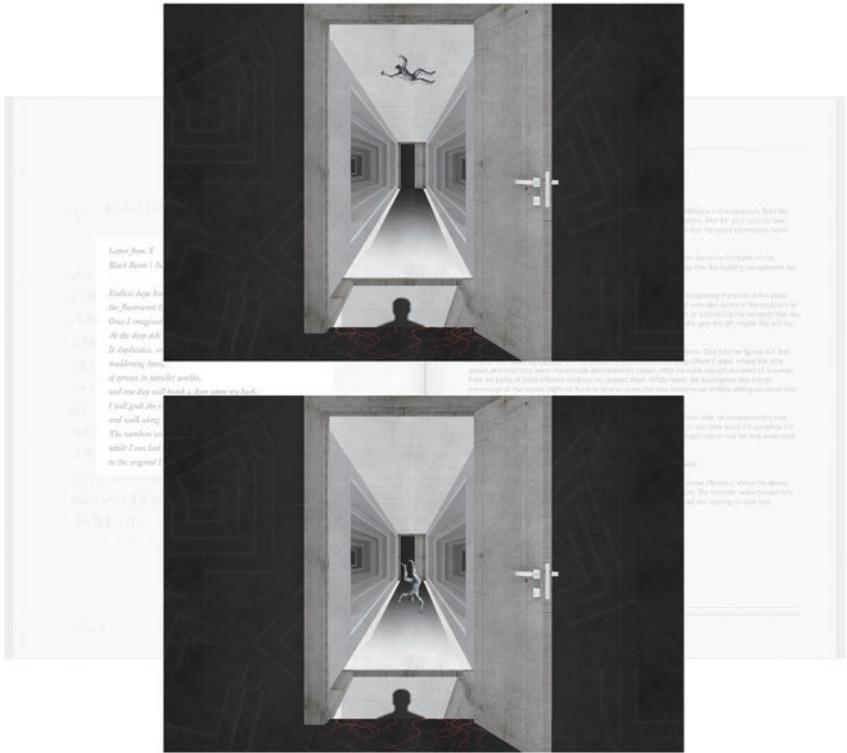


This thesis is influenced by the cinematic architecture of Pascal Schöning and the phenomenology of Juhani Pallasmaa, in which architecture is not in a solid state of materiality but, rather, in a changing process defined through sensory perception, cognition, and reimagined sequence of memory. The result of the architecture is a mediation between the world and our minds. To narrate this architectural reality, the project is structured as both a story and an architectural proposal that bridges the physical space of measurement and the mental space of perceptual reconstruction. The project is organized in three parts: the Novel, the Architecture, and the Film.

The story is staged in a fictitious aquarium that contains mysteries relating to human observation, illusion, and the machine of the ecosystem. It documents a crisis in the relationship between a set designer (X) and a biologist (O), who is crushed by the appearance of a third person (A), the unstable architectural environment, and an increasing mental burden. The architecture is simultaneously destroyed and completed as the narrative develops.

In the design process, each character's dilemma is paralleled by an architectural paradox. This includes: Hidden Truth vs. Perfect Lies (Curator J), Destruction vs. Creation (Set Designer X), Self-Destruction vs. Preservation (Biologist O), and Origin Body vs. Parts (Thief A). These paradoxes are initially independent but converge as the four characters interact and conflicts develop, contributing to the ultimate tragedy of destruction.





[Subjective Scene] *Perceptual Reconstruction*

THE LAST AQUARIUM

Plot Scenography

The scenography is constructed with 50% story world and 50% spatiality from perceptual imagination. There is no standard answer for the set design and final image, but just selected one of the possibilities from the architecture designer's perspective.

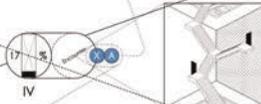
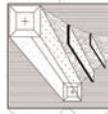
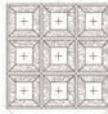
Monument | Lies



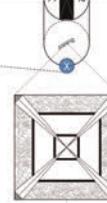
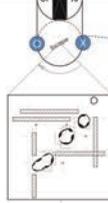
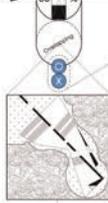
Black Room | Suspect



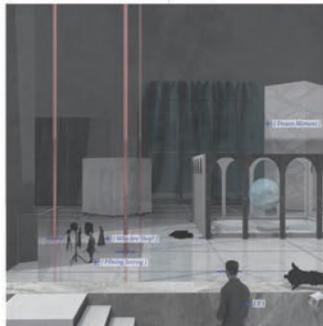
Net | Hut



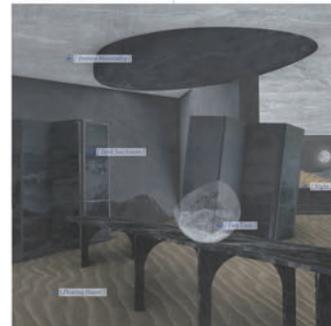
Light | Encounter



Another Dream | Dilemma



One Side of Water | Escape

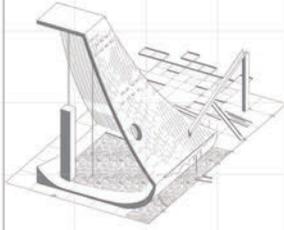


No Place | Creation

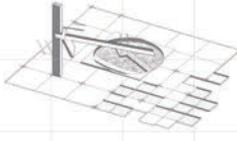
THE LAST AQUARIUM

Memorial Garden

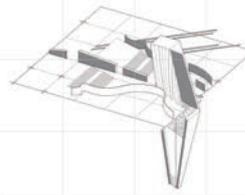
Water Chapel



Mirror Pool



Truth Tower



T9

Glass 4x4 code PC182

White marble with polished surface

Raw concrete base

Circle shape light with water texture

Thickness form plastic

500 sets / 14.7 million pixel digital screen

Holographic display screen

Adjustable support foundation module

Weathering steel

Raw concrete with bonding texture

Cherry timber surface



[Perceptual Architecture]
Memorial Garden



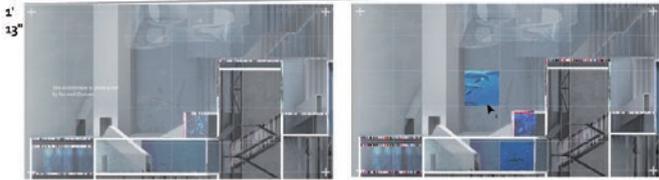
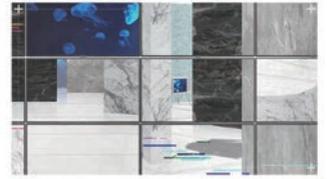
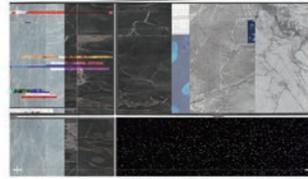
Chapter 1
Monument
Lies



Chapter 2
Black Room
Suspect



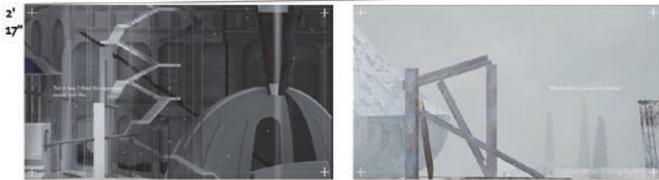
Chapter 3
Net
Hunt



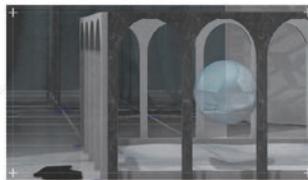
Chapter 4
Light
Encounter



Chapter 5
Another
Dilemma



Chapter 6
Side of Water
Escape



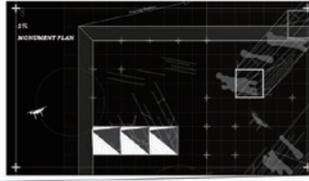
Chapter 7
No Place
Creation



[Reading Process]
Spatialization Map



Master Plan



1% | 99%



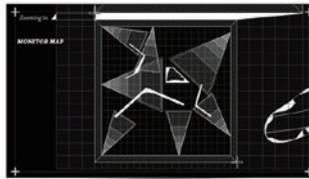
Disoriented Floor



3%



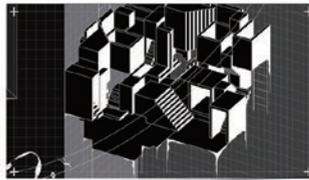
Monitor Map



9%



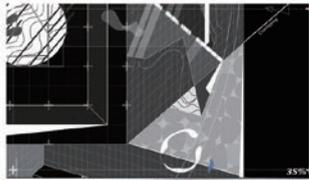
Circulation



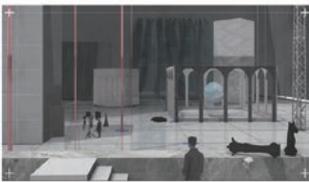
17%



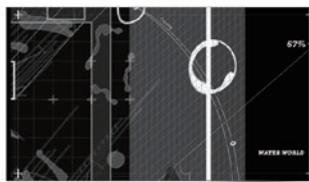
The Void



35%



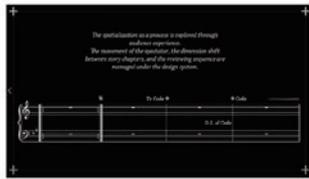
Water World



67%



The End



99% | 1%

THE GAP

Delaney McCraney and Reed Miller
Thesis Advisor: Cyrus Peñarroyo

In 2019 and 2020, Taubman College saw a pronounced body of student and faculty work concerned with architecture's often willfully indeterminate relation to capital and consumption. We approached the issue by rehearsing a design process firmly rooted in the expanding material network of building products and the seemingly immaterial exchanges of Building Information Modeling (BIM). Our project encompasses retail store designs, a brochure, a spreadsheet, and an ad campaign, all undertaken as earnest, optimistic ventures into the world of consumerism.

Crucially, this thesis challenges the false assumption that BIM simulates buildings as we experience them. Actually, BIM software, like Revit®, merely offers alternative modes of abstraction, leaving open the gap between digital models and physical objects. This

thesis delineates that gap by revealing, subverting, and putting to use some latent abstractions in architecture.

Products are the architect's primary digital and physical media today. They are manufactured, marketed, purchased, and importantly, they are imbued with digital content that architects coalesce into the translated, mediated substance known as building information. Products modeled in Revit® necessarily adopt functionality (system, component), hierarchy (family, type), category (door, floor), dependency (wall-based, face-based), geometry (extrusion, void), and limitless parameters. Such abstractions can only result in gaps between a product's digital and physical behavior. In this thesis, these design decisions create specific spatial and representational possibilities.



The Gap - thegap.site - 100% Gaps

For Products, By Products. Build the Gap.
The Gap

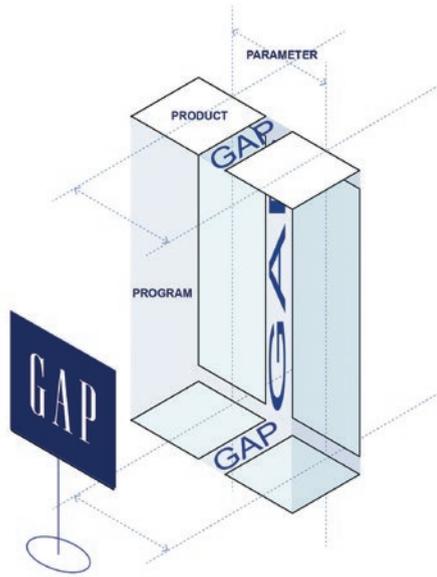
STORE	W (F)	D (F)	GFA (SALE	SALE	SALE	CHEC	CHEC	STOR	STOR	OFFIC	OFFIC	FIT (SF)	FIT/GFA	FIT UNI
Existing															
Cincinnati	160	112	17,976	13,737	76.4%	597	581	3.2%	1045	5.8%	384	2.1%	1524	8.5%	20
Salt Lake C	103	150	13,184	9,245	70.1%	514	346	2.6%	941	7.1%	240	1.8%	1100	8.3%	18
Williamsbur	78	113	8,710	6,318	72.5%	574	240	2.8%	385	4.4%	145	1.7%	826	9.5%	11
Models															
Version 1	100	100	10,000	7,405	74.1%	741	375	3.8%	800	8.0%	270	2.7%	930	9.3%	10
Version 2	100	100	10,000	7,431	74.3%	464	280	2.8%	900	9.0%	300	3.0%	864	8.6%	16
Version 3	100	100	10,000	7,880	78.8%	788	480	4.8%	800	8.0%	100	1.0%	520	5.2%	10
Version 4	100	100	10,000	7,650	76.5%	383	250	2.5%	1200	12.0%	250	2.5%	500	5.0%	20

T13

MANUFA	PRODUC	PRODUC	QTY (#)	QTY (LF)	QTY (SF)	MATERIA	MATERIA	APPEAR	APPEAR	LOCATIO	DOWNL
Core Products—Each											
Armstrong	CAPZ™ OF	Basic Ceilin	600	2,400	4,800	Fiberglass	Factory-app	Exposed St		Pennsylvan	Revit Syst
ClarkDietric	ProSTUD®	Structural C	800	6,600	7,220	Steel	Steel - Clark	Smart Edge		Ohio	Revit Com
Intra	KALIS SDLI	Lighting Fix	512	1,450	180	Aluminum	Intra lighting	Absolutely U		Slovenia	Revit Com
Kawneer	AA@110 Zo	Generic Mo	24	360	290	Aluminum	Kawneer - S	Large Move		Georgia	Revit Syst
Mosa	μ [Mu] 9901	Floor	1,600	3,200	6,400	Ceramic	Mosa Mu 99	Refreshingh		Netherlands	Revit Pattr
Steelcraft	L Series Ho	Door	20	60	420	Steel	Paint - Gen	Flagship Do		Ohio	Revit Com
USG	SHEETRO	Wall	200	800	9,600	Gypsum	Gypsum Pa	The Original		Illinois	Revit Syst

MANUFACTURER	PRODUCT NAME	PRODUCT CATEG	QTY (#)	MATERIAL MAIN	MATERIAL NAME
Accessories—Version 1					
Barclay	Ceiling Support Assemb	Generic Model		172 Metal	Polished Chrome
Formica	ENVISION™ Custom Le	Wall		90 Melamine	Campaign Imagery Str
Hilti	Bracket MQK-41-F	Generic Model		256 Aluminum	Aluminum - Petersen A
Hilti	Anchor Channel HAC50	Generic Model		144 Steel	Steel, Sherardized
Plaskolite	OPTIX DA Digital Acrylic	Wall		139 Acrylic	Acrylic
RaumForm33	airjust® Clothes Rail Sys	Generic Model		90 Steel	Stainless Steel
Schluter	Schluter®-RENO-U Slo	Generic Model		736 Aluminum	
Accessories—Version 2					
Formica	ENVISION™ Custom Le	Wall		96 Melamine	Gap Air Ad Wall
Fischer	Two-Screw Pipe Clamp	Mechanical Equipment		360 Steel	
Hilti	MQT-F Hot-Dip Galvane	Generic Model		184 Steel	S235JRG2 - DIN EN 1
Hilti	MAB Beam Clamp	Generic Model		192 Steel	EN-GJMB – EN 1562
Hilti	MFT-T Profile	Generic Model		184 Aluminum	HILTI_AD-31T1
Lindab	Fastening Plate for Men	Generic Model		64 Galvanized Steel	<By Category>
Lindab	Fastening Plate for Roof	Generic Model		240 Galvanized Steel	<By Category>
Plaskolite	OPTIX DA Digital Acrylic	Wall		96 Acrylic	Acrylic
Schluter	Schluter®-RENO-U Slo	Generic Model		86 Aluminum	
Accessories—Version 3					
Brown Jordan	WFC 90 Corner Filler	Casework		906 Steel	Danver Stainless Steel
Brown Jordan	ORPF XX Custom Width	Casework		860 Steel	Danver Stainless Steel
Dow	Wallmate™ XPS Insulat	Generic Model		84 Extruded Polystyrene	
Formica	ENVISION™ Custom Le	Wall		36 Melamine	Image Gap Blue Foam
QEP	Leave-In Tile Spacers	Generic Model		1,024 Plastic	
Traxx	CSR-C3224448-3 Carpe	Generic Model		20 Composite Board	Softwood, Lumber
Accessories—Version 4					
Babcock Davis	Inset Ribbed Bar Abrasi	Specialty Equipment		1,430 Aluminum, Epoxy	Metal - Babcock_Davis
Formica	ENVISION™ Custom Le	Wall		360 Melamine	Gap Summer 2017 Im
Hilti	MQ-41 Medium Duty Ch	Generic Model		200 Sheet Metal	Sendzimir Galvanized
Mosa	Grout	Floor		1 Sand	Mosa Grey Grout
Ruskin	EG 100 Screen	Generic Model		127 Aluminum	Ruskin - Mill Aluminum
Schluter	KERDI-BOARD Tile Sub	Casework		20 Extruded Polystyrene	Schluter KERDI-Board

MCCRANEY & MILLER

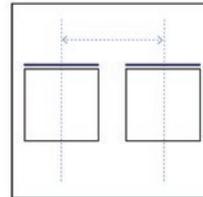


BUILDING

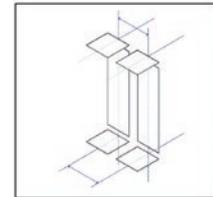
GAP



TABULAR VIEW



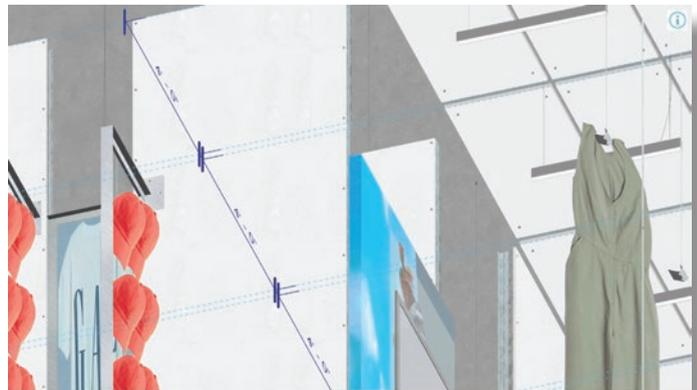
2D VIEW



3D VIEW

MODEL

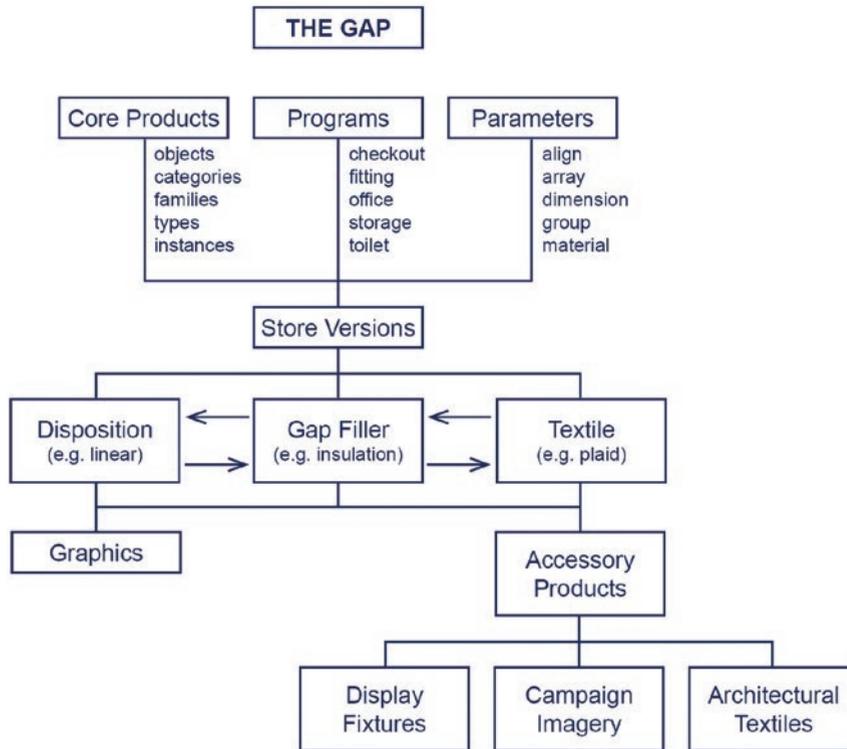
Consider a “wall” as Revit® portrays it: a layered assembly of digital material assets. Seamless and systematic, the wall category follows certain industry conventions which determine that it must sit in relation to a “level” and that it can “host” a door, et cetera. Yet it bears little resemblance to the range of discrete products needed to build it. Such tensions are not only inevitable—they are fundamental to a designer’s experience, and we aimed to exploit them as a visual identity.



The Gap - thegap.site - 100% Gaps

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The Gap





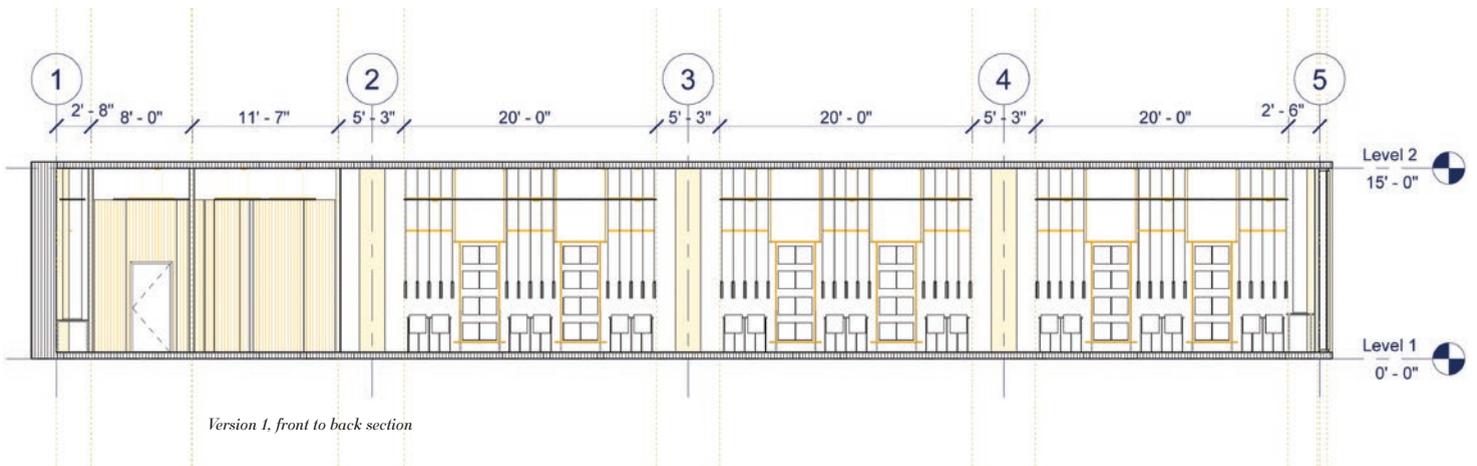
Four model stores are proposed for Gap, Inc. The stores are filled with gaps. Each comprises a fixed quantity of building products (tiles, lights), aligned, arrayed, and grouped parametrically to produce gaps in finish surfaces that become sites for merchandise and branding. Retail uses (fitting, storage) follow similar parameters, staging atypical shopping experiences while conforming to area ratios derived from typical Gap stores. As building information models, the four stores can only be glimpsed through curated, often contradictory views of the building information. Measurable quantities inscribed in tabular views

(schedules, takeoffs) furnish a cloak of rationality, while bold patterns dismantle stale segmentations of products and shoppers in 2D and 3D views (plans, perspectives). The stores are critical, yet viable.

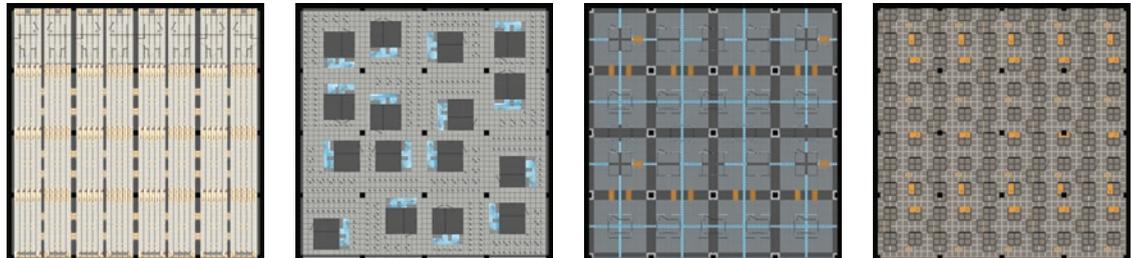
In 1969, Gap Inc. made its business out of a generation gap in the denim market. If today there is a gap in architectural practice between fanatical BIM integration and cautious BIM rejection, between blind efficiency and deliberate inefficiency, this thesis falls into that gap and keeps falling.



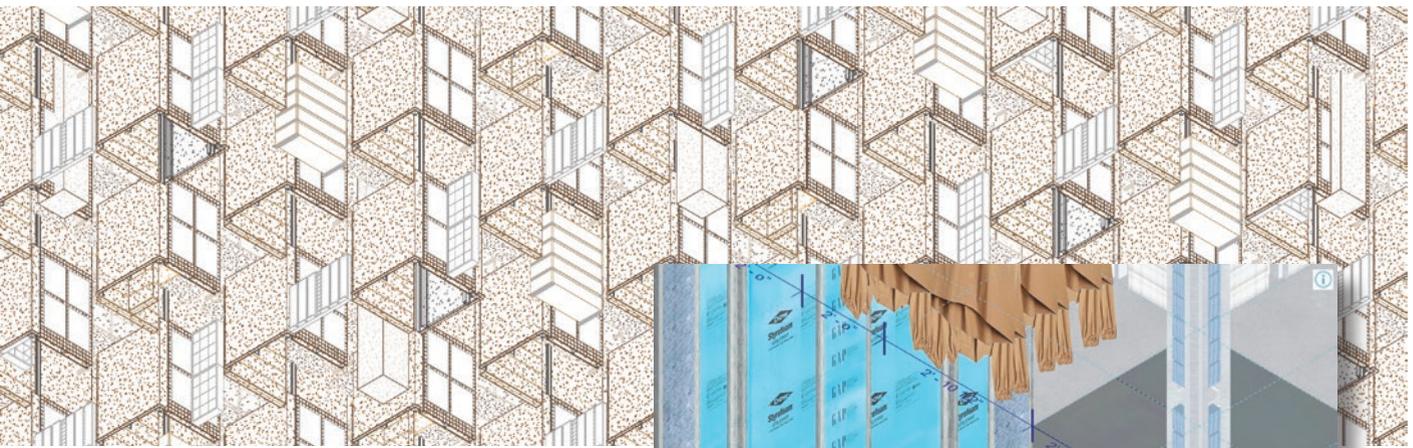
Version 1, perspective



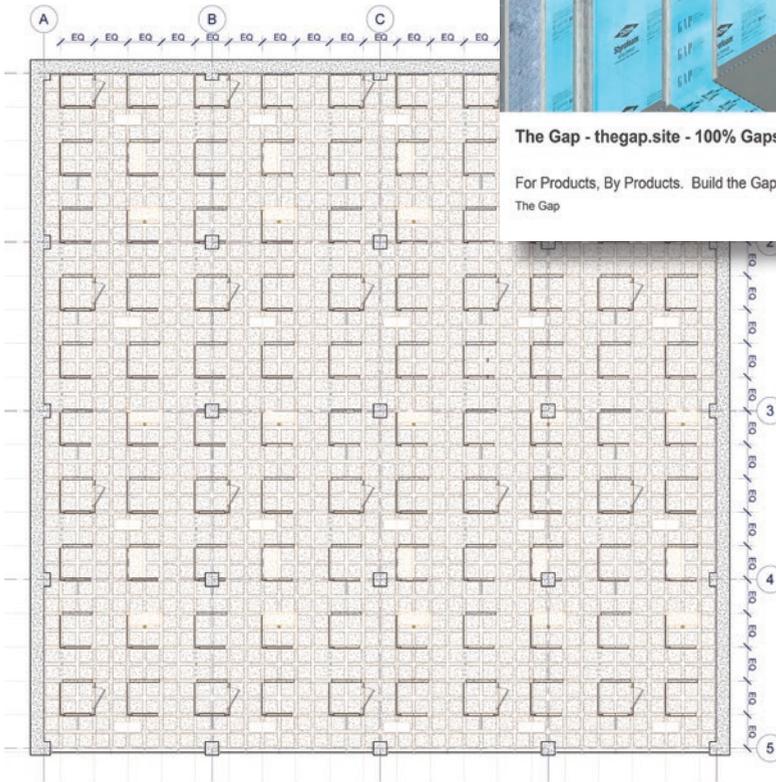
Version 1, front to back section



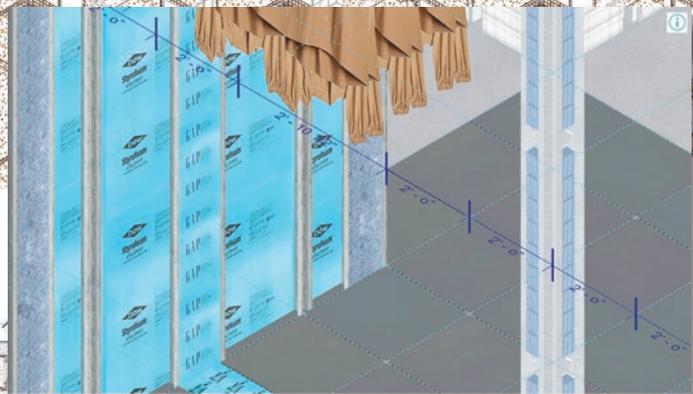
Version 1-4, plans



Version 4, isometric

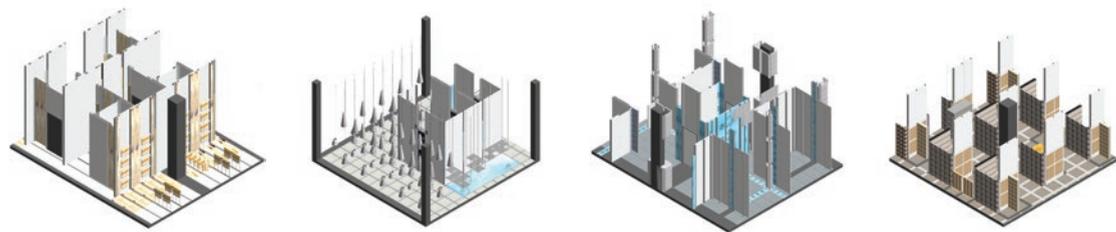


Version 4, plan

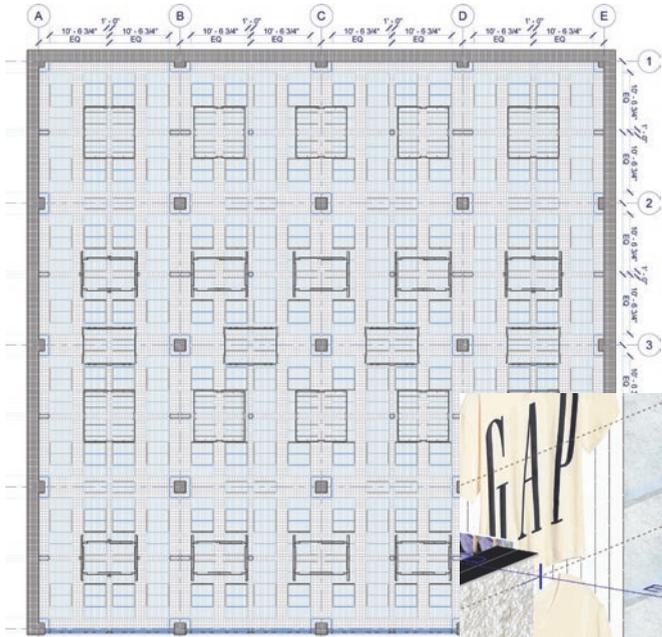


The Gap - thegap.site - 100% Gaps

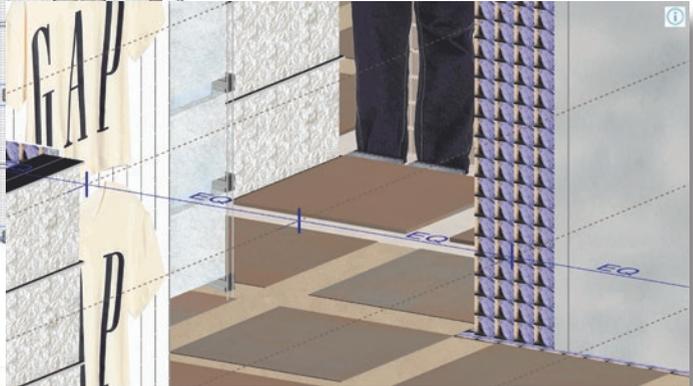
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Version 1-4, cropped isometrics

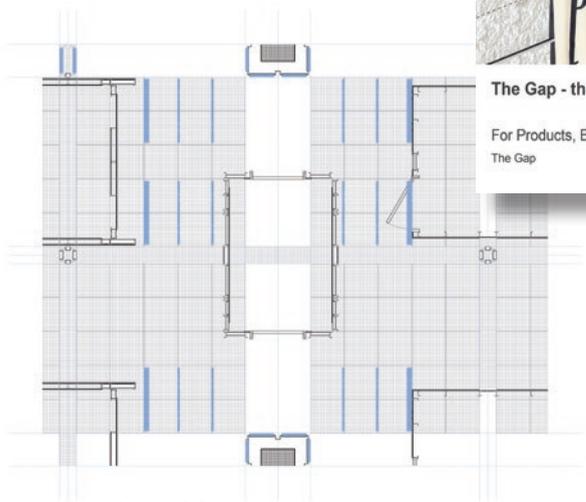


Version 3, reflected ceiling plan

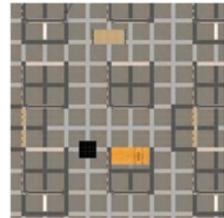
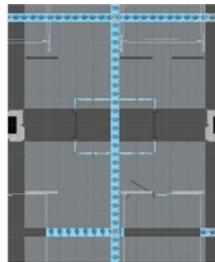
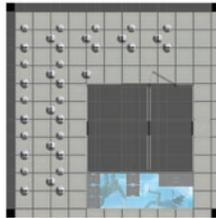
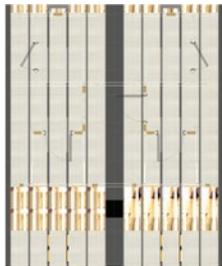


The Gap - thegap.site - 100% Gaps

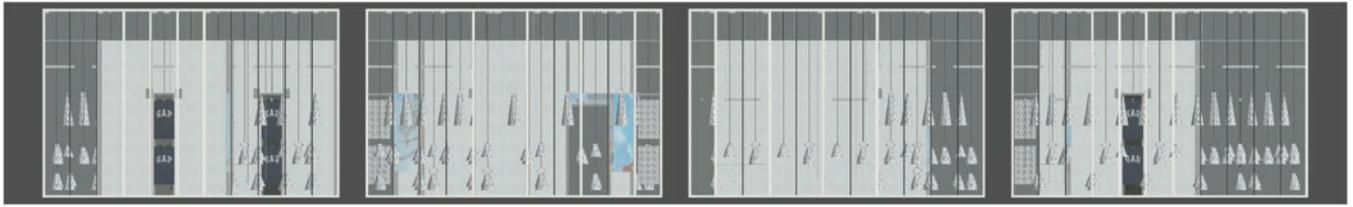
For Products, By Products. Build the Gap.
The Gap



Version 3, cropped plan



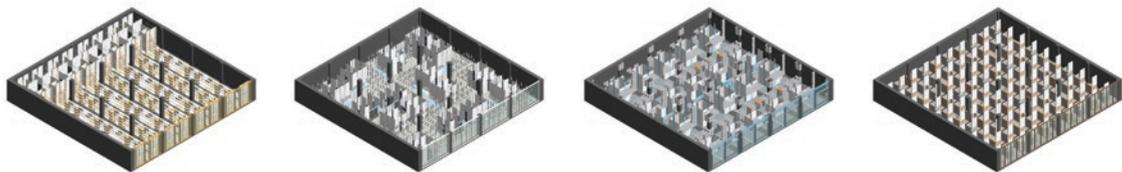
Version 1-4, cropped plans



Version 2, elevation



Version 2, perspective



Version 1-4, isometrics

AUTOPSIA IN ABSENTIA

A POST-MORTEM EXAMINATION OF A POST-NUCLEAR LANDSCAPE

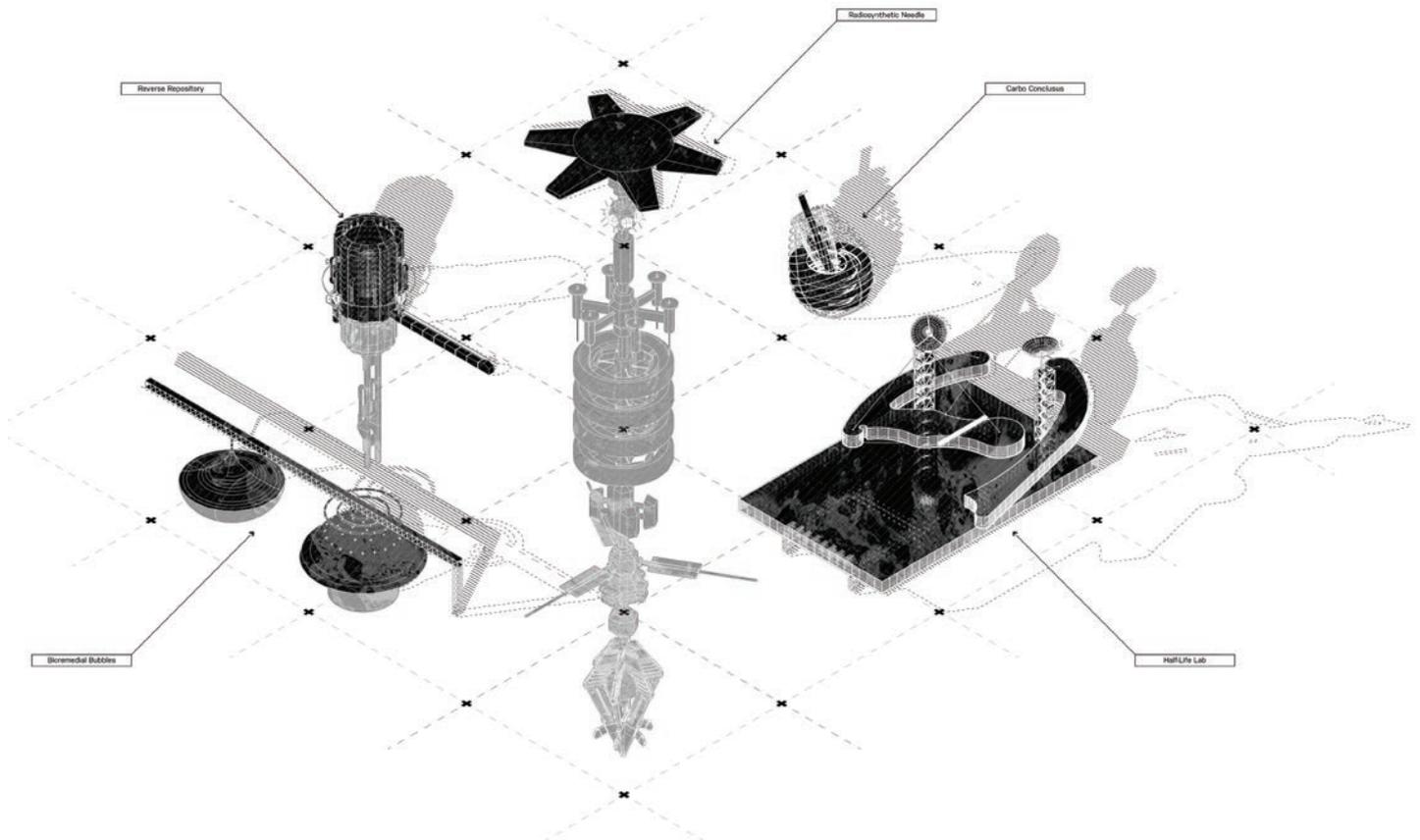
Marco Nieto

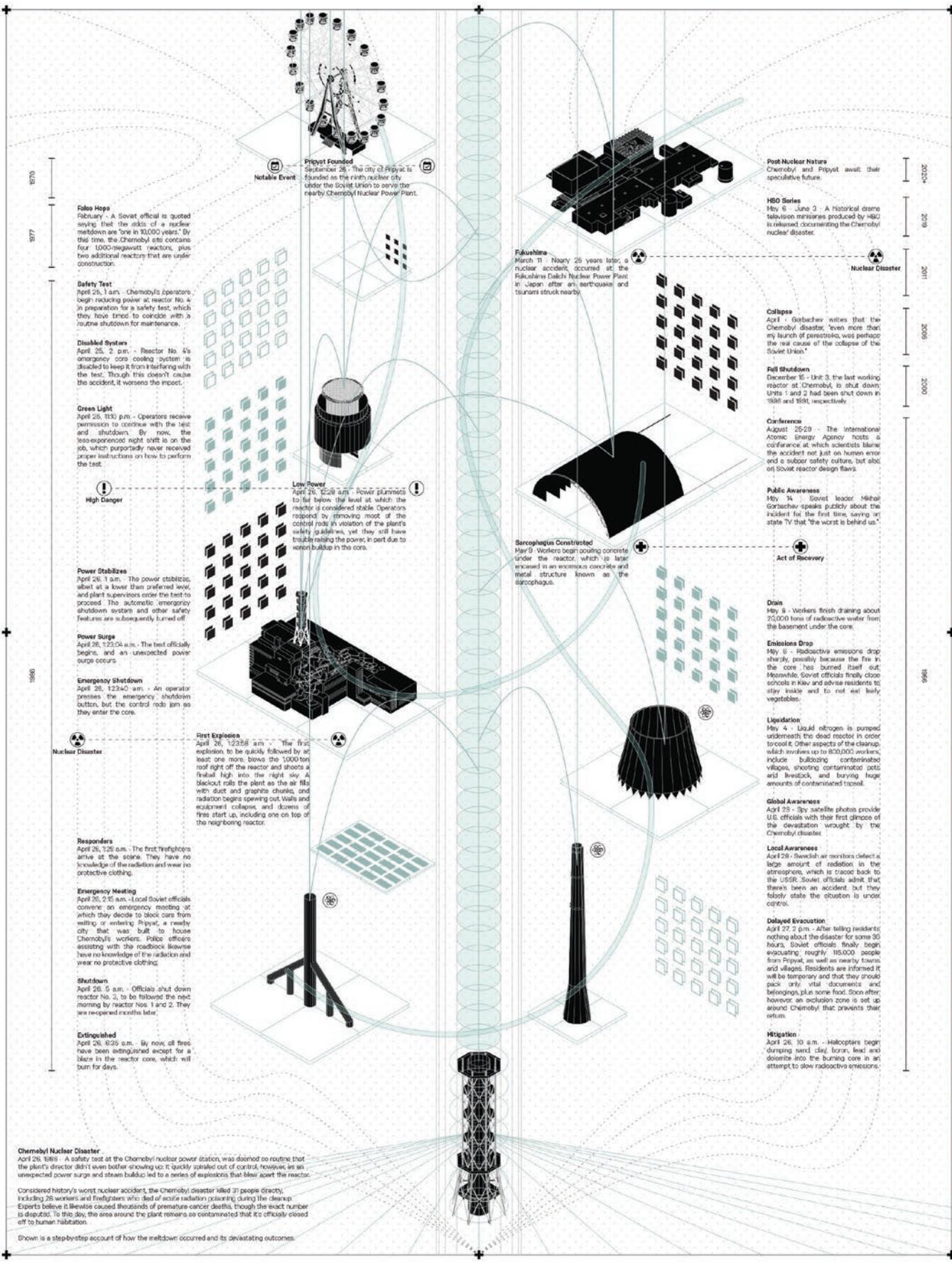
Thesis Advisor: El Hadi Jazairy

On April 26, 1986, a plant director was absent from a routine safety test on the backup cooling system of Reactor No. 4 at the Chernobyl Nuclear Power Plant in northern Ukraine. The test quickly spiraled out of control as an unexpected power surge and steam buildup led to a series of explosions that destroyed one of four reactors. Considered the most devastating nuclear accident in history, the Chernobyl disaster released an unfathomable amount of radiation into the atmosphere, killing 31 people directly, including 28 workers and firefighters who died of acute radiation poisoning during the cleanup. Experts believe it also caused tens of thousands of premature deaths related to cancer throughout all of Europe, though the exact number is disputed. To this day, the area around the plant remains closed to human habitation due to contamination and the plant itself is caged in a steel sarcophagus. The site continues to represent a geography of horror that is riddled with memories of pain and guilt.

By assembling an open landscape system made of diverse interventions in close proximity to the power plant, *Autopsia in Absentia* reworks and appropriates a set of conditions that affect local, environmental, and biopolitical factors. Each of the five interventions target existing conditions in which the experience of beauty and peace is complicated by the legacy of humanity's impact on nature. Together they operate as a unitary system that examines possibilities for cohabitation and coexistence.

The specific conditions targeted include nuclear destruction, nuclear waste, memory and storage, information and monitoring, and carbon capture. The proposed apparatuses vary in scope and scale, effectively fragmenting the site into understandable pieces. By fusing high-technology with high-typology, the interventions work in tandem to create an industrial idyll that reveals the autopsy of collapse.





Notable Event
Prip'yat Founded
 September 26 - The city of Prip'yat is founded as the ninth nuclear city under the Soviet Union to serve the nearby Chernobyl Nuclear Power Plant.

False Hope
 February - A Soviet official is quoted saying that the risks of a nuclear meltdown are "one in 10,000 years." By that time, the Chernobyl site contains four 1,000-megawatt reactors, plus two additional reactors that are under construction.

Safety Test
 April 25, 1 a.m. - Chernobyl's operators begin reducing power at reactor No. 4 in preparation for a safety test, which they have timed to coincide with a routine shutdown for maintenance.

Disabled Systems
 April 25, 2 p.m. - Reactor No. 4's emergency core cooling system is disabled to keep it from interfering with the test. Though this doesn't cause the accident, it worsens the impact.

Green Light
 April 25, 10:10 p.m. - Operators receive permission to continue with the test and shutdown. By now, the less-experienced night shift is on the job, which purportedly never received proper instructions on how to perform the test.

High Danger
 April 25, 12:29 a.m. - Power plunges to far below the level at which the reactor is considered stable. Operators respond by removing most of the control rods in violation of the plant's safety guidelines, yet they still have trouble raising the power, in part due to water buildup in the core.

Power Stabilizes
 April 26, 1 a.m. - The power stabilizes, albeit at a lower than preferred level, and plant supervisors order the test to proceed. The automatic emergency shutdown system and other safety features are subsequently turned off.

Power Surge
 April 26, 1:23:04 a.m. - The test officially begins, and an unexpected power surge occurs.

Emergency shutdown
 April 26, 1:23:42 a.m. - An operator presses the emergency shutdown button, but the control rods jam as they enter the core.

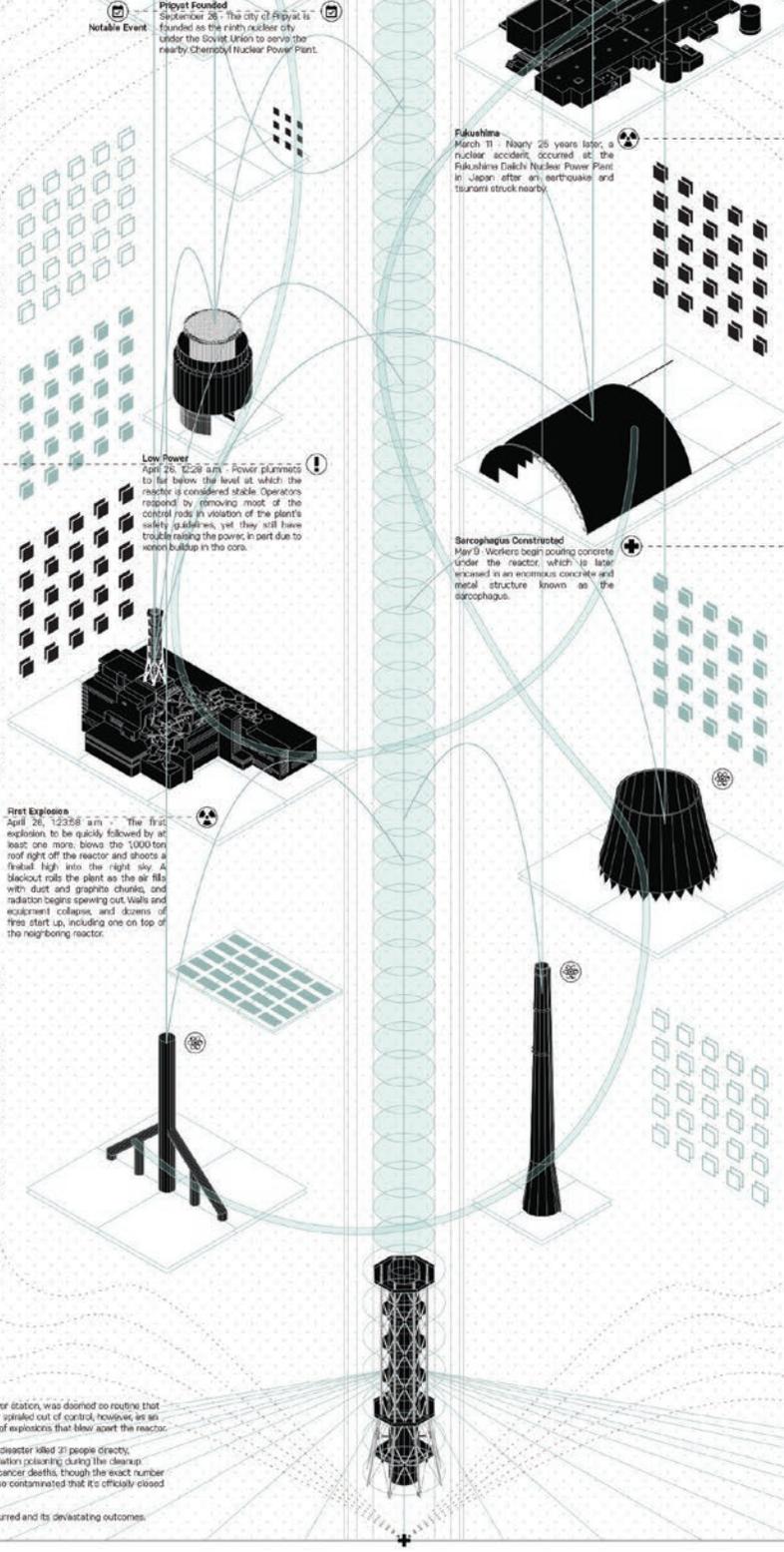
Nuclear Disaster
 April 26, 1:23:58 a.m. - The first explosion, to be quickly followed by at least one more, blows the 1,000-ton roof right off the reactor and shoots a fireball high into the night sky. A blackout rolls the plant as the air fills with dust and granite chunks, and radiation begins spewing out. Walls and equipment collapse, and dozens of fires start up, including one on top of the neighboring reactor.

Responders
 April 26, 1:28 a.m. - The first firefighters arrive at the scene. They have no knowledge of the radiation and wear no protective clothing.

Emergency Meeting
 April 26, 2:15 a.m. - Local Soviet officials convene an emergency meeting at which they decide to block cars from exiting or entering Prip'yat, a nearby city that was built to house Chernobyl's workers. Police officers assisting with the roadblock likewise have no knowledge of the radiation and wear no protective clothing.

Shutdown
 April 26, 5 a.m. - Officials shut down reactor No. 3, to be followed the next morning by reactor Nos. 1 and 2. They are re-opened months later.

Extinguished
 April 26, 8:25 a.m. - By now, all fires have been extinguished except for a blaze in the reactor core, which will burn for days.



Post-Nuclear Nature
 Chernobyl and Prip'yat await their speculative future.

HBO Series
 May 6 - June 3 - A Historical Home television miniseries produced by HBO is released, documenting the Chernobyl nuclear disaster.

Nuclear Disaster

Callipes
 April - Gorbachev writes that the Chernobyl disaster, "even more than my launch of perestroika, was perhaps the real cause of the collapse of the Soviet Union."

Full Shutdown
 December 15 - Unit 3, the last working reactor at Chernobyl, is shut down; Units 1 and 2 had been shut down in 1986 and 1987, respectively.

Conference
 August 25-29 - The International Atomic Energy Agency hosts a conference at which scientists blame the accident not just on human error and a major safety system, but also on Soviet reactor design flaws.

Public Awareness
 May 14 - Soviet leader Mikhail Gorbachev speaks publicly about the incident for the first time, saying on state TV that "the worst is behind us."

Act of Recovery

Drain
 May 9 - Workers finish draining about 70,000 tons of radioactive water from the basement under the core.

Emissions Drop
 May 6 - Radioactive emissions drop sharply, possibly because the fire in the core has burned itself out. Meanwhile, Soviet officials finally close schools in Kiev and advise residents to stay inside and to not eat leafy vegetables.

Liquidation
 May 4 - Liquid nitrogen is pumped underneath the dead reactor in order to cool it. Other aspects of the cleanup, which involves up to 800,000 workers, include bulldozing contaminated villages, shooting contaminated cats and livestock, and burying huge amounts of contaminated topsoil.

Global Awareness
 April 23 - Spy satellite photos provide U.S. officials with their first glimpse of the devastation wrought by the Chernobyl disaster.

Local Awareness
 April 28 - Swedish air monitors detect a large amount of radiation in the atmosphere, which is traced back to the USSR. Soviet officials admit that there's been an accident, but they falsely state the situation is under control.

Delayed Evacuation
 April 27, 2 p.m. - After telling residents nothing about the disaster for some 30 hours, Soviet officials finally begin evacuating roughly 115,000 people from Prip'yat, as well as nearby towns and villages. Residents are informed it will be temporary and that they should pack only vital documents and belongings, plus some food. Soon after, however, an exclusion zone is set up around Chernobyl that prevents their return.

Mitigation
 April 28, 10 a.m. - Helicopters begin dumping sand, clay, boron, lead and dolomite into the burning core in an attempt to slow radioactive emissions.

Chernobyl Nuclear Disaster
 April 26, 1986 - A safety test at the Chernobyl nuclear power station, was designed to routine that the plant's director didn't even bother showing up; it quickly spiraled out of control, however, as an unexpected power surge and steam buildup led to a series of explosions that blew apart the reactor.

Considered history's worst nuclear accident, the Chernobyl disaster killed 31 people directly, including 28 workers and firefighters who died of acute radiation poisoning during the cleanup. Experts believe it likewise caused thousands of premature cancer deaths, though the exact number is disputed. To this day, the area around the plant remains so contaminated that it's officially closed to human habitation.

Down is a step-by-step account of how the meltdown occurred and its devastating outcomes.



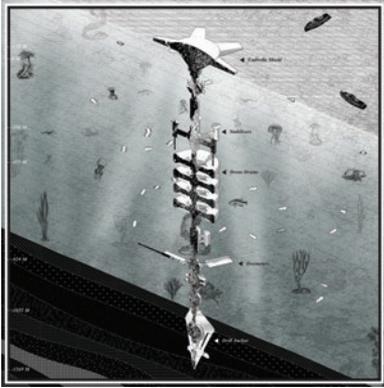
1 Diesel Generator
 2 Office Building
 3 Chimney Block 1, 2

4 East Rail Bridge
 5 Block 5 & 6
 6 Cooling Pond

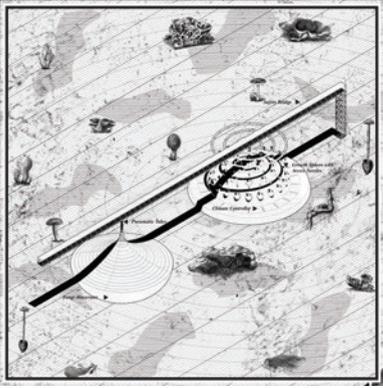
7 Big Cooler
 8 Unfinished Unit 5, 6 Cooler
 9 Radioecology Center

10 South Rail Bridge
 11 Technical Building
 12 Fuel Storage

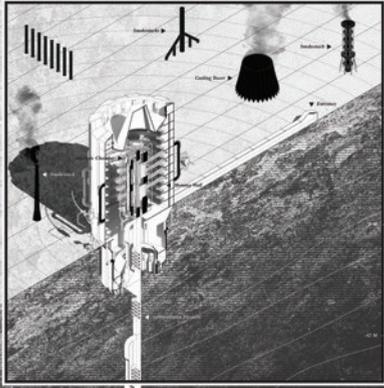
13 Coolant Pumps 1 - 4
 14 Heavy Radiation Area
 15 Autopsia in Abstentia



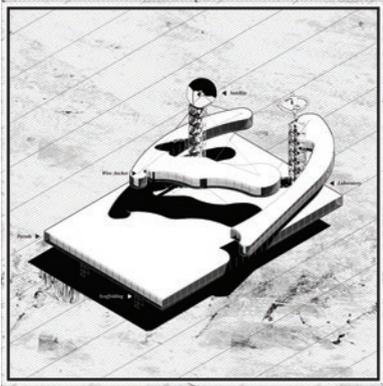
Radiosynthetic Needle



Biomedical Bubbles



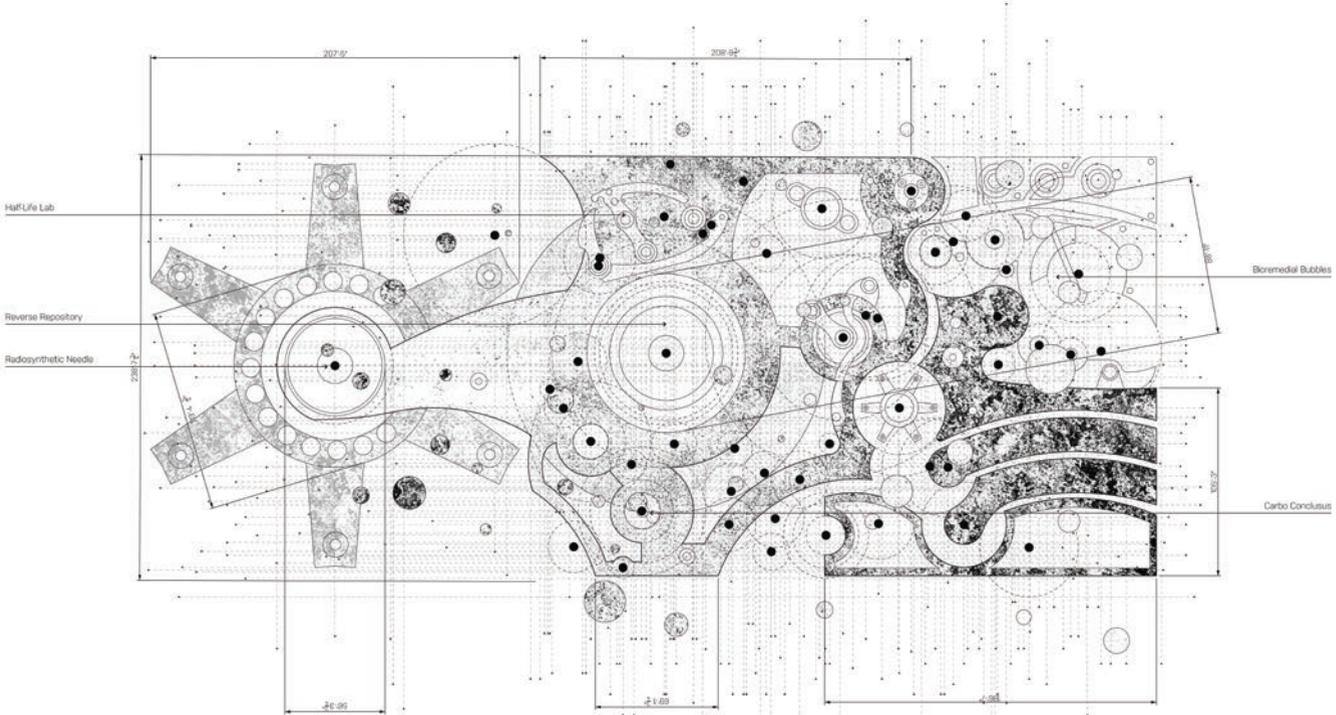
Reverse Repository



Half-Life Lab



Carbo Conclusus

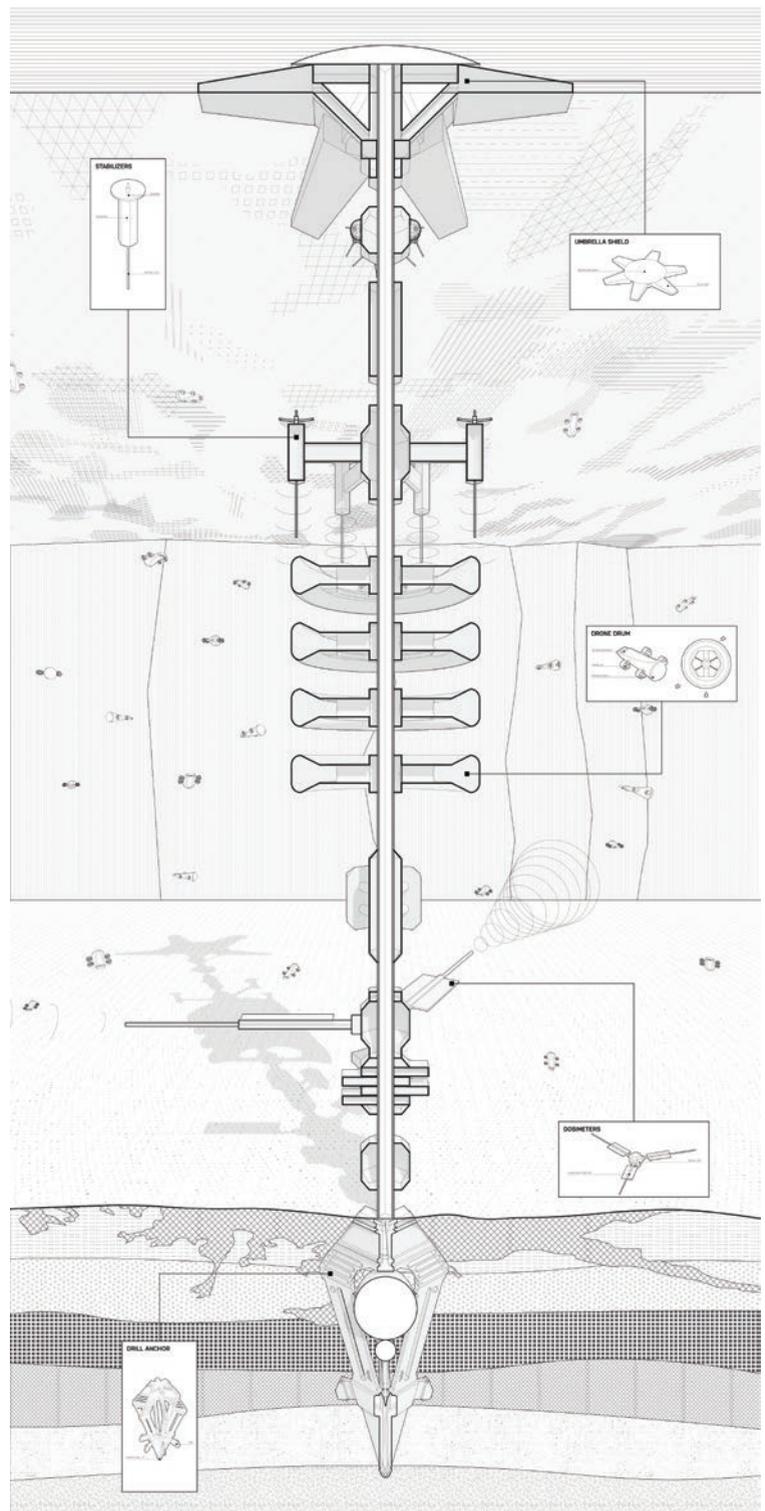


1. RADIOSYNTHETIC NEEDLE

This intervention, embedded deep in the radiated landscape, proposes an adaptive apparatus to expedite the long healing process at a megastructural scale through various mechanical processes that target contaminated environments for geoengineering.

Conceiving of the landscape as a body in pain, the system resembles a needle that pierces the earth and stimulates a healing response through the Pripjat River. Vertical organization allows for multiple responses to occur simultaneously, each affecting a separate stratum of the earth. A magnetic field in the form of an umbrella shields communities from radioactive rays, deflecting them away from organic life. Polar arrayed dosimeters scan global channels in search of abnormal radiation levels. A rotating axle generates reductive agents to be dispersed toward detected events in order to mitigate contamination.

Radiosynthetic Needle proposes strategies to actively monitor radiation, providing a sense of security for Chernobyl and other contaminated sites around the world.





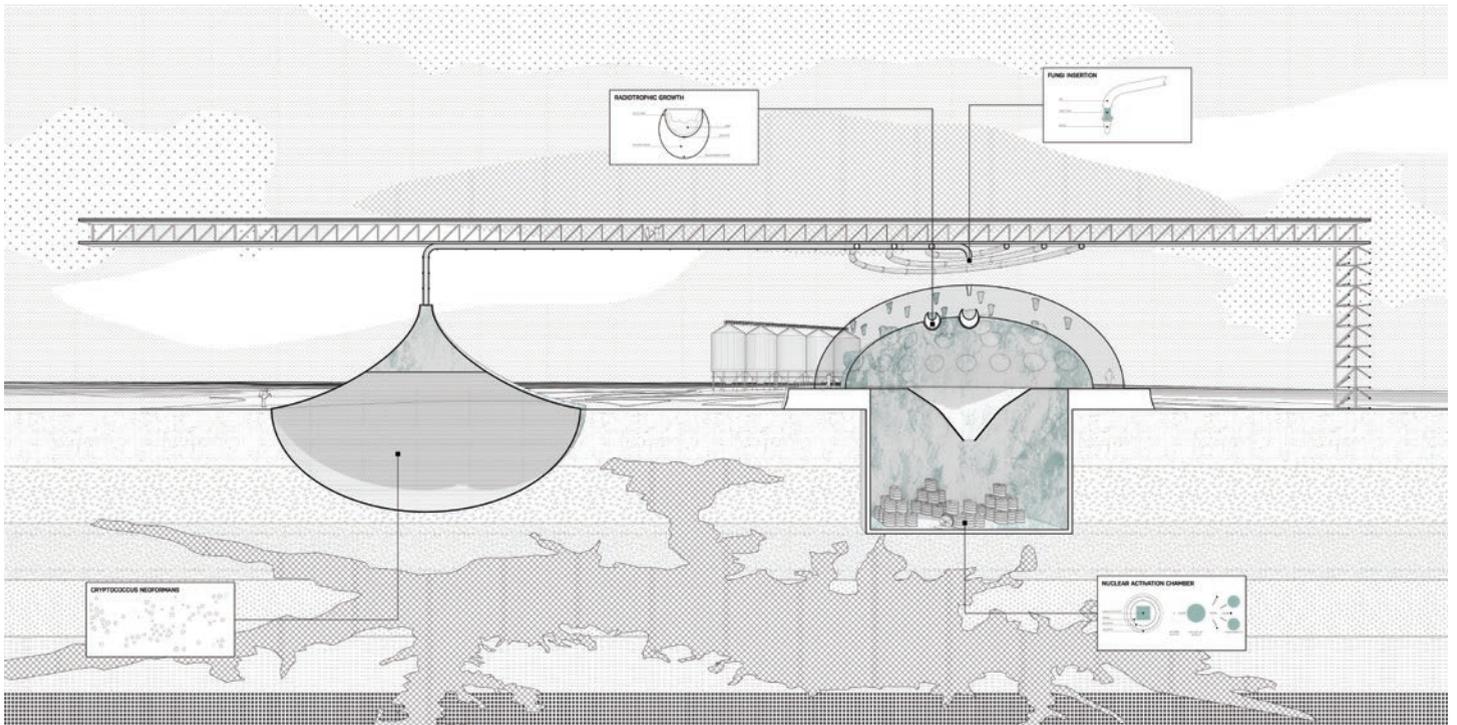
2. BIOREMEDIATION BUBBLES

Transuranic nuclear waste, a byproduct of nuclear production, is both hazardous and nonrecyclable. Often abandoned in remote and distant sites, over 250,000 tons of this waste currently sits idle, unable to provide utility for society. This intervention, concerned with bioremediation of radioactive waste, proposes the use of radiotrophic fungi to catalyze chemical reactions. The process turns the half-life of harmful radiation into the second life of harmless chemical energy, a power source that could be utilized in local communities as a replacement for fossil fuels.

The intervention, contained within two structures in the landscape deriving their form from mushrooms, offers an educational experience for users via bridges and transparent facades. These bubble structures grow fungi capable of radiosynthesis through a multistage

process: A concrete activation chamber located directly underneath the base of the half-dome hosts nuclear waste, allowing its radiation to contaminate egg-shaped bulbs above. *Cryptococcus neoformans*, a melanin-containing fungi stored in a decanter, is macerated by a liquid solution that is then extracted through pneumatic pipes. The solution is finally released into the prepared bulbs, initiating radiosynthesis. After several weeks in a climate-controlled growth sphere, the reaction produces a transmuted form of nuclear waste useful to future generations.

Bioremediation Bubbles demonstrate the possibilities of a symbiotic coexistence between artificial and natural processes, providing a model for resilience in the post-nuclear Anthropocene.

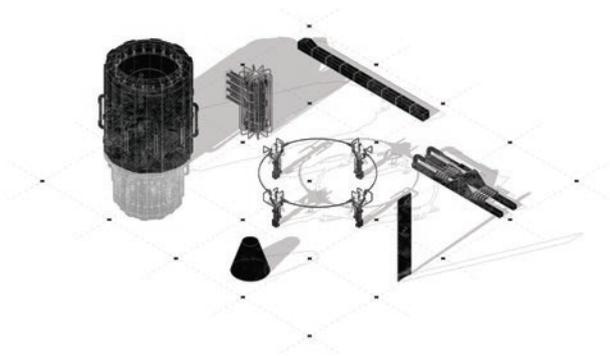
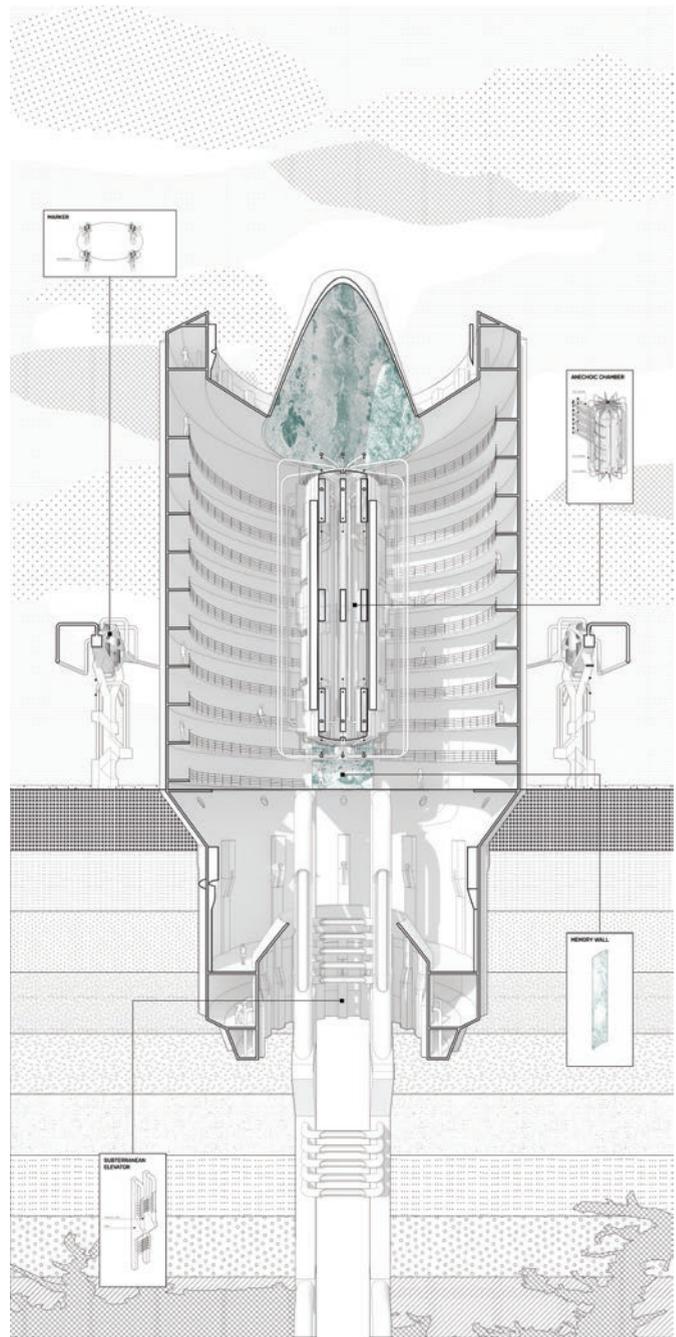


3. REVERSE REPOSITORY

Current containment protocols call for the storage of millions of barrels of highly radioactive waste in secure underground chambers 2,150 feet beneath the Earth's surface. The waste is often transferred into large concrete storage casks and disposed of in deep geological repositories. It is imperative that these sites remain undisturbed for the duration of radioactive decay—in some cases spanning 100,000 years—to ensure human and environmental safety. This intervention proposes the memorialization of the underground repository with an above-ground marker that acknowledges the burial process while warning future visitors of the dangers it possesses.

The spaces surrounding the memorial offer an educational experience for the public on the destructive potential of nuclear technology. Indicated by a massive resonance chamber, the monument itself actively animates the intangible waste hidden far below the earth. Sounds echo throughout the chamber, allowing users to reflect on the afterlife of nuclear waste. The monolithic architecture designed for the future, or post-humanity, also functions as an experimental exhibit for the present with a vertical memory wall containing soil samples and artifacts of nuclear events.

Reverse Repository proposes a sentient architecture that outlives radioactive materials but not humanity, allowing for a relationship between humans and buried nuclear waste that anticipates alternative futures.

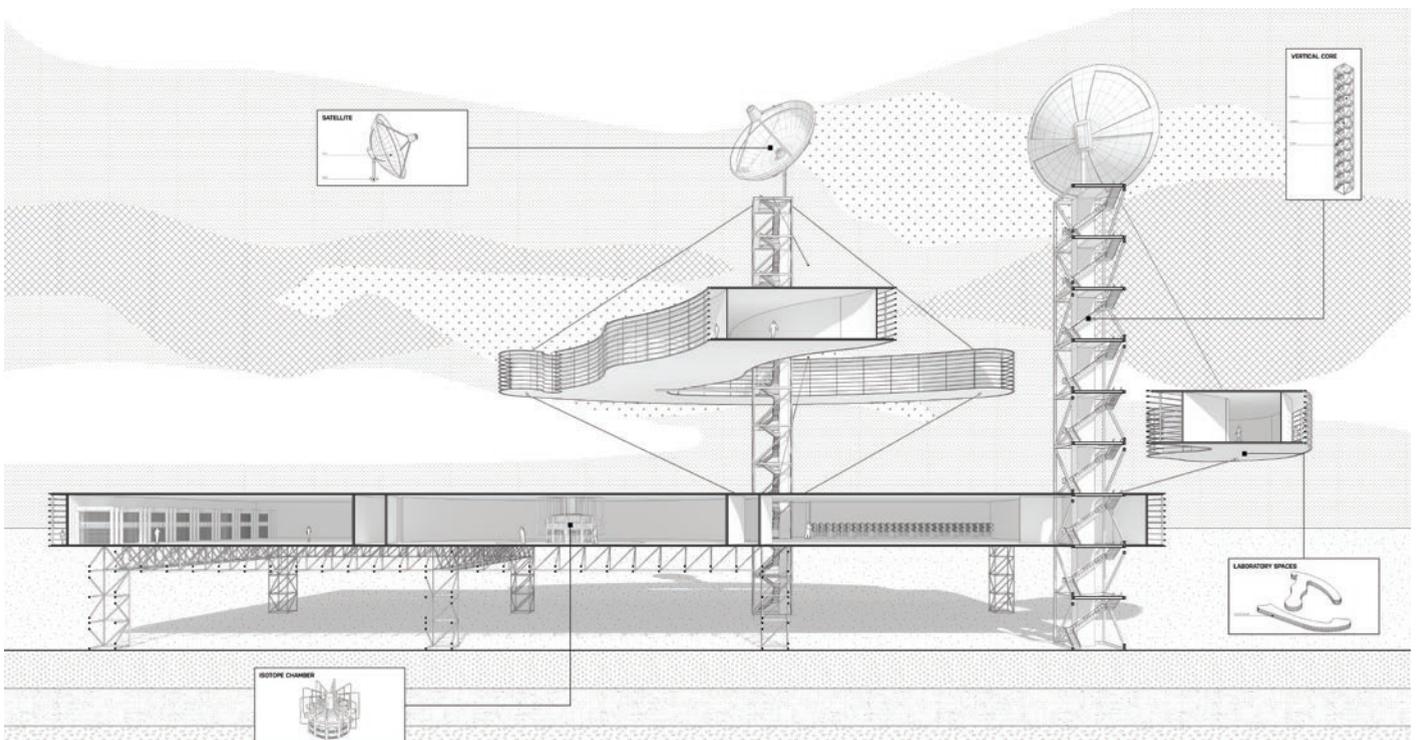
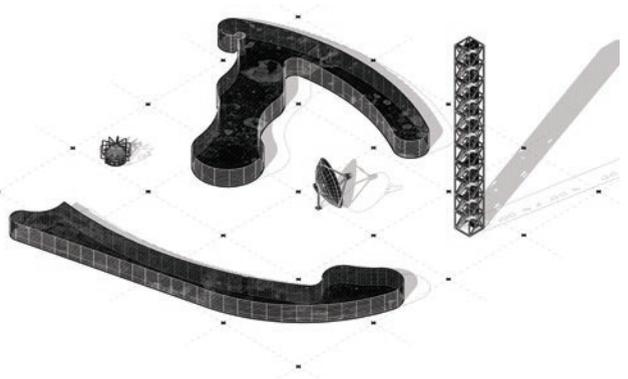


4. HALF-LIFE LAB

Half-life is the time necessary for the radioactivity of an isotope to decay to half of its original value, a point at which the material becomes safe to handle. Scientists use this metric to determine the approximate age of organic objects, their origins, and their history of human use. The lasting signatures of radioactive isotopes also produce an awareness of mortality within the greater rhythmic cycle of time. This intervention provides monitoring, data storage, laboratory equipment, and information accessibility in service of a new transparency for the nuclear industry. The geoengineering facility engages in speculative research for a post-nuclear society—the second half of our lives.

Composed of an open-ended infrastructural framework, the facility plugs in through prefabricated vertical cores and deconstructable steel components, creating architectural attachments or quasi-parasites that pursue curiosities. The research center can simultaneously perform studies of the landscape, containment of nuclear energy, climate engineering experiments, geological manipulation, and other interventions that explore the rhizomatic relationships of the site

Half-Life Lab creates a cybernetic ecology that forms the scaffolding of a post-human territory, merging cerebral speculation with cyberpunk post-apocalyptic ruin.



5. CARBO CONCLUSUS

Carbon functions as both the universal building block of life and the toxic consequence of anthropogenic activity. Modern building-scale carbon management technologies, including direct air capture farms and geologic carbon sequestration, offer promising solutions for our planet and provide carbon-neutral resources for our species. This intervention proposes hortus conclusus—enclosed gardens maintained entirely by carbon capture strategies—allowing the restoration of damaged and displaced ecologies.

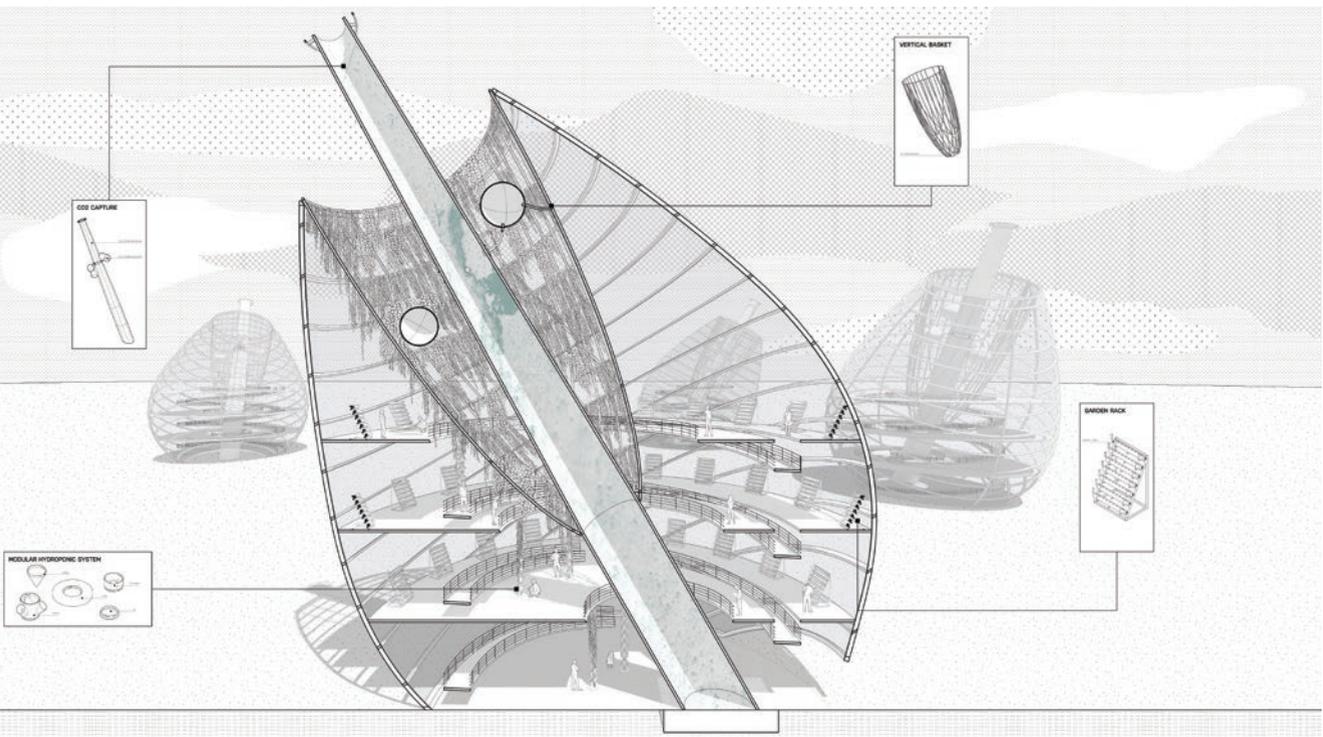
Captured carbon dioxide from the compromised atmosphere can be integrated as solar fuel, either densified into consumable pellets or directly pumped into greenhouses. These methods boost photosynthesis and yield by up to 20 percent. Hydroponic systems, garden racks, and a vertical basket allow for visitors to escape reality and enter an oasis of sustainable byproducts. The spaces aim to promote biodiversity, creating an enhanced environment that thrives in apocalyptic conditions.

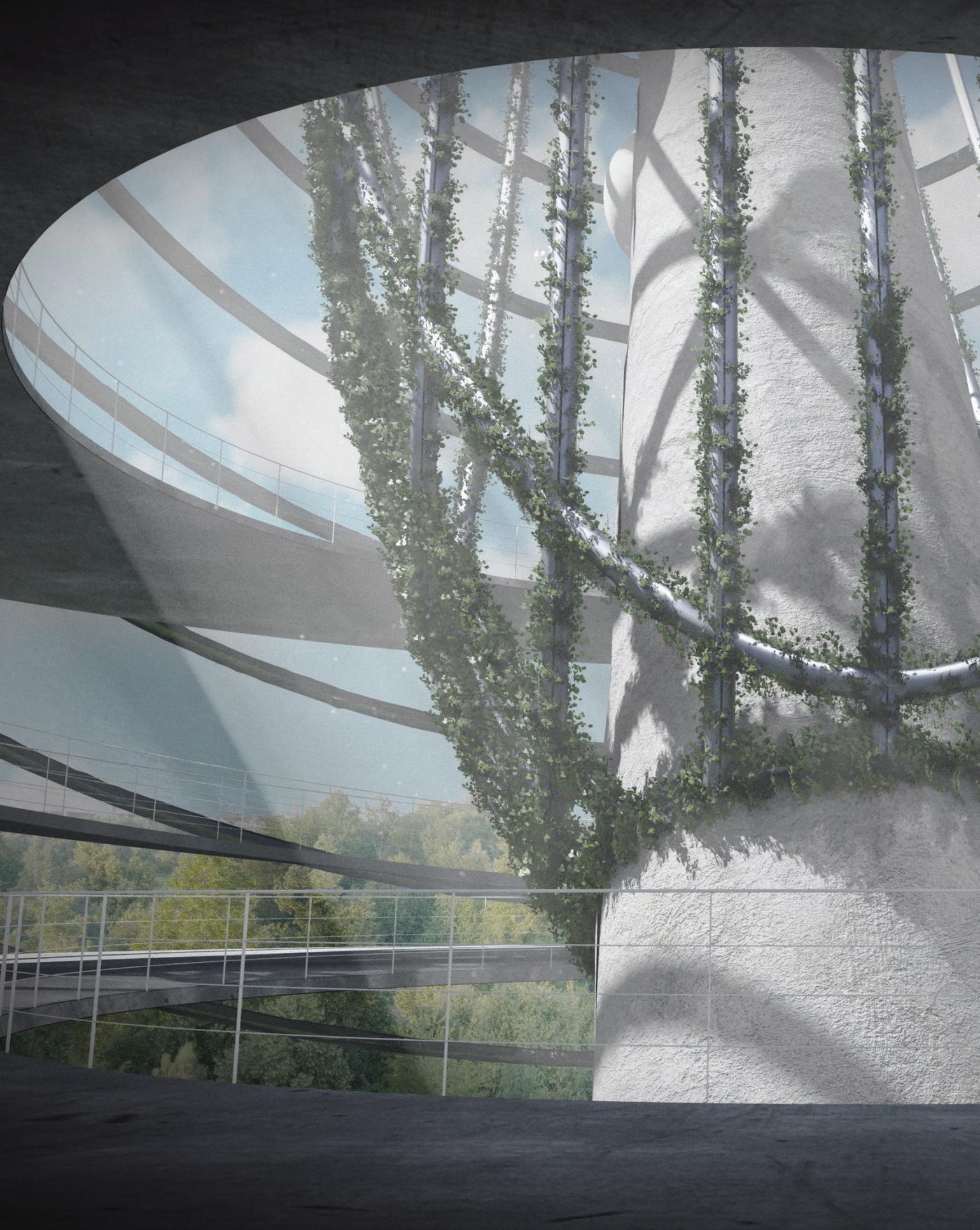
Carbo Conclusus merges industrial typologies, commercial plants, and greenhouses in order to synthesize a productive landscape that supports our current resources and practices.

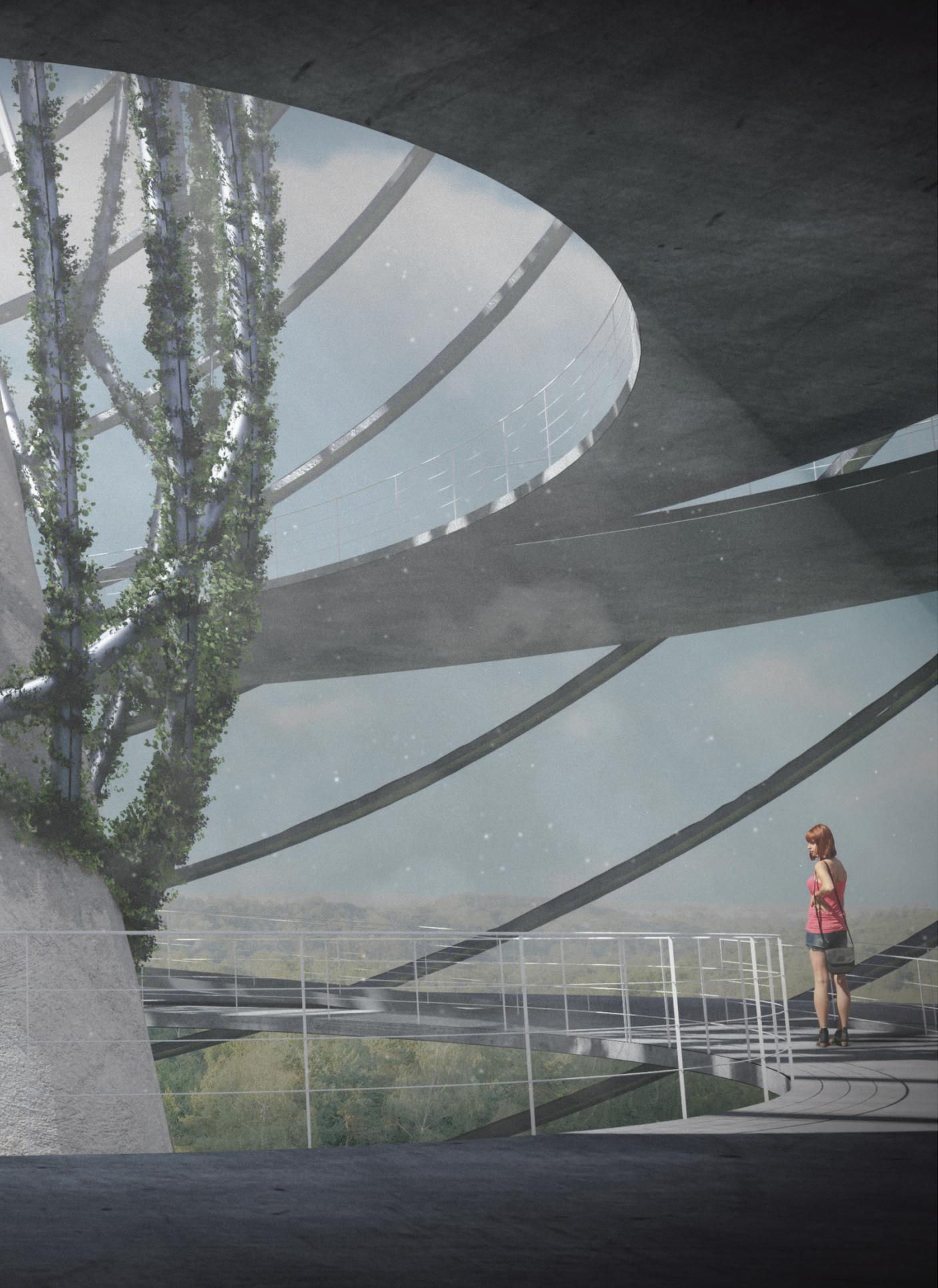
As a spatial and temporal terrain, the landscape of Chernobyl is continuously changing, defined by the dynamic relationship of the site to its specific context and history. The five interventions take advantage of slow, natural processes of growth, maturity, and decay to create systems guided by time. Their behaviors are determined by both external conditions and mechanisms of control. This systems approach transcends staged environments, instead producing an adaptive apparatus that addresses boundary concepts and planetary restoration.

These stories represent an initial study of environmental trauma and its capacity to index relationships between flora, fauna, infrastructure, and energy. Parallels between the events of Chernobyl and our present day evidence the need to research past conditions of transformation, present conditions of neglect, and future possibilities for resilience in order to overcome collapse and ensure the wellbeing of our world.

Special thanks to my dad who binge-watched the HBO Chernobyl miniseries with me and kickstarted this project before it even became a thesis.







OUR MOMENTS

Jenny Scarborough

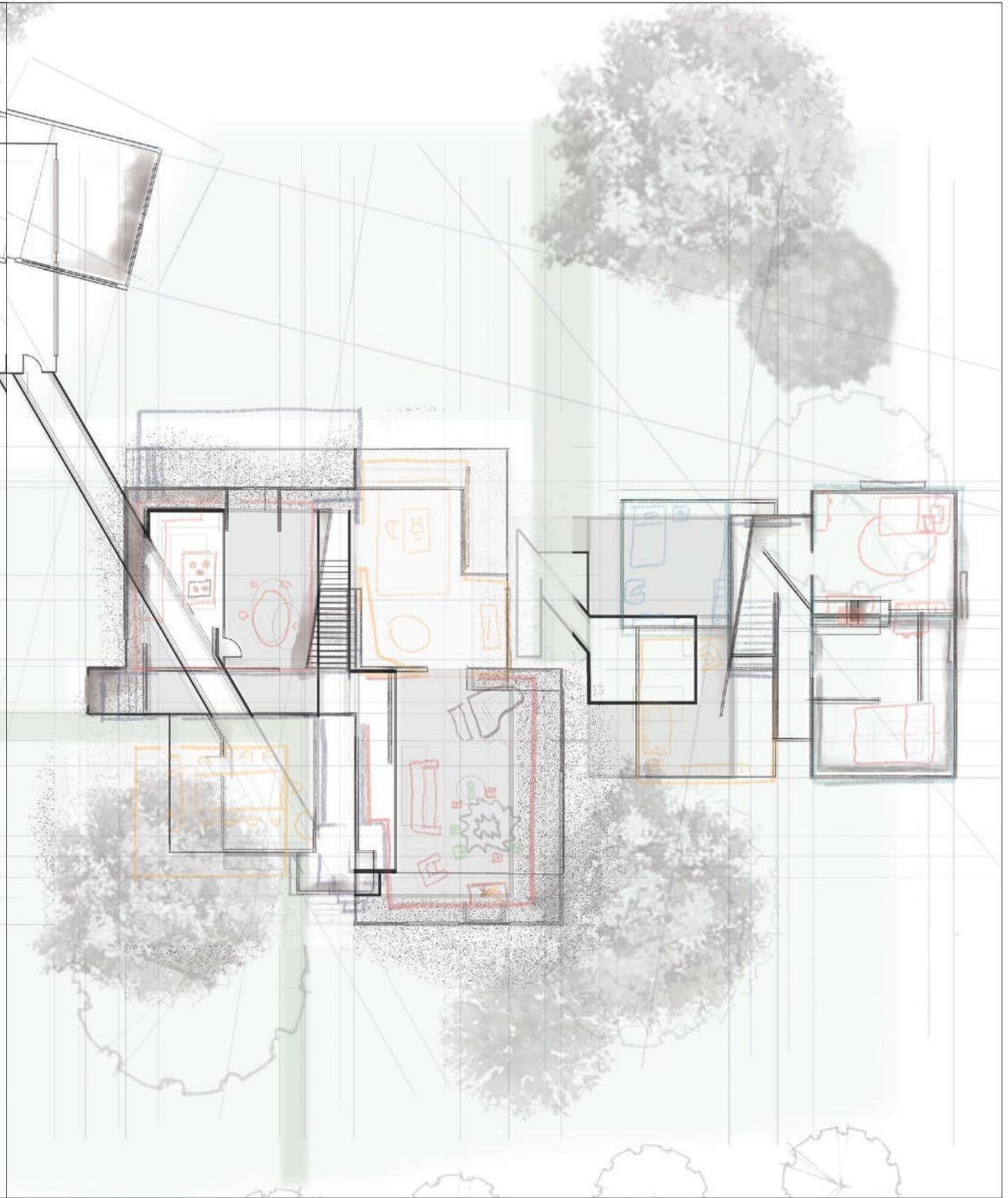
Thesis Advisor: Keith Mitnick

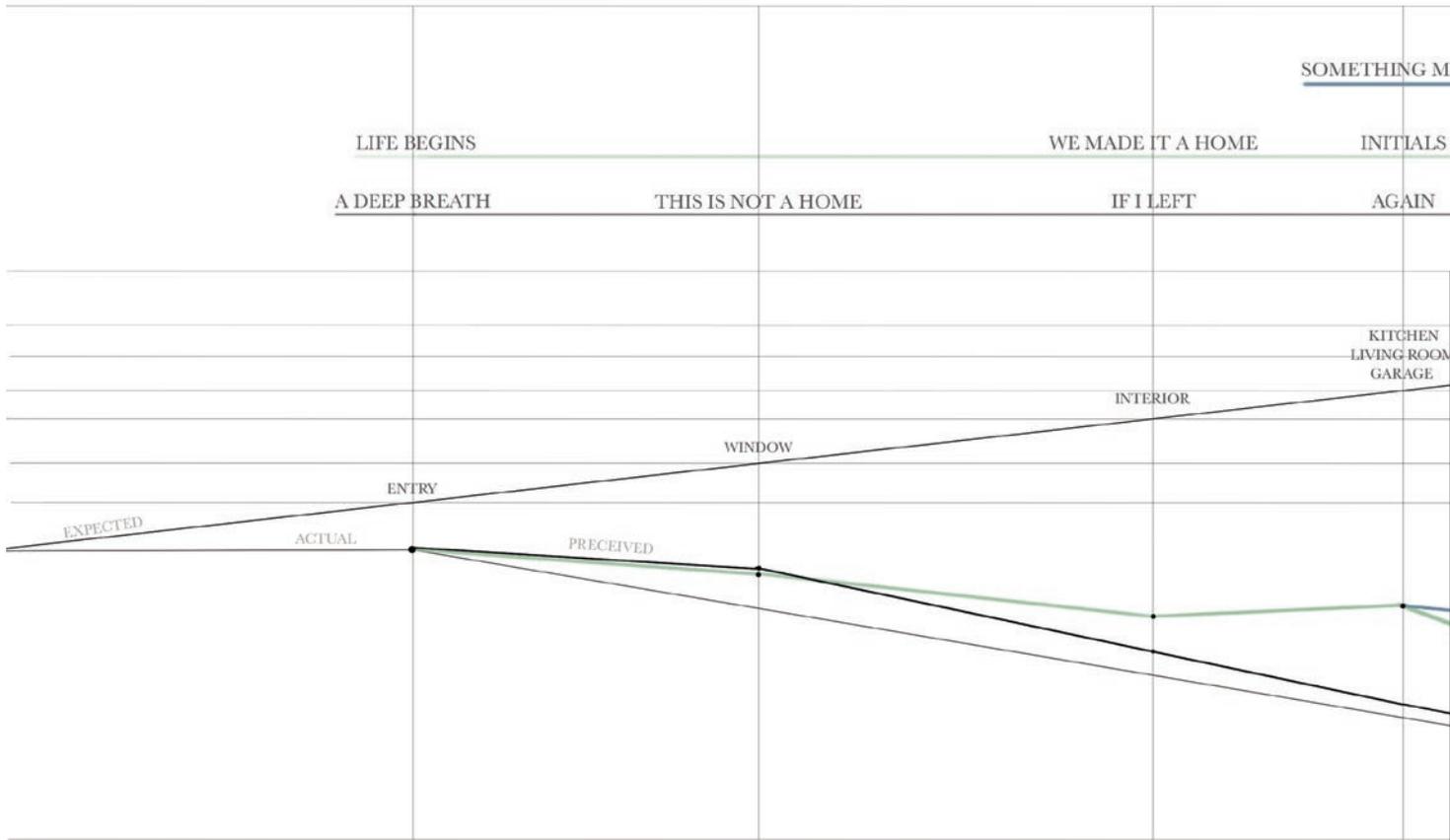
Encountered or practiced routinely, the “everyday” is an experience that goes unnoticed. Subject to life’s circumstances, experiences and things encountered are individually relative. Selective perception allows certain “everydays” to be omitted or taken for granted. Only when a change or interruption occurs is it recognized that what was once normal is no longer so. How is this recognition processed? An exploration of suburban single-family houses and modern American housing revealed that expectations and perceptions of space can be altered or even manipulated. This project’s interest lies with tactics in psychology and architecture that can influence the expectations and perceptions of architecture relative to the “everyday” of the individuals who inhabit it.

Written in the form of short, relational moments, this fictitious narrative presents the perspectives of three family members. Each set of moments recalls memories to provide insight into a consequential life decision. While living and occupying the same house, the shared moments overlap in various spaces and points in time to create architecture affected by expectations and perceptions. Each episode is written at a different moment in time, in a different architectural setting, and with attention towards a particular level of architectural detail. Demonstrating the lack of a master life narrative, a comprehensive understanding of their residence is never revealed, nor fully conceptualized.

Influenced by Sandy Isenstadt’s *The Modern American House* and Lars Lerup’s *Planned Assaults*, a taxonomy was created in which architectural elements, both physical and schematic, are used to create deceptions in space. These tactics range from spatial configurations that influence experience to tactile moves that invite physical interactions with architecture. Throughout the design of the plans, seven tactics were developed: Apertures-Form, Poche-Active, Enclosures-Un/Expectedly, Organization-Program, Organization-Sequence, Sensory-Atmosphere, and Sensory-Axis.







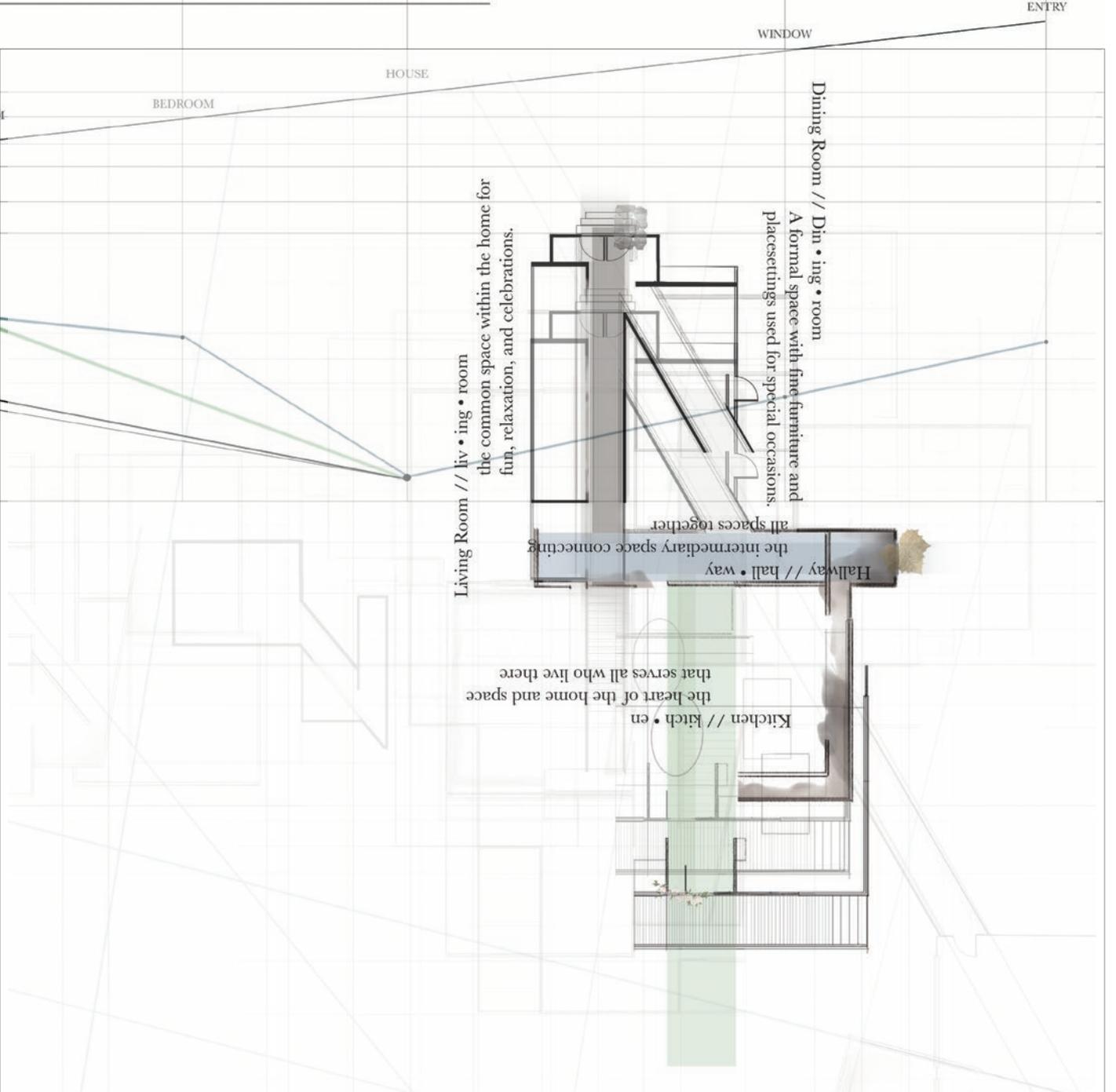
CHARACTERS

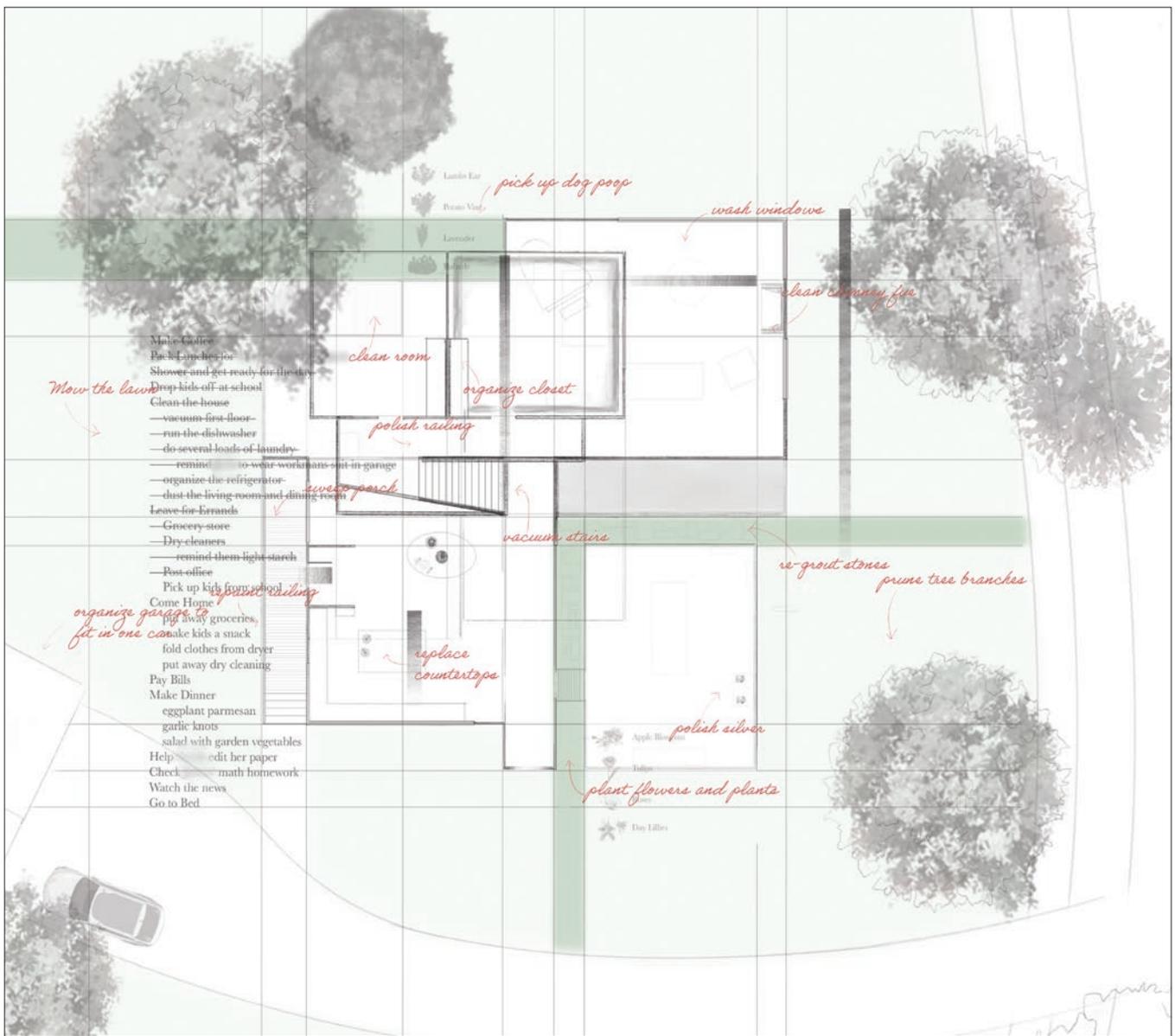
The narrative presents the perspectives of three family members: Mother, Father, and Child. Each character has a line that represents expected, actual, and perceived happiness throughout their lives. Each moment causes a shift in the respective character's happiness aligning with an architectural setting within the home.

MOMENTS

Each moment takes place within a specific place in the home. Spaces overlap between characters, allowing for differences in emotional and architectural perception to be juxtaposed. Moments also take place at different points in time, showing how the spaces change with the psychological states of the family members.

MISSING	WITHIN THE WALLS	STRANGELY ENOUGH	REPLACED	THE GOLDEN LEAF
	FORGETTING HOW TO TALK	ENOUGH		
		ENOUGH IS ENOUGH		





Mother

She had found her place; this house would be her home where together they would build a family filled with happiness and warmth. In an effort to curate this life she envisioned, she attends to the home to ensure everything has its place. She intensely cares for the spaces she loves. Unfortunately, this is not the place he wishes to be, and they quietly create separate lives.

LIFE BEGINS

This was a neighborhood comfortable to get lost in—expansive yards and the occasional couple walking their family dog along the tree lawns. I have pictured this moment for as long and I can remember—my first home. We passed a small park where a few children were running, we curved down the driveway, passing under two beautiful maple trees, and arrived at the house with a red door.

The front had a traditional entrance with slate stones to guide our way, and the driveway led to a quiet patio that overlooked the yard. I could see our life echoing in front of me: picnics in the soft grassy yard, colorful birthday parties in the living room, pancakes flipping in the kitchen on Saturdays, teaching our children to ride bikes up the driveway, and cozy winters in front of the fireplace.

Excited to begin this life, I smiled, squeezed his hand, and turned the key.

A DEEP BREATH

Her head is resting against the window, stationary, as the rest of the world flashes by. The moment she settles into a seat she is sound asleep. The road begins to curve as we enter the neighborhood and she sits up straight. Prim and proper, with picturesque gardens, unattached garages sheltering high-end cars, and perfectly kept tree lawns. I feel myself sit up a little too. The houses are a mixture of styles that somehow work together to fulfill the dreams of everyone who lives here. The lot each house occupies is generous—enough to forget that you have neighbors, but close enough to be reminded you most certainly do.

I stop midway up the stone path, taking in what is our foreseeable future: commitment, excitement, responsibility, and passion. Everything I knew but didn't expect so suddenly.

With a deep breath, and the return of a smile, I follow her through the red door.

THE GOLDEN LEAF

The bench has cracks in its wood and there are uneven divots on the arms where the iron has been repainted. The trees in the park are young, replacing the old that were cut down before they could fall in the wrong direction. The one exception is standing overhead as I sit here. I suppose its place at the tip of the triangular park allowed it enough clearance to be spared. Most of the leaves have fallen—the green grass showing through, its color slightly dull as the sun is obstructed by gray clouds holding the sky.

Hearing laughter, my gaze moves from the tree branches above to across the park. Delighted, a little girl scurries to her parents, holding high a golden yellow leaf high. Her father scoops her up as her mother pushes a stroller, carefully avoiding the large cracks in the slate sidewalk. Now, high on her father's shoulders, she holds the leaf like a flag, waving it as they flank the park, walking towards the house with a red front door. I cherish the innocence she carries through the door, into a house, once a home, filled with love, but equally with sorrow. Her leaf, once held high, is taken from her small hands and left pinned under the door knocker as the family disappears inside.

INITIALS

I looked past the cacophony of the morning's excitement, met with a soft smile and a wink. Set delicately within the branches of the tree, I felt the room grow still. The small box was wrapped in paper that didn't match the rest—cream with watercolor holly leaves, berries, and a bow of deep emerald green. I carefully removed the wrappings to find inside a delicate bracelet. There were three silver letters threaded through a white band, the clasp holding the bracelet together suspended gently. Overwhelmed with love and bewilderment, I was filled with affection that made the world stand still. I am noticed, I am considered, I am loved.

If my memory serves me, the bracelet is in a box on the top shelf of my closet. I haven't seen it in years.

SOMETHING MISSING

Snow softly falling outside, a gift from the season on this eve, a slight breeze of frigid air tickled my toes as the back door closed with a click. Turning to see who entered, my heart fell, not disappointed by her, but I had hoped it was someone else—him. It didn't matter the season or the weather, I could always see the soft glow of light from the narrow garage windows. I should have learned by now not to get my hopes up. Seeing the excitement leave my face, she gave me a hug that said, "Me too."

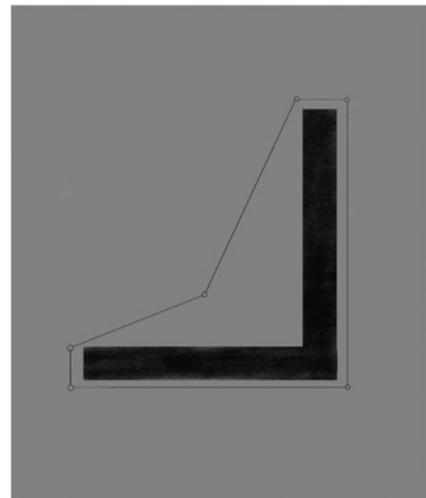


SENSORY • atmosphere

Occupying and living in a place, one's senses are subjected to what the architecture provides as stimuli. Through careful observation and nuanced design moments, the atmosphere of the architecture can be used to create a sensations that differ from those produced by a normative space.

POCHE • active

A wall is encountered from only one side at a time; what occurs on the other side of a wall can only be imagined. Within the ambiguity of experiencing a surface one side at a time, opportunities to exaggerate and experiment with dimensional movement become available.

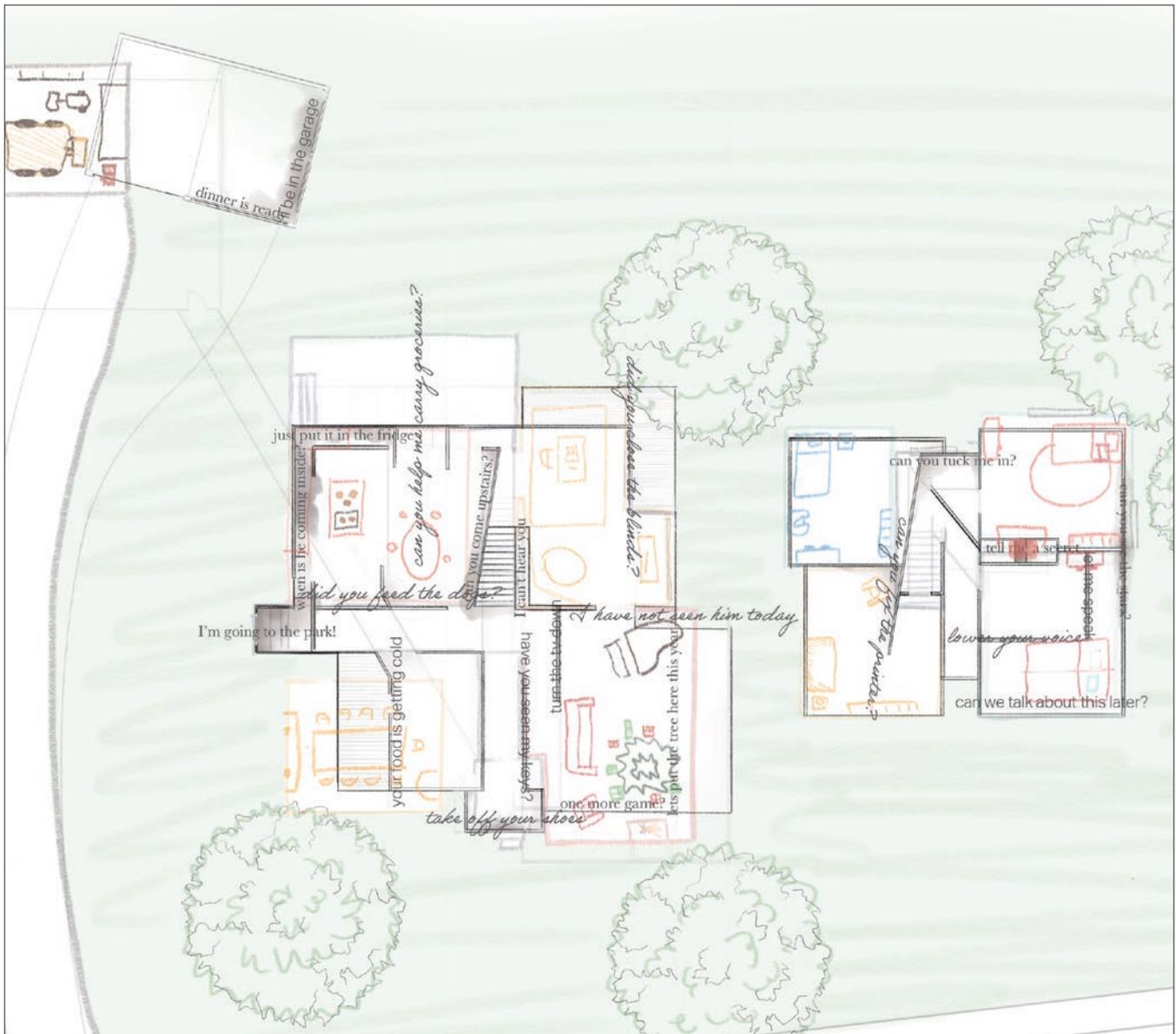


AGAIN

Turning around, I saw the mature hand that tapped my shoulder was accompanied by a soft smile. She handed me a small box wrapped in paper with a bow. I did not need to be reminded that I fell short on my end again. Watching her walk towards the house, I saw her daughter, my wife, through the window. She was laughing in the kitchen, her eyes creased at the sides, hair in a messy ponytail, carefully rolling cookie dough with two pairs of small hands helping to decorate. Feeling ashamed for a moment, irritation resumed as my attention returned to the snowblower I was unable to fix.

Child

Nostalgic for her childhood, she visits her old neighborhood and recalls the memories of her family. She was a child caught between glass walls, observing the family's slow and devastating destruction. As she strains to reconcile two truths, the spaces of her childhood help to reveal what she has always known but never understood.



REASONS

ENOUGH

How does one come to realize that, for ten years, they were unhappy? All the birthdays, holidays, graduations, nights reading stories as your child fell asleep in your arms. Coming home to your favorite dinner on the table, your dog wagging its tail when you wake up in the morning, and soft smiles from across the room silently saying, "I love you." It must not have been enough.

The trips and projects that occupied your evenings and weekends, the unacknowledged birthdays and holidays that were forgiven with a smile, the encouragement and excitement in the pursuit of new opportunities. Everyone who loves you must not have been enough.

Your reasons for leaving are not reasons at all.

ENOUGH IS ENOUGH

I did not even realize that, for ten years, I was unhappy. All the birthdays, holidays, nights reading stories as the children fell asleep, coming home to dinner on the table, my dog wagging its tail asking for breakfast, and glances from across the room were enough.

The trips and projects that occupied my evenings and weekends allowed me to leave the house. I have never been good at remembering birthdays and holidays—you know that. The encouragement and excitement never felt genuine. Everyone who loves me must have thought I wasn't enough.

I didn't know that I was leaving, but I did it anyway.

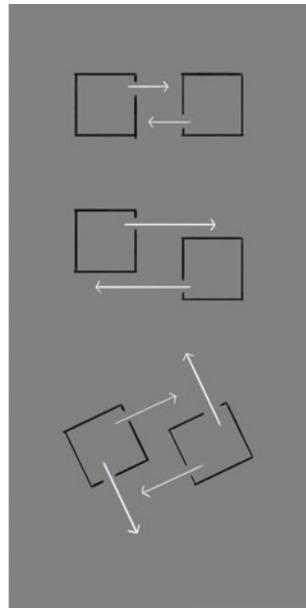
Thank you to my parents, Betsy and Brian, my brother Matthew, and the Rusk family; your love and support made this meaningful project possible during such a difficult time. Also thank you to my advisor, Keith, for continuously pushing and inspiring me to create work that teeters on the line of fictitious and factual.

STRANGELY ENOUGH

I saw that you were unhappy. All the birthdays, holidays, graduations, nights you missed reading to me to help me sleep, coming home to your dinner cold on the table, our dog wagging its tail by the door, waiting for you to come inside, and the smiles when you finally did. It must not have been enough.

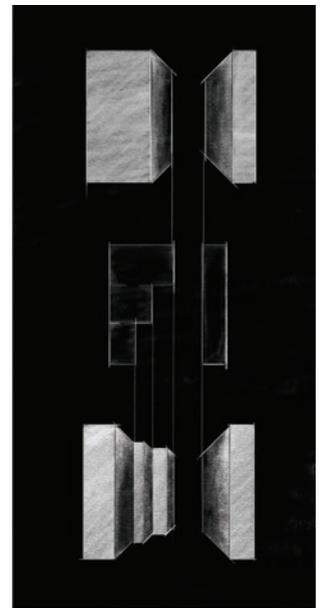
Trips and projects occupied your time when I wanted it. The birthdays and holidays always felt distant. When the arguing stopped, I tried to encourage and support your new pursuits. My love must not have been enough.

Strangely enough, I understand your reasons for leaving.



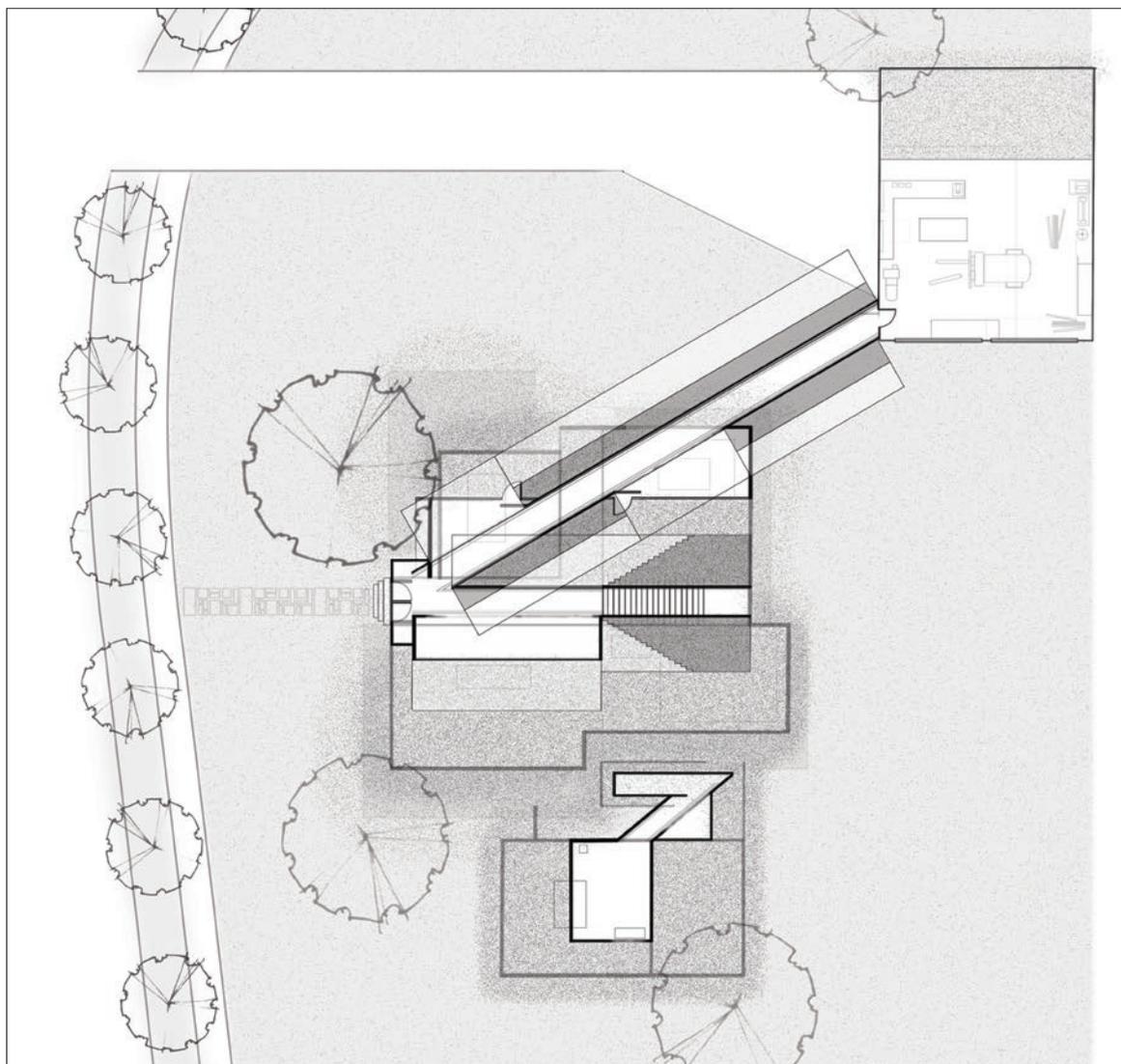
SENSORY • axis

Apertures determine what someone does or does not see. Directing lines of sight, rotations and offsets in both plan and section can give the illusion that something contextually present is not.



ORGANIZATION • sequence

Varying shape, scale, and orientation works to give distinct feelings physically and mentally to the same space when viewed from various perspectives.



Father

As he walks through his house, he puts up walls. Surrounded by his life, he questions what he is allowed to do, touch, move, or add. Walking through the halls, he can see into rooms but is unable to enter them. With growing discomfort, he follows these walls to the one space he is certain he can enter. This pursuit of place rewards him with purpose, but at the cost of what he left in the house: his family.

ON COORDINATION

The coordinator is responsible for establishing the framework for the year and working with different members of the college community to ensure that everyone has what they need for this research endeavor. The Chair of Architecture appoints a faculty member to coordinate, and this designation is counted as part of that tenured or tenure-track faculty member's service activities. Tasks include establishing shared due dates; processing student ballots; managing thesis faculty requests for internal and external critics that participate in midterm and final reviews; equitably sorting critics into juries; working with staff to issue honoraria for guests and to establish any event infrastructure; and collecting content from students and faculty for publication. The coordinator also tries to build solidarity across sections by creating opportunities for everyone to informally share ongoing research with each other. The infrastructural demands that result from students having the freedom to define their own trajectories appear during the second half of the winter semester when projects crystallize and faculty know who to invite for end-of-year conversations. The coordinator also has their own section of advisees.

As a fourth-time faculty advisor but first-time coordinator, I noticed that this role at Taubman College has more to do with organizing information and less to do with establishing a singular vision for what a thesis project entails. This is because the "guided thesis" model promotes multiple visions and ways of working. In an attempt to locate concurrence among the faculty, I think we share a desire for our students to challenge themselves and critically engage the built environment; on a practical level, we also share file templates, calendar invites, and web-based spreadsheets. Still new to coordination, I'm learning that to maintain plurality (one of our program's strengths) requires a lot of data management. Maybe this reveals how my brain deals with information but I'm intrigued by the way that logistical infrastructures typically known for streamlining can also sponsor complexity (or even discordance).

When I was assigned to be the coordinator in Fall 2019, I (like many people) didn't know that the coronavirus pandemic would emerge and radically impact the world in Winter 2020, and the pivot to remote learning two months before the semester's end highlighted just how crucial data management is to the thesis experience. Everything we planned had to suddenly change: I contacted guest critics with weekly updates as we transitioned into lockdown, I created a website instead of

the usual book to feature the students' abstracts since physical printing no longer seemed like an option, and we held reviews online for the first time using videoconferencing software. Reflecting on the past year, I remain in awe of our students and their ability to switch formats so quickly.

2020 THESIS AWARD WINNERS

Burton L. Kampner Memorial Award	Marco Nieto
Marian Sarah Parker Memorial Award	Delaney McCraney
Alpha Rho Chi Medal	Ishan Pal Singh
AIA Henry Adams Medal	Madeline Kil

ON VIEW

The thesis studio ends with an exhibition of student projects where a mix of internal and external critics are invited to discuss the work. This is a chance to celebrate the graduating class, to reflect on the overarching goals of each studio, and to meditate on architecture's histories and possible futures.

In my time at the college, thesis reviews have taken place at the Liberty Research Annex, at the Art and Architecture Building, and on Zoom, and each site seemed to foster different forms of production and public reception. For example, when faculty used to clear out the Annex to make room for reviews, students would often build expensive, museum-quality installations that were on display for about a week and open to Ann Arbor passersby for viewing. Reviews returned to North Campus once the A. Alfred Taubman Wing was completed, which not only re-centralized the college's year-end excitement but also discouraged prolonged exhibitions due to limited space. More recently, online platforms require students to exclusively format their projects for screens but also make the work more accessible to people from all over the world. I don't know if any of these scenarios are worth pursuing further, but I'm sure that the post-pandemic era will present more opportunities to rethink reviews in order to match the enthusiasm and intellectual rigor brought forth by our students.

JOY KNOBLAUCH

Joy Knoblauch is an Associate Professor of Architecture and Co-Director of the Architecture Doctoral Program at Taubman College of Architecture and Urban Planning. Her recent book, The Architecture of Good Behavior: Psychology and Modern Institutional Design in Postwar America, was published in April 2020 by Pittsburgh University Press.

Dimensions 34: How did this book come about?

Joy Knoblauch: I guess the book came from wondering how architecture engaged politics and wishing for a richer way of thinking about that question. I wandered into the entanglement with social science in particular and was thinking in a post-Foucauldian moment but also wishing for something that did better than “Architecture and Politics in the Reagan Era,” one of the standards at the time. Mary McLeod’s piece was always deeply unsatisfying and didn’t do what I wished it to do or what my friends wished it to do.

D34: So this is the culmination of a long project. Is it a continuation of your dissertation?

JK: Yeah, it took probably about ten years to complete the whole thing. It’s the dissertation plus another chapter and then substantially revised for a different audience.

D34: What’s the evolution of such a long project?

JK: I think we do end up with ideas that engage us through our careers. I could say even my undergraduate thesis was anti-institutional. It was a halfway house for women. So the idea had always interested me—how to think about therapeutic spaces, how to design them in ways that were not repressive. Even in my youth, I was thinking about that. And then I went and worked as an architect and that really changed how I thought about institutions and my own education. Then, I wrote about Robin Evans and really bit into the question of how architectural theory can say things about form. He was the best example I could come up with, so I really wrestled with his ideas. Then from there, I encountered this other side of social science that

we hadn’t really been taught in school—thinking about things like environmental psychology and how deeply government sponsored it was. I began to look into that critically. Science, Technology, and Society (STS) has been a great home for thinking about the relationship between criticism, history of science, and history and architecture. The history of psychology really excited me in coursework I did at Princeton so I started writing about Oscar Newman. It’s still hard to get away from writing about Oscar Newman because people want to know about broken windows theory.

D34: Early in the book you introduce the term psychological functionalism. Could you elaborate on this term?

JK: Just the idea that an environment is supposed to exert a change in your psyche, particularly toward a behavioral change. So it’s a functionalist mode that’s not about the material of the building and it’s not about efficient steps through the building, or any of the other meanings of functionalism that Adrian Forty so beautifully provides for us in *Words and Buildings*.

D34: How do you understand psychological functionalism in relation to the architectural project of modernism?

JK: I think the deep origin of the book is from my education steeped in Colin Rowe’s ideas of modernism—trying to wrestle with modernism’s good intentions, the idea that architecture could improve society, and then finding out how invasive and repressive that can be. To borrow Marshall Rosenberg’s way of speaking, it’s such violent communication that modern architecture wanted to tell people what to think and who to be. So I was wrestling with how we could have a nonviolent architecture. How could we have an architecture that does not presume that I should have a certain type of perception or a certain type of behavior? I think that’s getting back to the question: What would embracing nonfunctional architecture mean? Would it tread lightly on its occupants, perhaps?

D34: You also use the concept of biopower to explain the emergence of new institutional forms. Could you talk about the role of biopolitics in the book?

JK: I think it happens on a number of scales. On the national scale, in these institutions it was the management of life, and health, and your status as sick or well. And particularly the way that the state can do that—the tools of state knowledge, the surveys in the case of the Hill-Burton Hospitals, and then later on the crime statistics and urban research. I think it's more similar to what Foucault talks about in the lectures in *Security, Territory, Population*. I haven't read that material in quite a long time, but I think he starts to talk about neoliberalism before it's formally recognized as existing with the application of economic reasoning to these kinds of decisions. He speaks of the capacity of a population to respond and how that's gauged. And then I think the book tries to talk, amongst many other things, about architectural form. Where is the individual building as a tool of biopower, what does that mean, and what does it look like? What is important to these agencies and what is not? So we start to see the creation of standards.

D34: Some of the experiments in form that are documented in this book seem to have been enabled by advancements in medical science. You suggest pharmaceuticals, in particular, allowed for a less conspicuous architecture of confinement. With regard to influencing behavior, was medical science able to achieve what architecture wasn't?

JK: That claim was made by the National Institute of Mental Health. There was the juxtaposition between the Utica Crib, which was used to physically restrain mental patients, and architecture. It suggests that this nicer, open architecture is now allowed because of Thorazine and other pharmaceuticals. I feel like this is very much Beatriz Colomina's territory, thinking about what medicine has allowed architecture to do or what medicine has inspired architecture to do. And I think we have to acknowledge that mental healthcare is so different because of the prevalence of many different kinds of psychotropic medications. It's just very different than it was before that. But not to be technologically determinist, of course there were other kinds of social changes that happened with the Group for the Advancement of Psychology looking at people

returning from the war. It was a different type of patient at that point—it was traumatized middle class men who ended up in these institutions and that was a very different group of Americans seeing what these institutions were like. So did pharmaceuticals change the architecture of mental healthcare or was it far larger social changes? And as a historian, we always or we often like to say, "It's complicated." It's not just medicine.

D34: The question of resistance is suggested but not fully explored. Could the failures of institutional design hint at strategies for challenging regimes of soft power?

JK: Yeah, I think the obvious one that I like the best is talking about it. I see the book itself and my role as an educator as a strategy of resistance. It's important to at least say these things and to see these institutions as deeply complicated. I see the book as an option. We can have architecture participate in a discourse about its history this way. To see itself as embroiled in power, to know the histories of people like Clyde Dorsett, and to see us as part of bureaucracy I think is one first step.

As far as ways to design, I think the implications become a lot more complicated for resistance. The book I'm currently working on thinks about resisting notions of functionalism entirely, or at least recognizing where they are. Because I think the fish in water does not know if he or she is wet, and so capitalism can be hard to see. For an architect, the functional paradigm is hard to see sometimes because it's so thoroughly embedded in our field—it must be efficient, it must go somewhere. Looking at the origins of psychological functionalism in military research and its applications through corporate America—which took it up with great gusto—led toward my interest in ergonomics. I think the other attitude to resistance as a designer is to be aware of when we're being functionalist, whose ends we are serving, and to carve out some space for humanity that's not functional.

D34: In the context of institutional architecture, attempts to address social and political problems through design generally proved insufficient and sometimes disastrous. How might contemporary architectural practice learn from the missteps that characterized this era? Can architecture avoid complicity?



View of a central lounge space at the Ridgeview Institute. Clyde Dorsett papers, 1940-1991, Avery Architectural & Fine Arts Library, Columbia University.

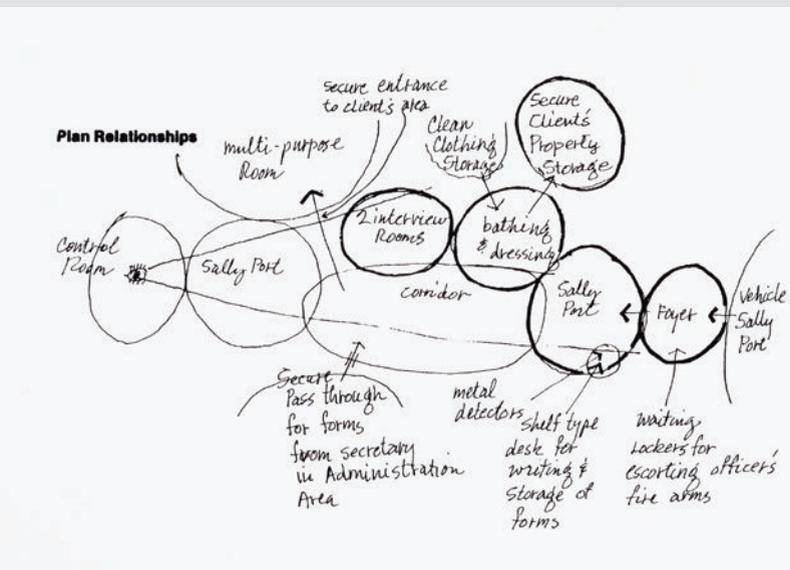


Diagram of plan relationships for the Southern Nevada Psychiatric Facility Forensic Program, detail. Clyde Dorsett papers, 1940-1991, Avery Architectural & Fine Arts Library, Columbia University.

JK: That's a really important question that the field continues to grapple with. It's related to the Manfredo Tafuri question: Can we get outside of the system? I'm starting to be really interested in how to do that. It's led me to study nonrepresentational things and to think very much about sensory processing. I think it would have to avoid surveys and consolidated standards for the nation—it would be a very different way of thinking. And I will deeply acknowledge debt to the disability studies world that thinks very much about nonfunctional spaces, nonfunctional design, and how to celebrate an existence that is not about it being able-bodied and getting work done, while also fostering independence and the desires that humans have. So I think that's where I'm looking for hope. If that's the question, "Where can we go that would be better?" I think disability studies has a lot to teach us.

D34: You also acknowledge the absence of the subjects' perspectives in this book—the subjects upon whom architecture is acting. Do you see any opportunity to reconcile lived experience with this type of historical text?

JK: Part of my hesitance came from not wishing to speak for people, especially in cases where there are better humanist accounts of these institutions and experiences. Certainly, for prisons there are far better accounts written by inmates. As for what it means going forward, I don't know. I think it's a tricky question. I am a minority in my deep skepticism for participatory models, so I decided to focus on this as a story about the architects. This is a history of what Clyde Dorsett had to say. He didn't have a ton to say about particular experiences that get filtered through surveys and things like that. That's how voices come in.

The other thing that I would say on that subject is—and I am writing about this right now—this is just after race is explicitly discussed in architecture. Especially in the case of someone like Oscar Newman, the discourse is so racial, but there's no mention of these things, that whiteness is so thorough. So I think those absences and gaps both in my book and in the literature are something that I am wrestling with. The act of resistance is to talk about it and say, "This is an absence that happened after architecture did so poorly in addressing its

problem of whiteness.” And what do we do now? How do we decolonize our history when it’s so thoroughly constructed that way? Would you even have a history class if we didn’t need to justify our apparatus and all of this kind of stuff? Those are things that I am working through and I don’t have an answer yet.

D34: You cite Daniel Barber and Keller Easterling as participating in a similar approach to architectural history that avoids “the language of complicity while remaining critical of [architects’] purported good intentions.” Could you talk about this and how it differs from prior approaches to architectural history?

JK: I think that the generation ahead of me was pretty black and white. Architects were either good or bad, they were either complicit or they were somehow able to be avant-garde and exist outside of it. And I think there is a lot of ground in between that didn’t get as much attention, so it involves looking at the work of architects that isn’t formally exceptional. It’s not that the buildings in the book are particularly exciting to look at—that’s not the idea. So these scholars of my generation have been trying to look at architecture that’s important for its position in society or in politics. I guess the point is that I don’t think it’s extra-architectural. I don’t think environmental history and things like that are outside of our field, though they have been considered outside of our field. So I think it tries to view architecture as connected to things, as political, and maybe show complicity. Throwing the whole thing out didn’t seem to get us anywhere. We celebrate this turn to racial justice and calls to make a more equitable architecture, but we also worry that these openings have happened before and closed again so quickly. So how do we keep this one open? How do we do this one differently? The ambition of some of us is to try to just keep talking about it. OK, well where are we going to go from there? And how are we going to remake a system that’s far larger than anything students are doing in studio presumably?

D34: You talk about the use of architectural graphics and data quite a bit in the book. It’s interesting how you establish this relationship between architecture and psychology as both fields that existed outside the boundaries of what was considered hard science. But they relied on these techniques—drawings, diagrams,

data—to exert expertise or suggest technical objectivity. Do you think that strategy was successful for architecture?

JK: It was massively successful for the Environmental Design Research Association. Bringing social science into architecture provided funding for a lot of work. But I also think architecture is having a huge crisis of its authority, and it should. People like V. Mitch McEwen have called attention to pipes freezing in Texas. Where were the architects that allowed walls to be built without the required code? I think that the built environment is not doing well. We have not stood up to say that we are culpable in the climate crisis and we need to take that on—that is an architectural question. We can chase politics, we can chase soft power, and we can talk about whether we can fix income disparity. But, we can certainly decide not to build in concrete. And we can certainly decide that buildings need passive ventilation, that they need to be oriented properly, and we as educators need to tell our students that rather than seeing it as uncool or however it’s been perceived. The other radical proposal is, “Do we need more buildings or do we need to deal with existing patterns of settlement?” I think those are the questions of our real culpability. The question was about technical instruments, but I think that our failure to have an adequate attitude toward technocracy in architecture is huge. And of course I prescribe more STS. But we need more understanding that technology is a human product and a political product. These diagrams do things and they may not do what they purport to be doing. So I am definitely going to continue to work on that—the question of technical expertise.

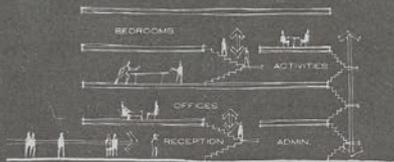
D34: Are there any positive lessons to be learned from this era of institutional design?

JK: Yeah, there are two things I would say. I became very interested in architecture as a public relations tool. The image of the facilities was really powerful, the image of design is really powerful, and aesthetics in our culture are really powerful. I often tell students, “You are future public relations experts really. You’re making something that is going to be the frame of a family, an institution, a state, a corporation.” But then we also read Brian Massumi’s “The Autonomy of Affect,” which is one of my favorite discussions about how reception happens and how

VERTICAL STACKING

THE MAIMONIDES HOSPITAL OF BROOKLYN COMMUNITY MENTAL HEALTH CENTER, Brooklyn, N.Y. **Architects:** Caudill, Rowlett, Scott, Consulting Architects; Kahn & Jacobs, Project Architects; Irving Kaplan, Project Manager. **Site:** 100' x 155' lot adjacent to Neinken Out-Patient Center on Maimonides Hospital campus. **Cost:** Approximately \$1,500,000; \$33 per sq ft. **Structural System:** Concrete columns and beams, flat slab construction. **Materials:** Exterior walls, brick cavity wall; interior, exposed block and dry wall. **Construction Schedule:** To be completed by September 1967. **Consultants:** Sigmund Roos & Associates, Structural Engineers; Jansen & Rogan, Mechanical Engineers. **Photo:** Jay Hoops.

The Maimonides Hospital of Brooklyn Community Mental Health Center will offer the full range of services of a comprehensive center to a catchment area of approximately 108,000. The population for the most part consists of working-class and middle-class people, few of whom can

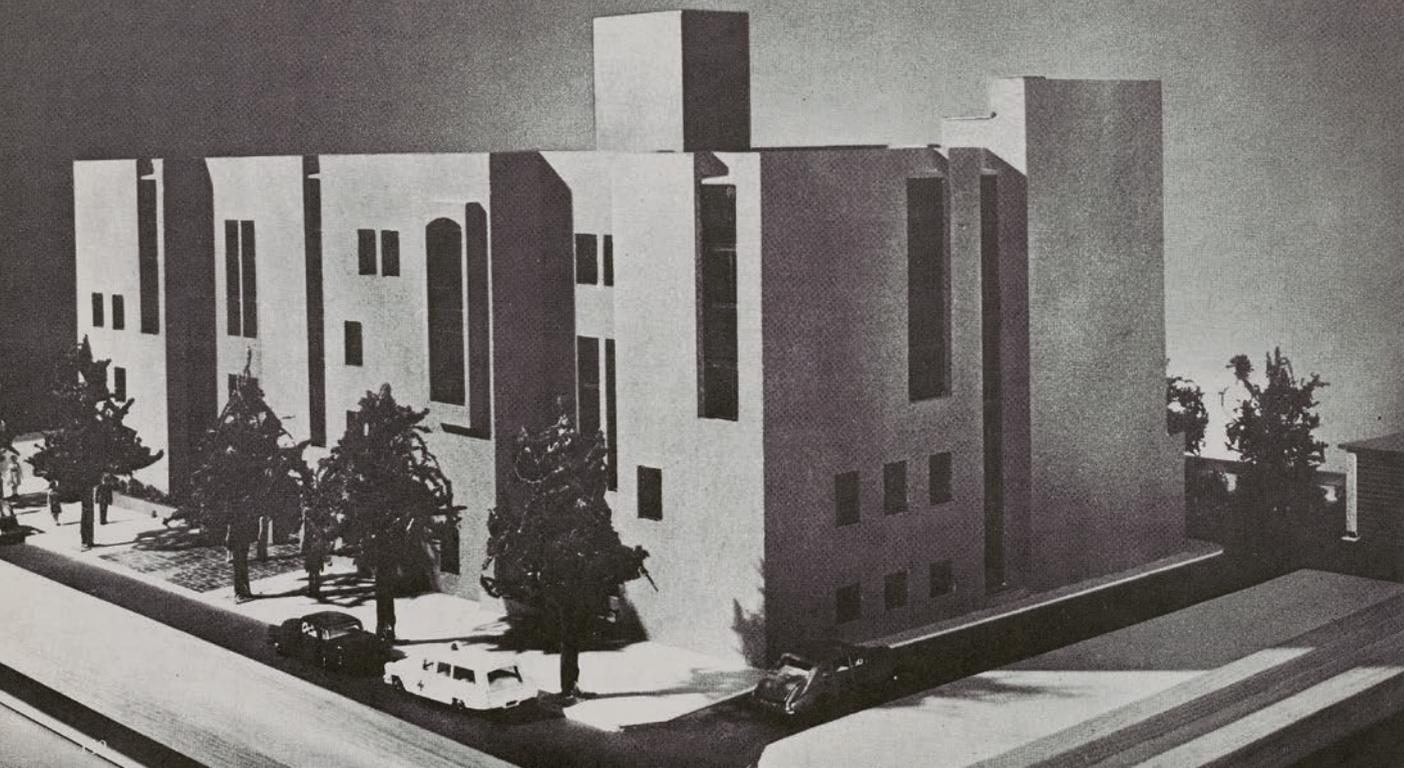


Central open stairs were designed to connect bedroom and activity areas and reception and office areas to foster easy visual and physical access. Fire regulations under the Hill-Burton code call for closing the stairwells to prevent fumes from spreading too easily in hospitals with bed-ridden patients. Here a concession has been made and only one end of the stairwell has to be enclosed. Meanwhile, the NIMH is working with the Hill-Burton agency to adjust the code for mental health centers where the in-patients are ambulatory.

afford extensive psychiatric care on a self-paying basis. Although no extensive study has been made of the prevalence of mental illness in this area, response to Maimonides Hospital's present limited program of out-patient care and community and consultation service shows a need for expanded facilities. Furthermore, in the local area, there is almost no other mental health or psychiatric facility to serve the population.

The consulting architects, led by James Falick, an associate at Caudill, Rowlett, Scott, and the staff of the center worked closely throughout the planning stages. They were concerned with the image the building would present to the outside world, as well as the feeling it would convey to the patients and staff inside. From the exterior, architects and staff wanted the building to be a departure from anything resembling a hospital; they wanted the center to blend in with the scale and character of the neighborhood. Since the surrounding buildings are five- or six-story structures of dark red brick or wood, with arched entrances, Caudill, Rowlett, Scott suggested picking up these characteristics and breaking up the massing to continue a residential scale.

For the interior, they wanted a physical environment to foster a therapeutic ambience; physical dimensions were not to impose harsh demands on the patients' distorted perceptions. The architects and



sensory processing is so important. The interpretive lens belongs to somebody else—it's an uncontrollable reaction of the viewer. It's not the architect's job. Like in the Hill-Burton Hospitals, they started to be attentive to patient reactions because they needed to care for the community in a certain way to raise funds. Then the mental health centers were attentive to providing different kinds of sensory spaces. It's terribly anachronistic to speak of it in those terms, but they would provide onlooker columns and networks of spaces with more open environments, visual connection, windows, and varieties of materials. It's really not my place as a historian, but as an educator speaking to future architects, I support that strongly. Similar to what Sean Ahlquist is doing to look at sensory properties of materials and how we can make spaces for neurodiverse humans—that's something to take forward from their work.

D34: Do you have any advice for students devising their own academic or professional projects?

JK: The first thing I'll say is unsustainability. I think if I were to say what is the most important thing facing our field right now, the entanglement of environmental and social justice is probably most urgent, so I would certainly encourage that. But then more abstractly, I think I have had a strategy—which has been annoying at times—of picking paradoxes, things that I really can see both sides of. These community mental health centers were a huge humane improvement and they did participate in a moment of optimism, a moment where architecture was enlisted for good. Clyde Dorsett was a really well-intentioned person and put his efforts toward doing something that he thought would be better. It wasn't about being a superstar. So encouraging students to poke at that spot where they're uncomfortable, I guess, would be the answer. When something is unsettling, you think it's both a hope for the future and maybe the worst idea you've heard, I think that is fruitful. But I will also caution that it can be deeply annoying.

D34: Is there anything that you want to add or to explain further?

JK: I think this is a really unique time. This is one of those moments where architecture seems to have an opportunity to open itself up, to change itself, and to improve. So my concluding thoughts

to students would be to go ahead and remake the things that need to be remade. We don't need to keep things the way they were necessarily. Obviously I think one of the big contributions we also need to be making is to health, to see ventilation of course from a sustainability perspective but also from a health perspective. Maybe that's the theme of the interview: When is it the architect's fault and when is it not? There's so much that we're culpable for in this pandemic and it's astonishing how little we've talked about it. A colleague and I are editing the new *Journal of Architectural Education* on the subject of health trying to push this as a topic. Taubman used to have an MS in Design and Health, so I can't say we're not talking about it. But it does seem like this is such a spatial, architectural, and HVAC crisis that I would encourage students to feel empowered to intervene.

FELLOWS

FELLOWSHIPS AT TAUBMAN COLLEGE

Taubman College of Architecture and Urban Planning offers three fellowships in the areas of architectural research and instruction: the Sanders Fellowship, the Muschenheim Fellowship, and the Fishman Fellowship. Fellows spend a year at Taubman College, teaching three classes as they pursue their fellowship interests. Final products range widely in form from exhibitions to publications, installations, and other material or virtual constructions. All three fellowships allow for the realization of architectural works and endeavors typically unsupported within conventional models of practice.

2019–20 ARCHITECTURE FELLOWS

SANDERS FELLOW

MATĪSS GROSKAUFMANIS

Matīss Groskaufmanis examines architecture's relationship to political and economic ideologies, with a particular focus on the emergence of global architecture practice. In 2018, he served as a curator of the Latvian Pavilion at the Venice Architecture Biennale, exploring housing as a means of nation building. Prior to founding the architecture agency Schema in 2019, Groskaufmanis has worked on research, publishing, and building projects as part of Rotterdam-based architecture practices OMA/AMO and MVRDV. He holds a Master of Architecture with distinction from Delft University of Technology and a Bachelor of Architecture from Glasgow School of Art.

MUSCHENHEIM FELLOW

JACOB COMERCI

Jacob Comerci is a designer and educator. He has previously worked with Bureau Spectacular in Chicago and Los Angeles and with MOS Architects and LTL Architects in New York. His research and design work reconsiders models for collective life and work by way of the interior fit-out of existing real estate with furniture-scaled domestic equipment. He received a Master of Architecture from Princeton University and a Bachelor of Science in Architecture from the University of Illinois at Chicago.

FISHMAN FELLOW

EDUARDO MEDIERO

Eduardo Mediero is a licensed architect and founder of Madrid-based architecture practice HANGHAR. His work has been exhibited at the XIV Biennial of Spanish Architecture and Urbanism, the 16th and 15th Venice Architecture Biennale, and the Colegio de Arquitectos de Madrid. Mediero holds a Master of Architecture with Honors from the Polytechnic University of Madrid and a Master of Architecture from the Harvard University Graduate School of Design.

PRACTICE, PRODUCT, PROTOCOL

Practice, Product, Protocol is an exhibition about architecture's entanglement with immaterial systems. In the era of the information economy, a growing share of architectural discourse no longer responds to material assets but, rather, to the value and opportunity of intangible ones, such as financial instruments, digital interfaces, spreadsheets, invoices, and diagrams. The emergence of abstract organizational structures has also resulted in an inability to establish clear boundaries between traditional notions of public and private space, as domestic and working environments have converged into a single place of life, work, and leisure. Increasingly, these environments are mediated through corporate organizational platforms, allocating space as a subscription-based service. The entanglement of architecture with these immaterial systems is displayed in three interspersed parts, ranging from a video game environment that examines organizational models of architecture practice, a serially produced catalogue of deployable soft architecture, and financial formations for a post-property urban condition.







The 2019–20 Taubman College Fellows engaged in a conversation following a virtual opening of their exhibition on March 30, 2020.

Q: What are managerial hallucinations, domestic simulations, and financial formations?

Matiss Groskaufmanis: I think managerial hallucinations describe experiences involving some apparent perception of necessity that is not really there.

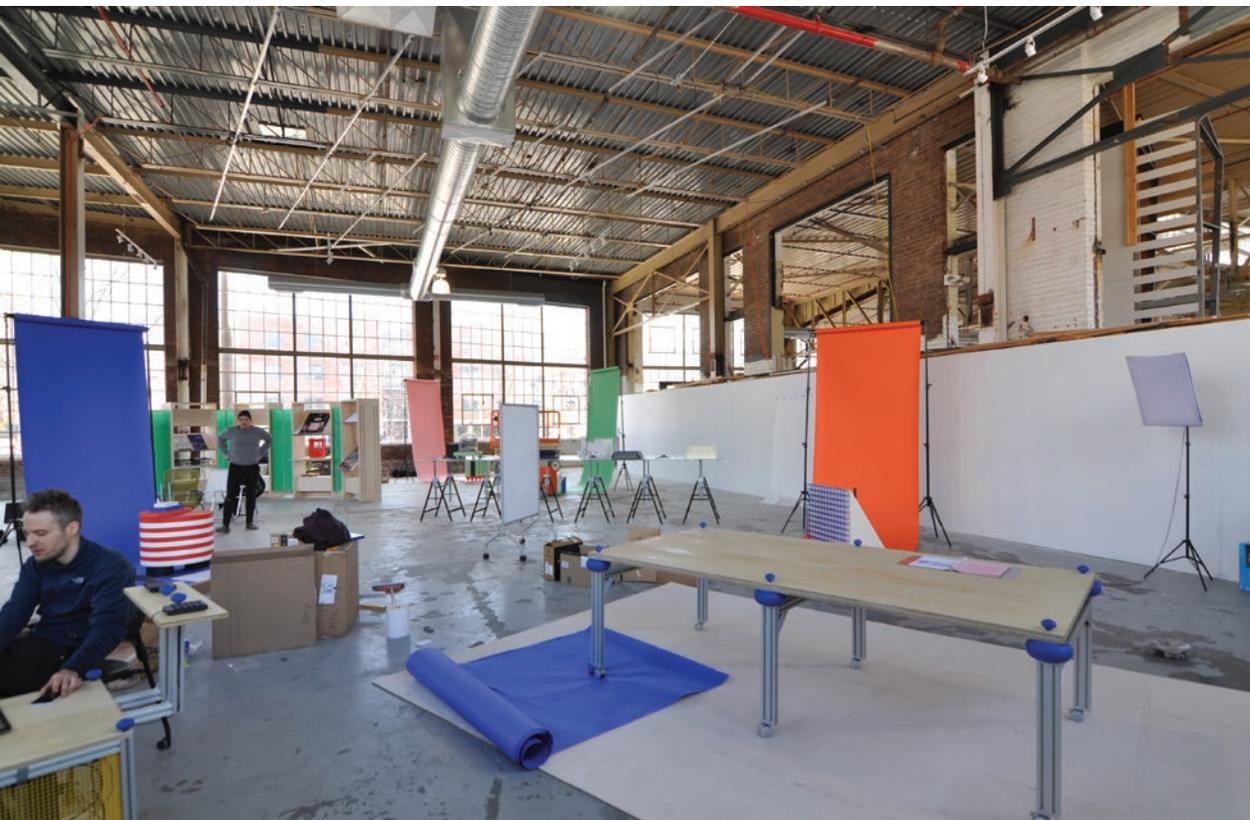
Jacob Comerci: I think I have the easy one here—domestic simulations. I used The Sims to simulate domesticity with objects that were designed over the course of the year. This allowed me to think about AI and its built-in biases through interactions with the designed objects.

Eduardo Mediero: It's hard to explain very briefly what financial formations are. This idea came from the premise “form follows finance,” in which physical built form responds to specific financial instruments and ownership models. While the financial formations in my presentation had very provocative conditions,

we also live in everyday financial formations. The most common is likely the condominium, a vertical stacking of individual ownership to repackage and intensify the amount of charitable assets in one block. Financial formations are everywhere and it's interesting to trace architectural and urban form through the lens of financialization.

Q: You have all designed and proposed circumstances of architecture not in units, but through many objects or circumstances that produce a proliferation. Can we talk about the multiplier effect? Is there a new client typology involved? Is there a new skill set involved?

JC: For me, it's a question of how to think about a more nimble practice that also can be prolific in its output. So it's not about the scale of buildings or cities—it's about small objects. That's the idea in focusing on co-working. Co-working is an alibi to think about an industry that allows for the designs of one to be propagated ad nauseum. So this prompts the agency question too: Where can architects find opportunities for the reclamation of agency today? I think one place is in this realm of reproducibility and seriality rather than the one-off.







1. MATĪSS GROSKAUFMANIS

According to some estimates, the 1990s saw global market value of intangible assets exceed that of tangible ones. This shift profoundly affected the notion of value, as intangible dimensions of products – symbolic, aesthetic, and social – foreshadowed their exchange value. In addition to intellectual property, brands, e-commerce, services, and managerial constructs – layers of subcontracting, service agreements, and other organizational capacities – became valuable assets in their own right.

During the same period, structural changes emerged in architectural practice. Both the effects of the deregulation of global finance, and the collapse of the communist geopolitical sphere allowed access to new markets. Only a few decades later – lubricated by file transfer services, air travel, social media, CAD and ICT

technologies – it has become easier than ever to design spatial products across the globe. At the same time, these new realities demand more management of architectural production in practice, as a growing proportion of architects' work has become immaterial.

This exhibition offers a peek into a virtual present-day workspace of a multinational architecture practice. The workspace can accommodate up to 576 architectural workers and managers, and at its peak capacity it can simultaneously develop up to 288 architectural projects. Walking through space induces hallucinations of fatigue studies, commodity forms, BIM protocols, and other technologies of management. Both projective and retrospective, they offer narratives about the convergence of culture and entrepreneurialism in the smooth managerial space of the post avant-garde architecture practice.







MG: I have a different answer to that because I did a different project, although I agree with what Jacob said. I think I will relate it to the idea of alternative practices. My first year of undergrad in 2008 was marked by the collapse of the world economy and the architecture market, especially the “starchitecture” segment. After that, there was interest in all kinds of alternatives—ideas of reinventing the system, rethinking what architects do, and so on. But if you look at today’s situation, most of those ideas have not been incorporated. I think it’s because several factors need to coincide to allow alternatives to really proliferate. Yes, there are many localized examples of people who have managed to reinvent the ways that they practice, but these things are not always scalable. I think that it takes more time to perfect and deploy on a larger scale.

EM: I think the question of scale in my project is extraordinarily important. As I mentioned, my project casts architecture and the built environment as a type of financial asset that has existed even since the early Roman times. But it’s from the 1980s onward that this model really explodes and takes on a global dimension. In my project, there’s this idea of the non-urbs. The non-urbs have to be a sort of resistance. If the non-urbs are scaled up, then it would be all wrong. So it almost produces a certain viral quality in which their continued resistance requires the existing structures of our governing systems.

Q: What is the role of neoliberalism as it appears in your projects? Where is morality in all of these things and where is that the responsibility of architecture? And then, again, where are opportunities for agency?

MG: I think this is a great question. At the time of my academic upbringing in the Netherlands, there was an ongoing discussion about neoliberalism that I became suspicious of. I don’t mean to say that I don’t buy the concept, but there was a preconditioned attitude towards what it is—that it’s something evil and that it’s destroying us. And don’t get me wrong, we are all victims of neoliberal policies in one way or another. But I think it’s too easy to take a polemical position and say, “This is horrible. Let’s resist it. Let’s make an alternative.” Whenever someone says that they are resisting neoliberalism, I get very suspicious, especially in American academia when we know how this whole thing is financed. So I think we should be very careful with our statements in that regard. But I also think

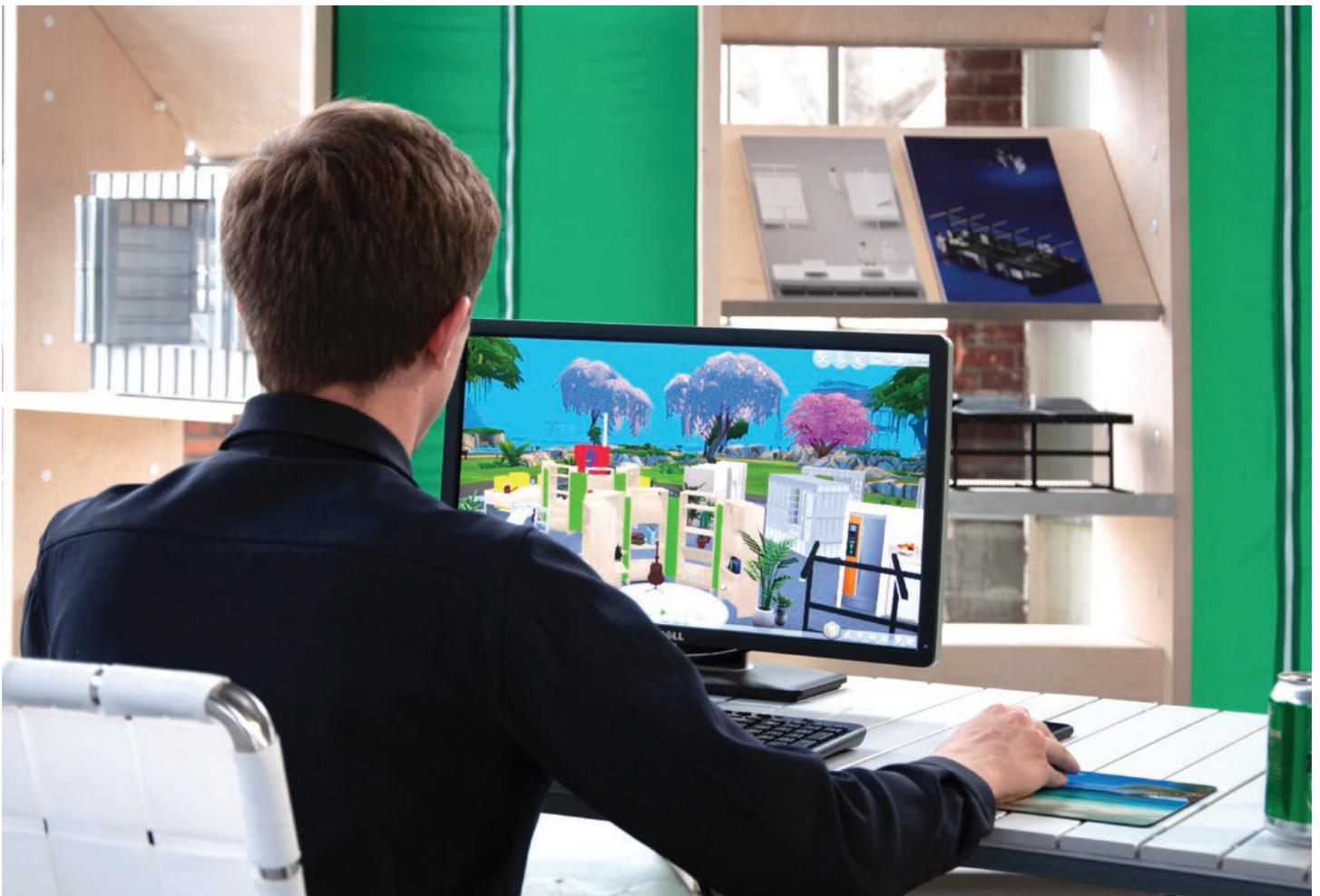
2. JACOB COMERCI

Major US cities continue to see increases in co-working and co-living spaces resulting from rising real estate values, urban migration, and digital nomadism. An incoming generation of professionals find these companies' low-risk rental and subscription models of shared living and working desirable, as they provide conditions otherwise unattainable for individual renters. This project capitalizes on business strategies of major co-working and co-living companies, which produce total environments equipped with desks, conference rooms, and coffee bars in addition to an invisible set of protocols that facilitate the politics, organizational structures, and management of people in space.

There is an opportunity to learn from these company models, as they have proven to nimbly adapt to socioeconomic conditions and produce architecture at scale. At a time when profit-driven real estate schemes, increasingly tightened regulations, BIM standards, and the mass production of building components have rendered the architect increasingly powerless in the production of

the built environment, this project points to an alternative model of practice which critically and opportunistically inserts itself into an existing framework of prolific architectural production.

The work displayed is a proposal for a readily deployable series of discrete architectural objects which can be assembled, disassembled, and transported with ease, unbound by building regulations and costing a fraction of ground-up building. The project operates somewhere between the space of architecture, industrial design and furniture design – a soft architecture produced not in units of one, but many – an itinerant, serialized catalog of equipment.













that we should reinvent our terminology and maybe not even use the term “neoliberalism.” Maybe the first step is to understand it better and to do so in part by magnifying it in our own projects.

F17

JC: This is kind of an impossible question because I think architecture and architects are very complicit. Maybe it’s not the most complicit discipline, but architecture is up there in terms of its sordid relationship with power and money. So to be a responsible citizen, it seems like the only thing you could actually do is quit architecture. For me, I have no idea what the answer is. And where morality lies in that—it’s a really great question. I agree with Matisse that academia is not somehow insulated from those same neoliberal forces. So if that’s not the case and there isn’t really a space of refuge, then how do we begin to engage? Maybe we can both be moral and still have an impact at scale. That’s kind of the hope, anyway, behind my focus on this idea of proliferation.

EM: I’d also say that sometimes refuge is understood as an actual physical separation. I’m thinking of the socialist utopias of Charles Fourier that moved to the countryside to start a completely new society as a critique of their contemporary social structures. Those experiments always failed because they conceived of refuge as a place outside of existing systems. So I think that we can’t avoid it. It’s within us, it’s around us, and we have to operate within the rules of the game—that’s absolutely inevitable. But as much as we can, we must use those rules of the game for our own purposes. So again, it’s not about isolation or complete separation, but actually embracing the system in which you exist, work, and produce in order to challenge it.

Q: In your projects there are nuances and moments of infiltration into really complex, layered systems. You’re talking about economics, politics, culture, and so on. How do you see your work affecting the ways in which architecture currently operates? Given the changing nature of the economy, labor, and governments, where do you see opportunities to build something?

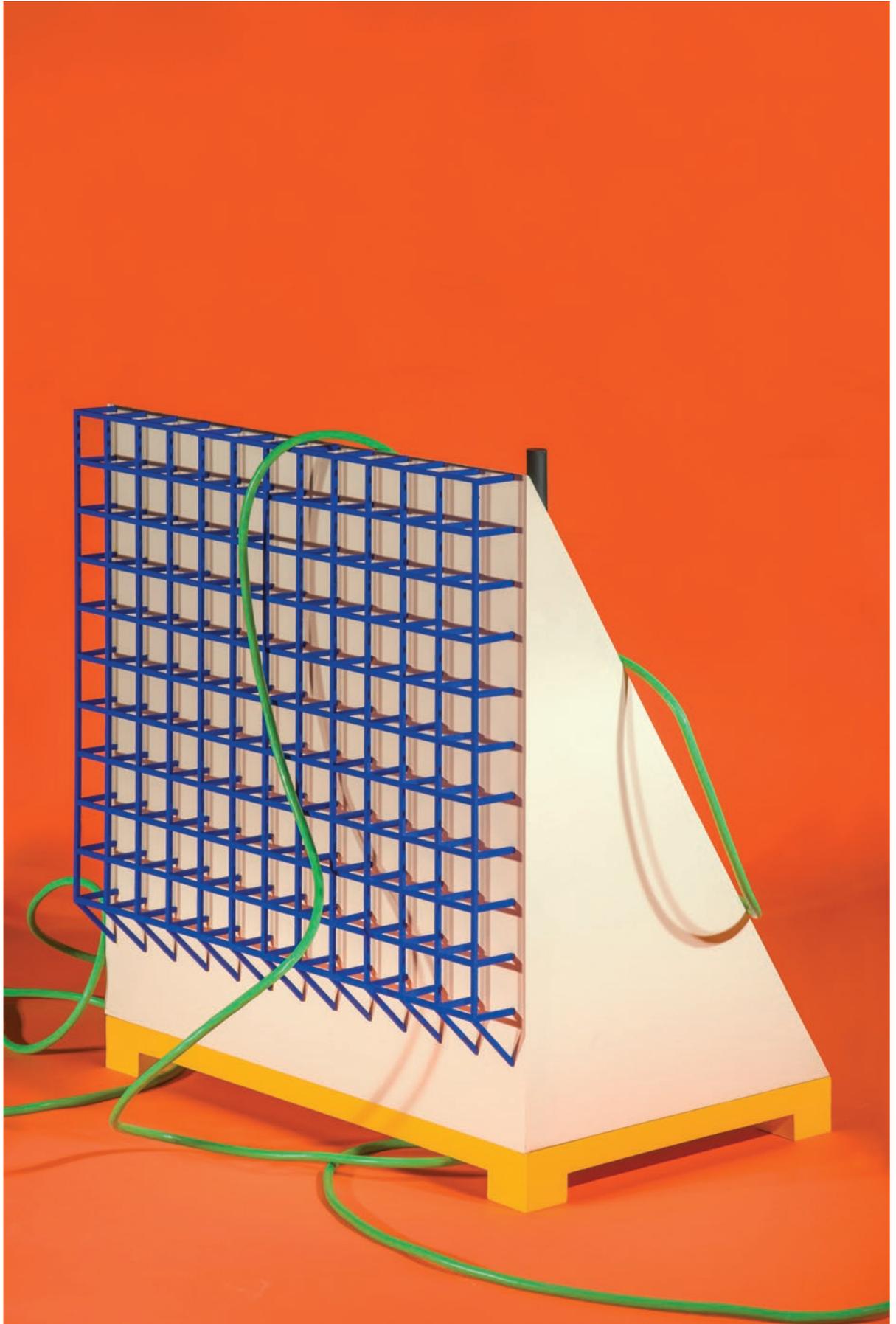
JC: I think in trying to find a chink in the armor, it’s important to first understand the players who are most prolific in the production of architecture. How are they doing it? This is something I am really interested in and why I am looking at both co-working and co-living. They’re very prolific industries, and, although

3. EDUARDO MEDIERO

In a city where private ownership is thought to be an inalienable right and property laws ensure personal gain over public interest, a speculative real estate bubble should be unsurprising. For centuries, Madrid has developed itself around the defense of property laws so ancient they now seem impossible to question. However, with the rise of finance capitalism in the last decades, we have witnessed the emergence of immaterial assets that have challenged the ability of property laws to establish clear boundaries. Land, buildings, and objects have now been replaced by bonds, derivatives, and stocks, producing an imperceivable and limitless financial structure which accommodates the neverending hyperaccumulation of neoliberal economies.

Today, as Madrid's real estate values continue to rise toward another collapse, the accumulative character of its urban condition must be brought into question. To define its negation becomes not only an oppositional action, but a responsibility in defending the common realm over private interests. Against this infinite, totalitarian condition, the project presents a series of isolated products – financial formations that act not as generators for capital, but rather as a parallel real estate network that adopts the algorithmic structure of finance capitalism. Assigning a material representation to intangible financial instruments, these formations suggest a post-property scenario, in which private interests are replaced by common use.







they have their problems, it's important for me to familiarize myself with their practices. Like Eduardo said, if there is any capacity for change that architects can enact, it requires being a cog in this very complex set of financial circumstances that we find ourselves in.

If the first part of my presentation is largely about understanding the ways in which co-living and co-working companies operate at scale, then the second part is about considering how we can operate in those same ways but rethink what is being proliferated, what objects are being placed into existing office buildings, and what the implications of those things are. A co-living or co-working space is not much different than your home, except to say that there are just more of the same objects. This is why I think something like furniture design is important. There are all kinds of assumptions built into the way we sleep next to one another or the way that we sit next to one another. Those things have real political consequences, like a rectangular dining table versus a circular one. That's real—one has a hierarchy and one doesn't. Maybe that's as much as architects can do, but I think that has big implications.

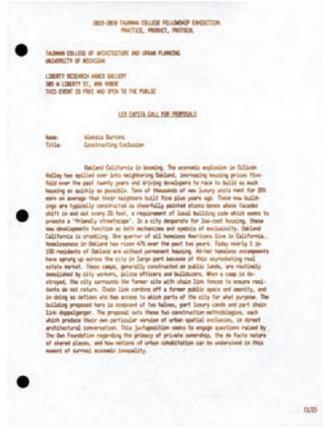
EM: To add to that, I'd say that in order to identify opportunities or deficiencies within the system, you have to understand the system. That's precisely the ethos of this whole exhibition. Immaterial protocols have governed the production of these objects, including their physical and material representation. I think that's something that has come across in all of our work. We acknowledge that with all of these spatial products—offices, furniture, buildings, cities—we always depart from an immaterial abstract system. As architects today, it's our obligation to understand those systems and include them within our expertise.



4. CALL FOR PROPOSALS

The project's scope of possibilities is broadened through a call for proposals that questions architecture's reliance on private property. Seven architecture practices from across the globe, spanning Australia, Mexico, Norway, and the United States, have responded to a brief asking to design a room that considers alternative modes of cohabitation through demanial ownership, or public domain. Each room belongs to a larger system in which the appropriation of architecture through private property is superseded by inalienable, communal protocols.

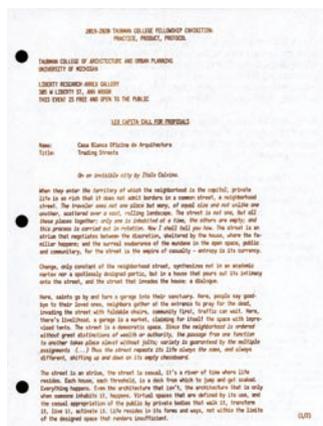
1. Constructing Exclusion – Aleksis Bertoni
2. Trading Streets – Casa Blanca Oficina de Arquitectura
3. (Earth) Room – Guillermo Fernández- Abascal & Christina Deluchi
4. Station – Juhee Park & Noam Sagarosti
5. Observatory – LCLA Office (Luis Callejas and Charlotte Hanson)
6. HYPEBEAST Locker – Matilde Cassani with Leonardo Gatti
7. Set for Possible Rooms – Parasite 2.0
8. The Property Courtroom – Studio Vatn



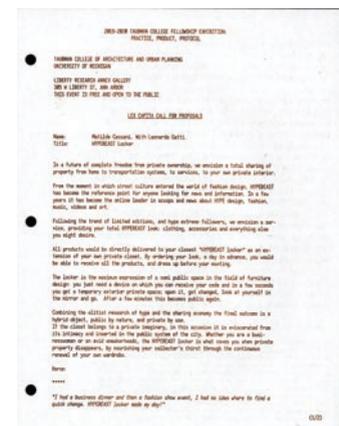
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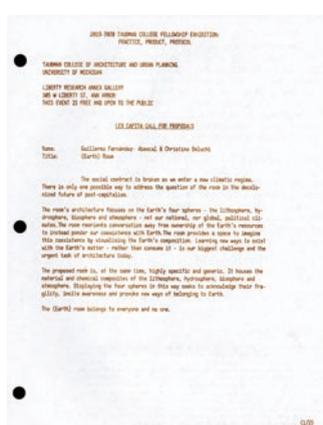
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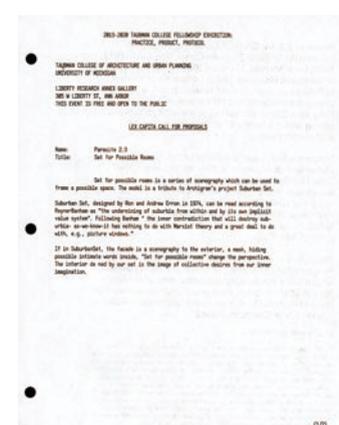
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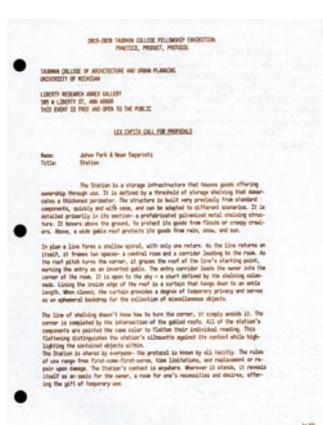
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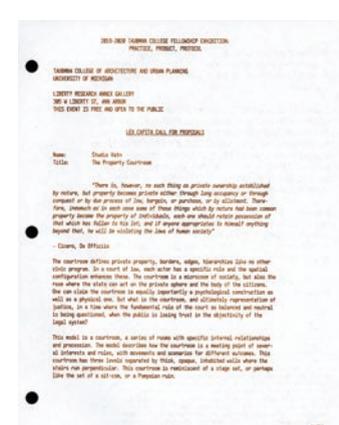
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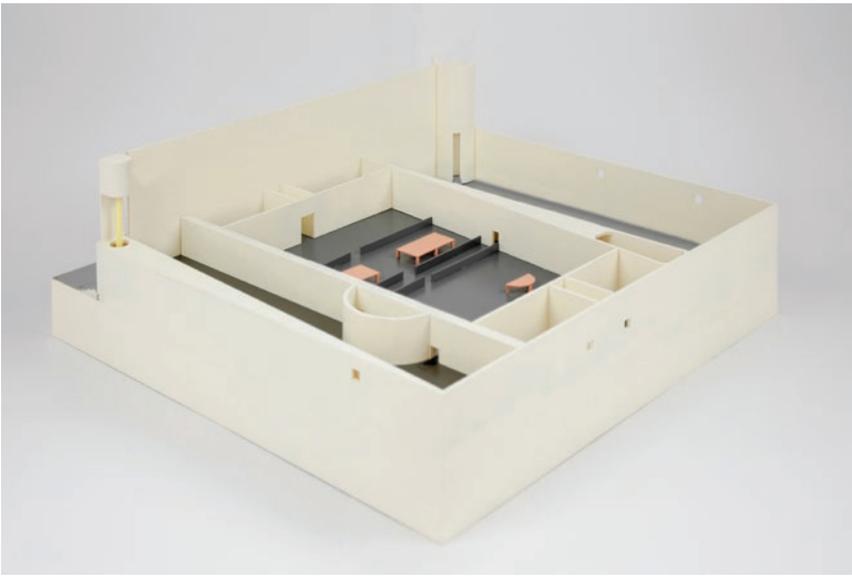


"Ad hoc homeless encampments have sprung up across [Oakland, CA] in large part because of this skyrocketing real estate market. These camps, generally constructed on public lands, are routinely demolished by city workers, police officers, and bulldozers." – (1)



"The Station is a storage infrastructure that houses goods offering ownership through use. It is defined by a threshold of storage shelving that demarcates a thickened perimeter. The structure is built very precisely from standard components, quickly and with ease, and can be adapted to different scenarios." – (4)

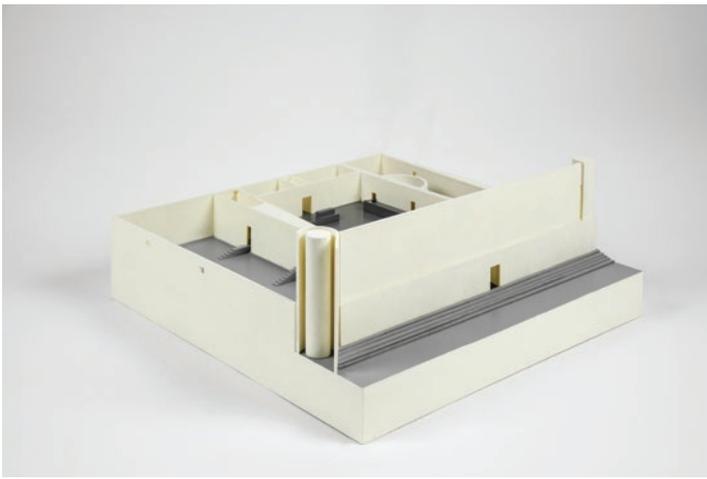




"The courtroom defines private property, borders, edges, hierarchies like no other civic program. In a court of law, each actor has a specific role and the spatial configuration enhances these. The courtroom is a microcosm of society, but also the room where the state can act on the private sphere and the body of the citizens." – (8)

"The room reorients conversation away from ownership of the earth's resources to instead ponder our coexistence with the earth. The room provides a space to imagine this coexistence by visualizing the earth's composition. Learning new ways to exist with the earth's matter—rather than consume it—is our biggest challenge and the urgent task of architecture today." – (3)





"This model is a courtroom, a series of rooms with specific internal relationships and procession. The model describes how the courtroom is a meeting point of several interests and roles, with movements and scenarios for different outcomes. This courtroom has three levels separated by thick, opaque, inhabited walls where the stairs run perpendicular." – (8)

"The building proposed here is composed of two halves, part luxury condo and part chain link doppelganger. The proposal sets these two construction methodologies, each which produce their own particular version of urban spatial exclusion, in direct architectural conversation." – (1)





"The Station is shared by everyone—the protocol is known by all tacitly. The rules of use include first-come-first-serve, time limitations, and replacement or repair upon damage. The Station's context is anywhere. Wherever it stands, it reveals itself as an oasis for the owner, a room for one's necessities and desires, offering the gift of temporary use." — (4)

"We don't think the design of such individualistic room is possible on Earth. Because of this, we propose to you to exhibit this small room we designed to look at the stars and outer space, which is perhaps the only place left where it is possible to aspire to play under the utopian rules." — (5)





"Set for possible rooms is a series of scenography which can be used to frame a possible space. The model is a tribute to Archigram's project, Suburban Set." – (7)

"It houses the material and chemical composites of the lithosphere, hydrosphere, biosphere and atmosphere.

Displaying the four spheres in this way seeks to acknowledge their fragility, incite awareness and provoke new ways of belonging to the earth." – (3)





"Change, only constant of the neighborhood street, synthesizes not in an academic narthex nor a spotlessly designed portico, but in a house that pours out its intimacy onto the street, and the street that invades the house: a dialogue." – (2)



"The locker is the maximum expression of a semi-public space in the field of furniture design: you just need a device on which you can receive your code and, in a few seconds, you get a temporary exterior private space; open it, get changed, look at yourself in the mirror and go. After a few minutes, this becomes public again." – (6)





2019-2020 TAUBMAN COLLEGE FELLOWSHIP EXHIBITION:

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2019-2020 Fellowship Exhibition:

Practice, Product, Protocol

JACOB COMERT,
MATISS GROSKAUFMANIS,
EDUARDO MEDERO

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EDUARDO MEDERO

March 30 –
April 30, 2020

MARCH 30 – APRIL 30, 2020

Liberty Research Annex Gallery

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LIBERTY RESEARCH ANNEX GALLERY
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305 W Liberty St. Ann Arbor, MI

2019-2020 TAUBMAN COLLEGE FELLOWSHIP EXHIBITION:

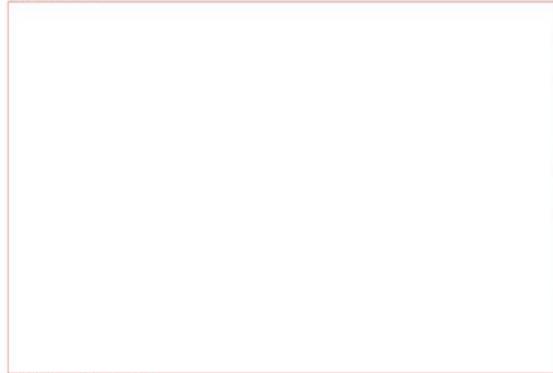
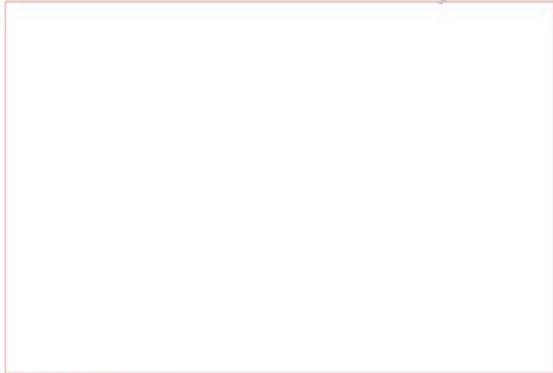
2019-2020 TAUBMAN COLLEGE FELLOWSHIP EXHIBITION:

PRACTICE,
PRODUCT,
PROTOCOL

PRACTICE,
PRODUCT,
PROTOCOL

JACOB COMERT,
MATISS GROSKAUFMANIS,
EDUARDO MEDERO

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MATISS GROSKAUFMANIS,
EDUARDO MEDERO



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ASRG

ARCHITECTURE STUDENT RESEARCH GRANT

The Architecture Student Research Grant (ASRG), initiated by the Class of 2013, provides a unique opportunity for student research. ASRG calls for projects that push the boundaries and possibilities of the discipline of architecture. Successful propositions discover new forms and methods of working, making, and representing. Projects can take many forms—built objects, public installations, experiments, representations, written work, and models for alternative practice. At its completion, the research is presented both as an exhibition and a public lecture.

2020 ASRG RECIPIENTS

Music, Architecture,
and the Spatialization
of Sound

Kaylee Tucker, Tyler
Gaeth & Leonard
Bopp

A2

Towards a Paper
Architecture

Lindsay Barranco &
Jamie Lee

A12

Portable Life
Kit for Nomadic
Beekeepers

Dan Shen

A22

The Architecture Student Research Grant is funded through the Architecture Program Chair's office and through the generous gift of alumni Adam Smith and Lisa Sauvé of Synecdoche, Ann Arbor.

MUSIC, ARCHITECTURE, AND THE SPATIALIZATION OF SOUND

Kaylee Tucker, Leonard Bopp & Tyler Gaeth



Motet surface

Music, Architecture, and the Spatialization of Sound is an interdisciplinary collaboration that aims to explore new modes of engagement between music, architecture, and their respective audiences. While plenty of research has illustrated the parallels between the two disciplines, our work focused on the codified language of scores and construction documents—the instructions produced in order to realize musical and architectural works.

Through a series of exercises and studies, we experimented with techniques to break down the layers of symbology and jargon that compose these critical forms of dispatch, working back and forth between each discipline, to create realizations that convey the qualities of both fields in more accessible formats.

Situating our objectives between the two disciplines, we studied the historical development of musical and architectural notation. The former originated in cuneiform tablets of ancient Babylonian song while the latter emerged in planometric etchings on stone. Centuries of development revealed the gradual formation of a disciplinary-specific lexicon—a unique symbology and theorization that required

RYOANJI

JOHN CAGE

2

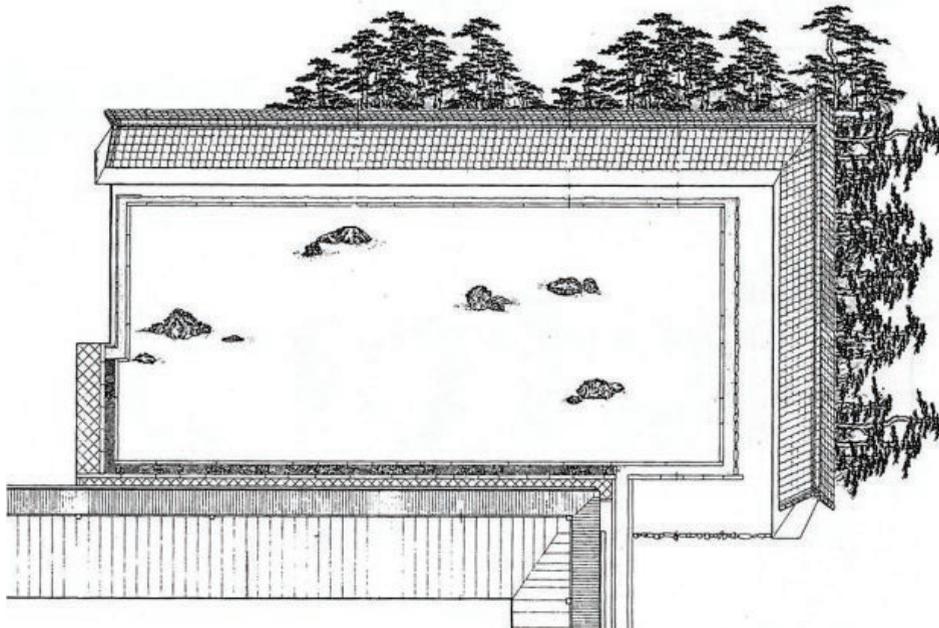
g
a
a#
b

John Cage, Ryoanji.

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Bird's-eye view of the rock at Ryoanji.

Izozaki Arata, Ma: Space/Time in Japan,

Cooper-Hewitt Museum, New York, 1976.

Dry Garden in Ryoanji, Kyoto, Japan.

By Stephane D'Alu, April 2004, is

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specific training in the respective field in order to be understood, interpreted, and realized as musical or architectural works. Temporality and spatiality are also encoded in these documents. The temporal nature of musical performance, at least prior to recording technology, meant that musical works lived on through their scores. In contrast, architectural drawings are usually produced as a means to construct a single, permanent work of matter, rendering the document irrelevant after construction.

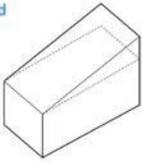
Considering these contradictory origins, we also studied contemporary precedents that directly explore the intersection of spatial and temporal mediums. Among these works, *Ryoanji* by John Cage perhaps most directly implicates the role of notation in producing sonic affect. For the composition, Cage generated prints

of the elevation of the fifteen stones that compose the dry landscape garden of the Buddhist Zen Temple of Ryoan-ji in Kyoto, Japan. Presented in a modified form of traditional notation, performers are instructed to interpret these lines as the basis for their performance, played as glissandi (sliding between pitches) within the range of their instruments. In this piece, the architectural work is the direct inspiration for musical material. These drawings—representations of physical objects—are translated as a form of notation.

One of the critical lessons we borrowed from our study of *Ryoanji* was the generative nature of ambiguity created through the interpretation of spatial elements in the form of musical notation. By hijacking trained musicians' regiment of study, Cage's notation allowed instrumentalists to interpret (read) music directly from



expand



To increase in extent, size, volume, scope, etc?

architectural definition

1. Increase by at least one dimension
2. Thermally, the change of materials in different seasons and weather conditions

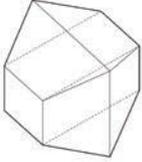
musical definition

1. To add a new idea to a pre-existing idea - i.e. making a phrase longer by adding a new element

musical phrase



inflate



To distend; swell or puff out; dilate?

architectural definition

1. Expand a shape symmetrically as if it were being blown with air
2. Dealing with elastic, sealed volumes, to pump air or other gas in order to create volume
3. The size of something relative to its context, function, convention, and occupants

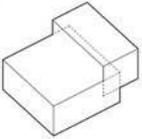
musical definition

1. To add both higher and lower registration

musical phrase



merge



To combine or unite into a single enterprise, organization, body, etc.?

architectural definition

1. To combine two shapes together
2. The intersection of two spaces into a new, single function or volume

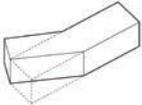
musical definition

1. To combine two ideas - either having them at the same time, or turning two ideas into one combined idea (A+B = AB)
2. A combination of discrete frequencies (building blocks) defined by the intervals between each pitch

musical phrase



bend



To force (an object, especially a long or thin one) from a straight form into a curved or angular one, or from a curved or angular form into some different form?

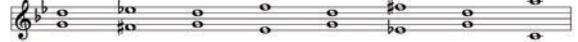
architectural definition

1. To rotate part of an object, changing the angle
2. Re-forming a linear material into some curved shape

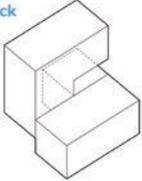
musical definition

1. To alter a pitch/group of pitches in registration - bend up or down. OR - in terms of speed, slow down or speed up

musical phrase



interlock



To interweave or interlace, one with another?

architectural definition

1. To take two shapes and fit them together, using positive and negative space to "lock" them together
2. Joinery method in which two or more components connect by co-mingling

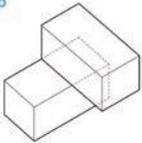
musical definition

1. Take two ideas that are complimentary and put them together. Steve Reich "Music for Pieces of Wood" is a great example.

musical phrase



overlap



Extend over so as to cover partly?

architectural definition

1. Stack two shapes
2. Converting the edge of one material or component with another

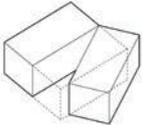
musical definition

1. Put a contrasting idea on top of another idea, in the middle of the first idea.

musical phrase



rotate



Move or cause to move in a circle around an axis or center?

architectural definition

1. Move a shape (or part of one) about an axis
2. Changing the orientation of a component

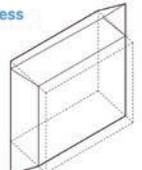
musical definition

1. Rotate a pitch set with, for instance, a tone row

musical phrase



compress



To flatten by pressure; squeeze or press?

architectural definition

1. The opposite of inflate—instead of more volume, there's less
2. Apply pressure to make a material or mixture more dense

musical definition

1. Shorten time over which an idea is expressed

musical phrase



the elevation of the temple's garden in a way that was equal parts methodological (analytical) and generative (interpretive).

For our experiments in translation, we used a set of verbs and their contextual definitions as the fertile ground for subsequent translations. For the spatial component of this exercise, we turned to Anthony Di Mari and Nora Yoo's *Operative Design: A Catalogue of Spatial Verbs*, a book that presents 30 base verbs and how they volumetrically—or spatially—operate.¹ We proceeded to define each verb from a non-disciplinary standpoint. Adding to these dictionary denotations, we each wrote disciplinary-specific definitions, defining how each term would be used in both music and architecture. Because each of us came with different understandings of the terms, we amassed multiple definitions that we then used in our next steps.

We identified eight of these verbs that—along with their accompanying definition triads—offered compelling

spatial and temporal implications. Beginning with a spatial realization of each verb from Di Mari and Yoo's diagrams, Bopp composed a short musical motif, which was subsequently manipulated based on the action of each verb.

Tucker and Gaeth began developing ways to re-translate the phrases back into spatial form. To begin, Tucker and Gaeth established a grid system based on the existing lines of a musical staff and the smallest common note length from the phrases—a sixteenth note. With pitch shown on the y-axis and time shown on the x-axis, Tucker graphed each note written in Bopp's compositions. Each point is located at the time where the note begins and connected in one continuous line to subsequent pitches, producing the final graphic representation.

Through this process, the team found that information represented in the musical notation system can be misleading to those outside the discipline. While all

musical notation



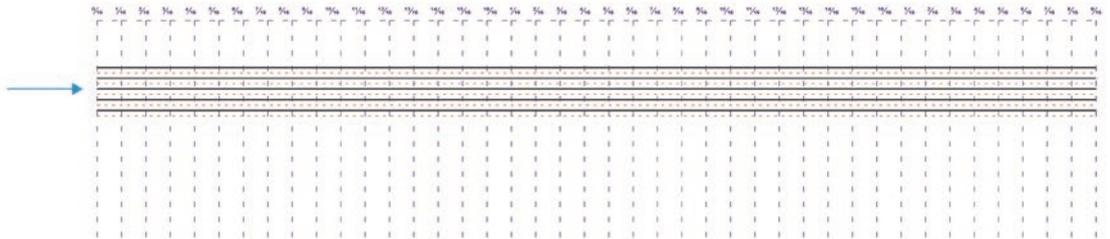
staff



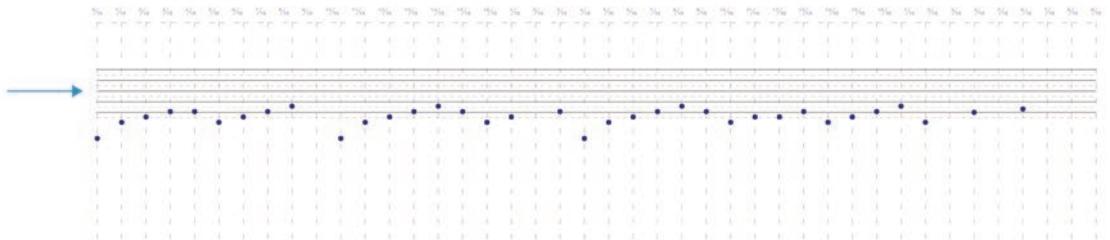
add lines at mid-points



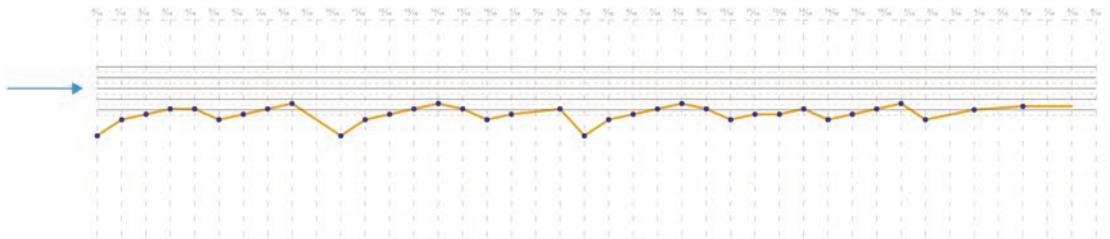
time markers,
1 unit/16th note



add points for each note,
using time markers to show
note length



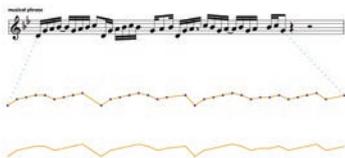
connect points



final graphic representation



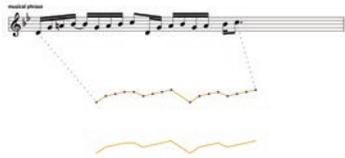
expand



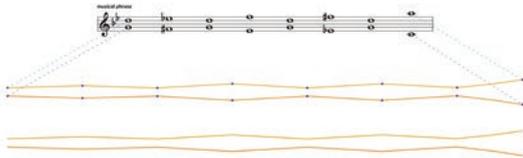
inflate



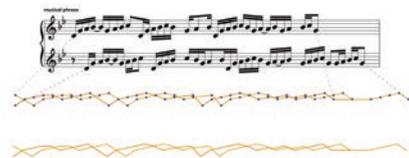
merge



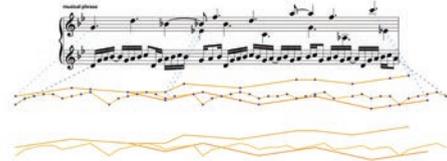
bend



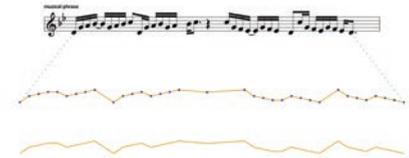
interlock



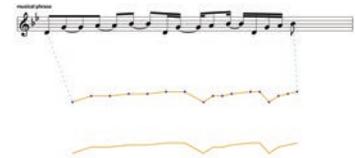
overlap



rotate



compress



Score-graphic comparison

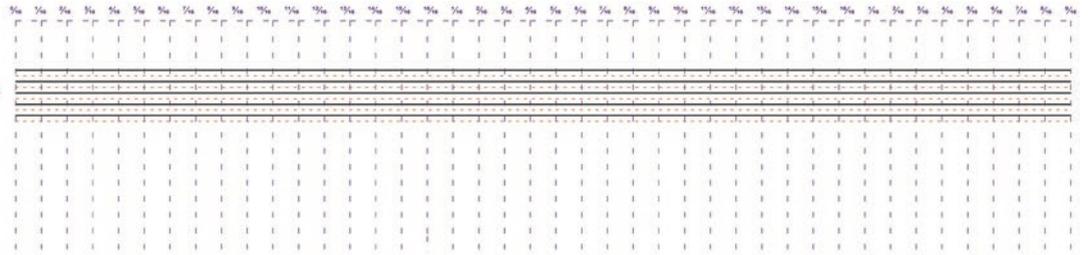
of the phrases appear to be the same length when written out on the score, representing them graphically revealed discrepancies. By representing the musical phrases through a method in which time is equally spaced, longer notes require more horizontal space when illustrated. A phrase like “inflate” is longer in duration than “merge.” Because they do not rely on disciplinary notation—like the symbols that show note length—these representations begin to make the trends readable for non-musicians.

Building from the process used to translate the verbs, the team wanted to develop the procedure in a new context. A sixteenth century motet composed by Thomas Morley was used as the starting media for this next experiment because of the simple three-note motif that Morley inserts between each of the six voices

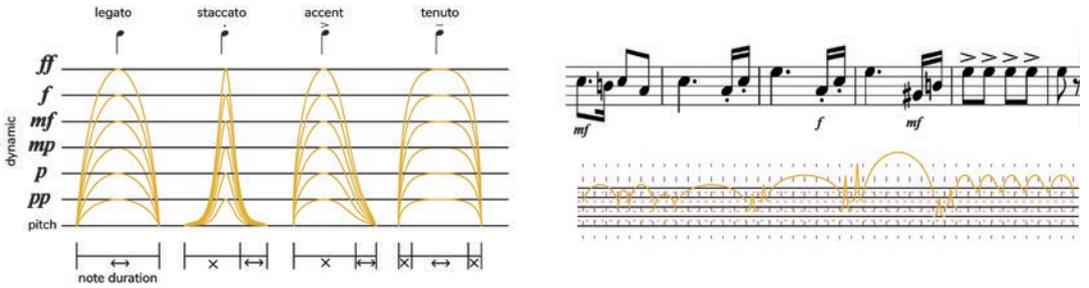
throughout the progression of the piece. Building from the earlier process, the team maintained the same graphic structure as before, but modified the y-axis component to describe the articulation and volume of each pitch in addition to its frequency. Translating the score using this system, Gaeth constructed a line graphic for each of the six voices, spaced these components evenly, and generated a surface geometry based on the parameters of those segments.

Bopp then “translated” this surface back into a musical soundscape. With the goal of relying on each new disciplinary translation, Bopp based the composition on the interpretation of Gaeth’s surface geometry alone, not considering Morley’s three-note motif or the sonic qualities of the original piece. Bopp’s composition roughly treated the y-axis of Gaeth’s surface as pitch

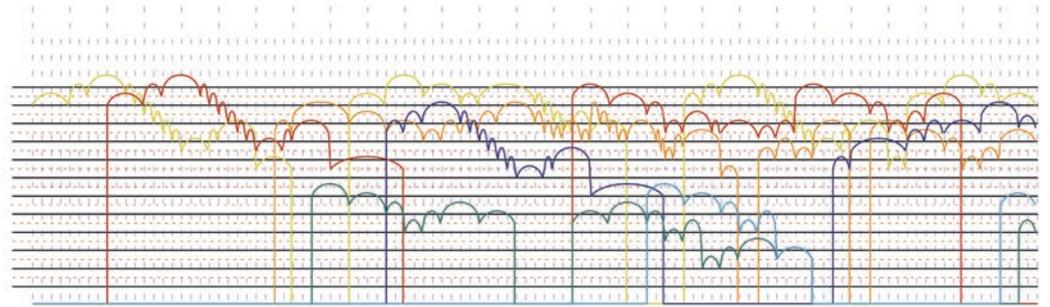
time markers,
structure borrowed from
previous process



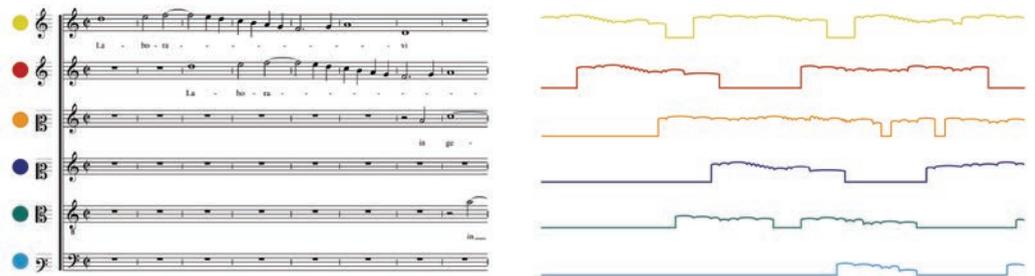
add articulation to
pitch and duration



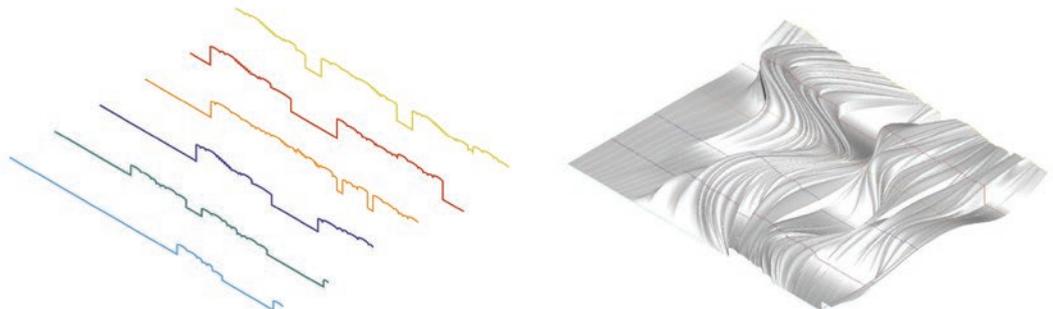
processed motet
after translation

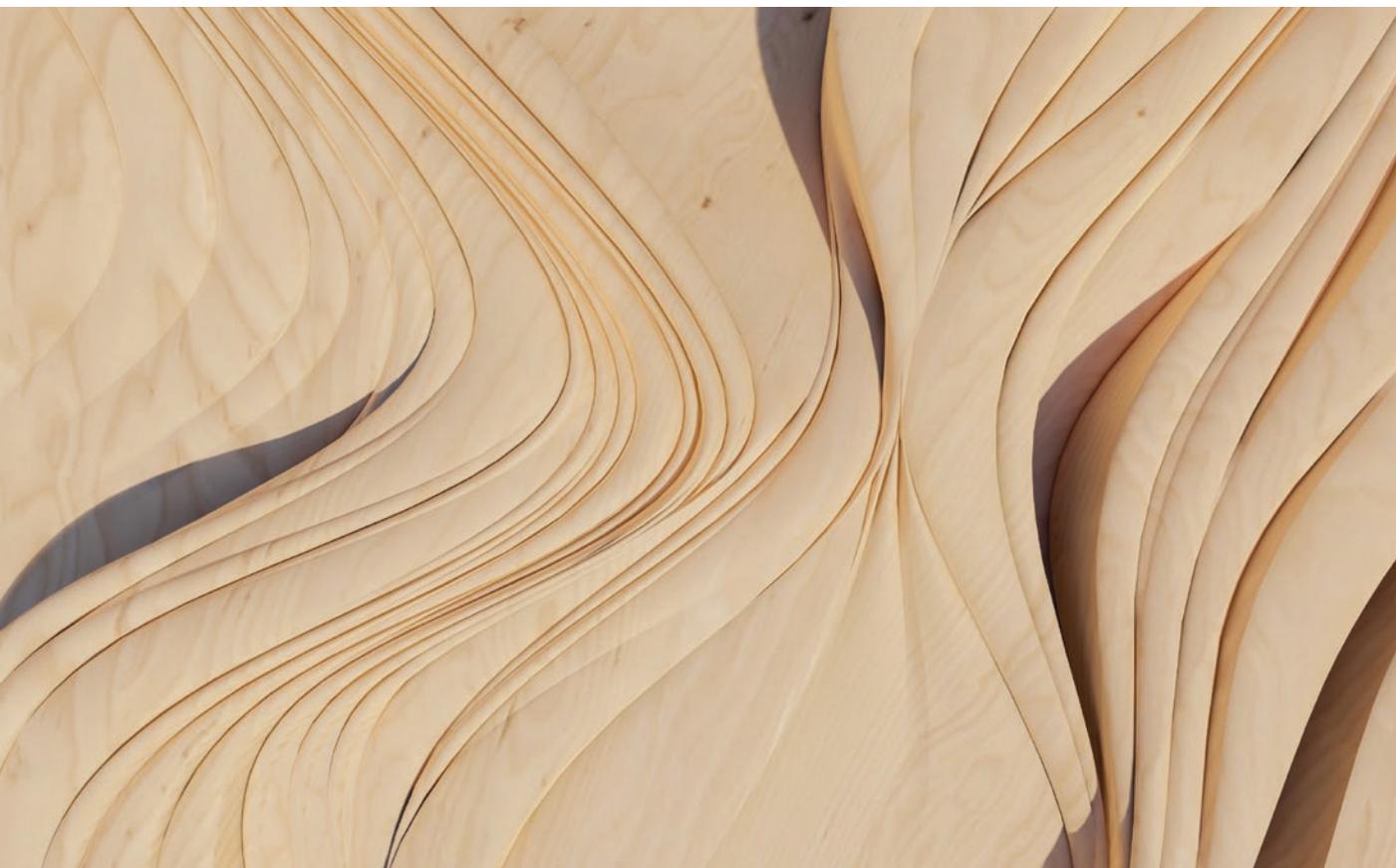


individual voices
extracted as lines



surface created
between lines



*Motet surface*

and the x-axis as time, with each new voice entering at a higher pitch. Where the contours grew closer together, so did the pitches—where the contours grew more distant from each other, the pitches expanded in repertoire.

Through the process of translation, re-translation, and re-re-translation, the team explored the generative potential of mismatching disciplinary and non-disciplinary knowledge.

As an exploration of representation and re-representation, this process attempted to tease out connections between the two disciplines. We found that this process of re-translation leads to evolving results, meanings, and interpretations.

TOWARDS A NEW PAPER ARCHITECTURE

Lindsay Barranco and Jamie Lee
Advisors: John McMorrough and Catie Newell

Facing the realities of climate change and the inefficiencies of the waste stream in the age of the Anthropocene, interests in sustainable building materials and material ecology are now unprecedented. Where do opportunities exist for innovation in the life cycle of materials when considering system intervention and radical modes of construction for both form and formwork?

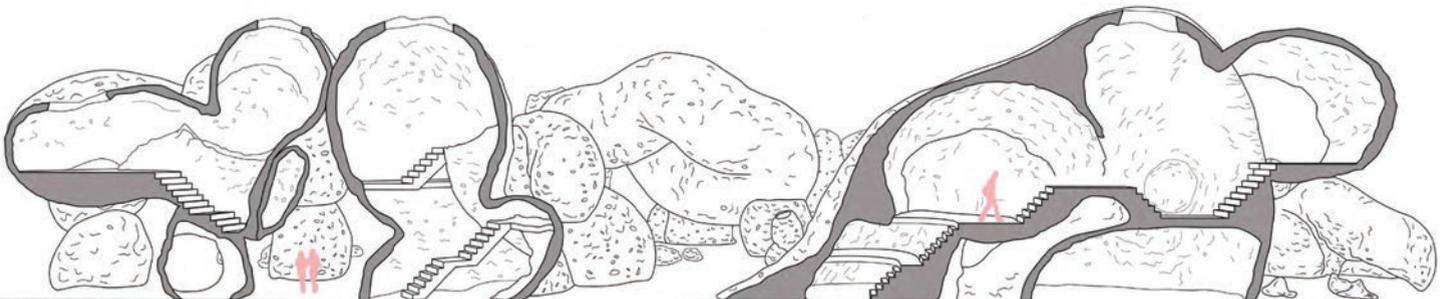
Our research investigates innovative form-finding processes and fabrication methods, exploring the performative qualities of thermoplastic and elastomeric materials as pneumatically controlled formwork using scripted digital simulations and analog fabrication methods. Inspired by experiments of paper scaled models created through balloon formwork, we explored possibilities in scales and form through the fabrication of pneumatically controlled formwork using latex rubber and thermoplastics. Consuming fewer resources and time in comparison to conventional formwork systems,¹ pneumatic formwork systems use stretch-resistant membranes as vessels of air supporting structures for material casts.

This construction technique was first patented by Toichi Nose in 1926 for the production of culverts and concrete pipes.² Subsequently, after Wallace Neff pioneered construction of cost-efficient houses using pneumatic formwork in 1941,³ applications of pneumatic formwork emerged in construction techniques,⁴ dome-like structures,⁵ concrete shells,⁶ prefabricated concrete panels systems,⁷ and ice shells.⁸ These research precedents highlight the potential of using pneumatic formwork in large-scale, low-cost, and reusable applications to generate complex curved forms.



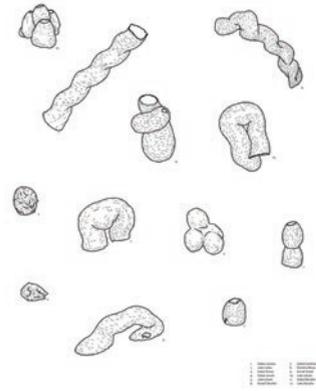
Three minute film produced for the exhibition

Ephemeral or permanent? This project interrogates the possibilities of creating an urban flagship store that embraces the transient quality of an ephemeral paper construct and a permanent structure.





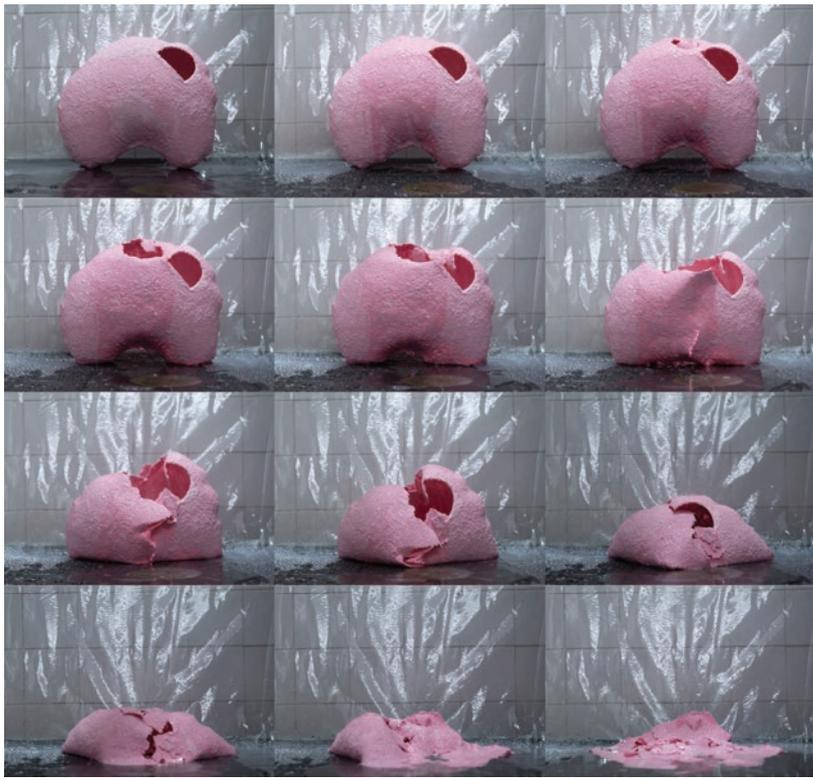
Fabrication involving new materials and systems required project planning and goal setting in the early phases of this research. Our goals included (1) conducting the research and procurement of a range of materials with a series of prototype experiments during early material investigations; (2) identifying the appropriate material, equipment and pneumatic fabrication methodology with the highest percentage of fabrication success without any air leaks; (3) establishing a workflow with a simplified fabrication process, equipment program and methodology that fit within our budget and technical availabilities as certain industrial materials involve the availability of appropriate industrial tools. The unconventional nature of thermoplastic and elastomeric materials compelled us to conduct our own material sourcing in the areas of boating, fashion, industrial, and manufacturing sectors where thermoplastics and elastomers are commonly used. The pneumatic formwork was fabricated by the adhesive seaming of 2D panelized latex membranes under compressive pressure for the formation of air-tight pockets, while incorporating air valves, commonly used for inner tubes, as points of entry for air. Because our forms were determined by the manipulation of elastic stretch-resistant latex, we developed a computational design tool that would digitally simulate the approximation of material characteristics of the intended shape and fabrication method through a physics-based modeling approach. Using algorithmic modeling plug-ins such as Grasshopper and Kangaroo, these integrative mechanisms helped to take into account the material behavior that impacted certain considerations of functionality and aesthetic-geometric optimization.



The impulse to use paper as a built-form in this research lies in its ubiquity as the largest waste component handled by American waste management services. In 2018, 46 million tons of paper were recycled while 17.2 million tons of paper ended up in landfill, accounting for 11.8 percent of landfill in the United States.⁹ These figures reveal the significant unexplored potential of waste usability within our material supply chain. In the field of architecture, our practice traditionally preaches monumentality and permanence as phenomenological representations or narratives of those in power. In the present context, permanence is a construct of extractive capitalism. Our research examines paper's agency as an omnipresent, low-cost material artifact of capitalist production, underlying its potential to subvert ideas of permanence. Engagement in the productive reuse of inexpensive recycled paper reinforces our exhibition's performative act of challenging conventional material extraction processes in the built environment and subverting the supply chain.









A17



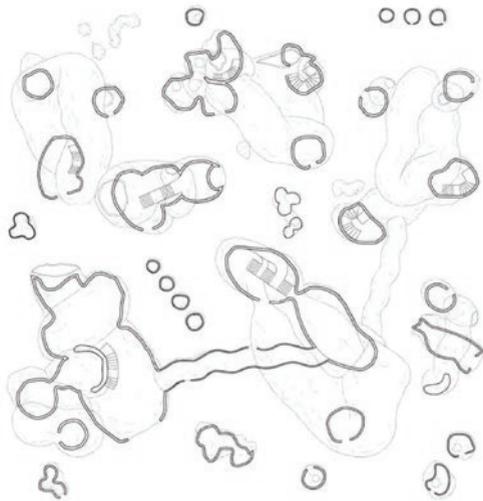
The exhibition contains a set of interim furniture objects, made from paper waste collected from Taubman College's recycling and trash bins during the COVID-19 lockdown. Ironically, when physical models were no longer required, the currency of paper material diminished. It instantaneously lost its relevance as a common production staple with fresh pieces of material finding their way into recycling bins. Engaging in methods of image reconstitution, the objects were designed to reframe the value of post-consumer waste and reimagine its possibilities through playful and whimsical forms. The inflatable formwork encouraged reusability through their repeated inflation and deflation while the paper objects were easily disintegrated by water. The decomposition and reconstitution of our paper objects signified the fluctuating value assigned to material temporality and suggests a new utility of waste that tends to be disregarded.



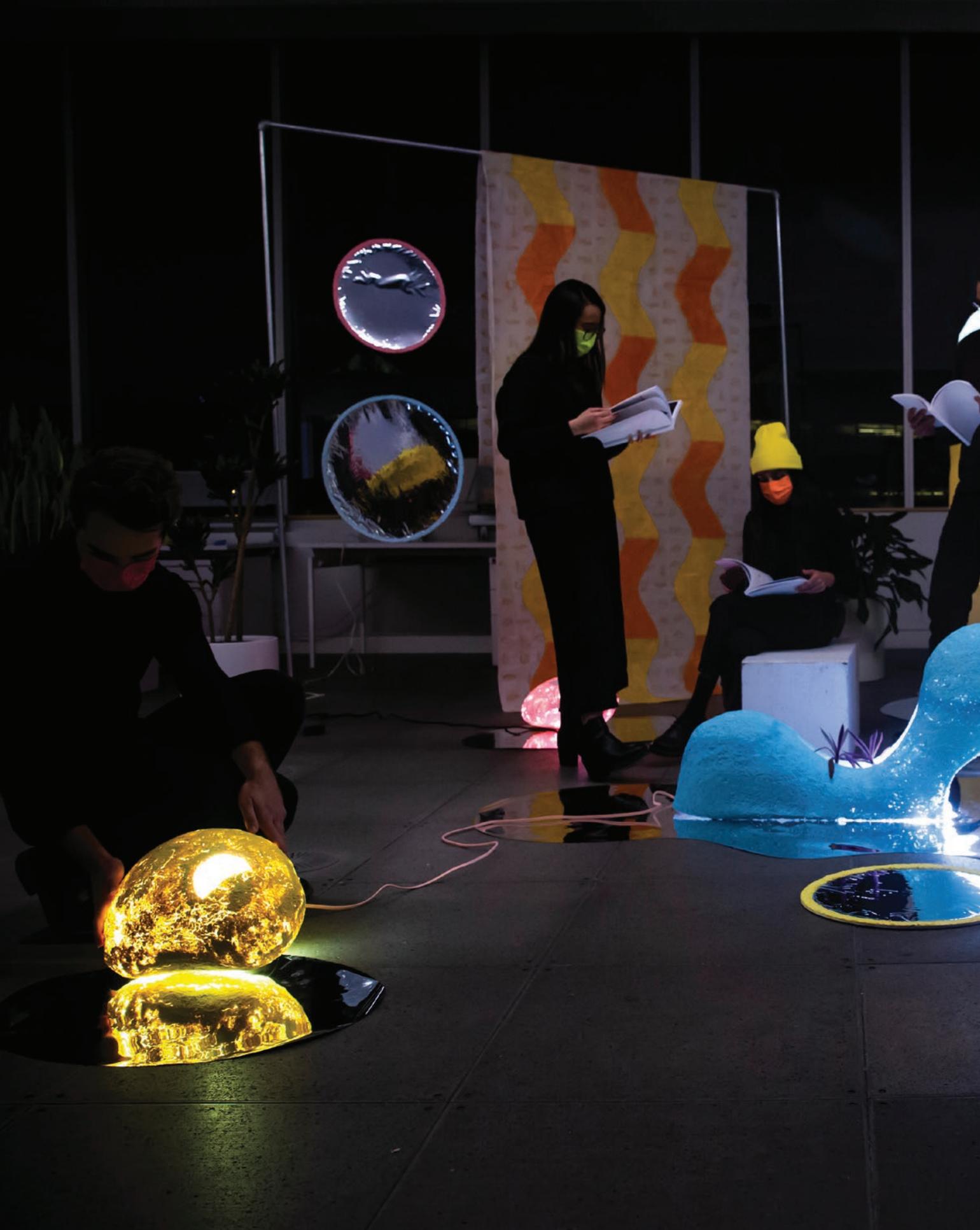
Celebrating ephemerality as a counterpoint to fixity, *Towards a New Paper Architecture* conveys the range of possibilities when interdisciplinary research is applied to concepts of sustainability and material ecologies. The reflective nature of the work places as much emphasis on methods and temporality of its production as much as in its completion. Techniques of image manipulation in film and photography encourage viewers to imagine an alternative material economy. Recognizing the archaic systems that no longer serve us is a first step toward more ecologically-sensitive processes. Systemic changes in the age of the Anthropocene necessitate a socially-conscious paradigm shift through interdisciplinary practices and innovative systems intervention. Transforming perceptions of waste as both consumers and designers is key to transcending the systemic issues of our material economy—it is time for us to embrace the value of waste. The exhibition imagines an alternative world in which waste can be reconstituted as productive buildings and objects through innovative approaches to waste reuse.

We would like to thank Adam Smith and Lisa Sauvé of Synecdoche Design Studio for seeding the Architecture Student Research Grants at Taubman College and funding our research ambitions. We would like to thank the Chair of the Architecture program, McLain Clutter, and Programs Assistant Laura Brown for their generous administrative support and assistance during the radical circumstances of the pandemic; our academic advisors John McMorrough and Catie Newell for their timeless advice; and last but not the least, our kind and lovely friends, Nikki Cantarero, Waylon Richmond, Nicole Urban, Mitchell Evans, Luna (Cat), Christy Au, Victor Mardikian, Tom McCormick, Christine Darragh, and Xie Ruxin, for supporting us in every possible way.

- 1 Kromoser, Benjamin, and Huber, Patrick. "Pneumatic Formwork Systems in Structural Engineering." *Advances in Materials Science and Engineering* (2016): 1-13.
- 2 Nose, Toichi. "Process of Constructing Culverts of Pipes of Concrete." U.S. Patent 1,600,353, (1926).
- 3 Neff, Wallace. "Improved Method of Erecting Shell Form Concrete Structures." U.S. Patent 2,270,229, (1941).
- 4 Bini, Dante. "Method for Erecting Structures." US Patent 3,462,521, (1969).
- 5 Heifetz, Haim. "Bauen and Wohnen." *Internationale Zeitschrift* 26, no. 6 (1972): 262-263.
- 6 Isler, Heinz. "New Materials for Shell and Spatial Structures." Proceedings of the IASSWorld Conference, Madrid, Spain, (1979).
- 7 Dallinger, Sonja, and Kollegger, Johann. "Pneumatic Formworks for Shell Structures." 8th Fib PhD Symp, Kgs Lyngby, (June 2010).
- 8 Kokawa, Tsutomu. "State Of The Art Developments In Ice Shell Construction." Engineering: Cornerstone of a Sustainable Environment, Edmonton, Alberta (August 2005).
- 9 Environmental Protection Agency. "Advancing Sustainable Materials Management: 2018 Fact Sheet." December 2018.



The plans illustrates the experimental possibilities of these paper pavilions constructed through a developed syntax that is coagulated to stage an urban experimentation.





PORTABLE LIFE KIT FOR NOMADIC BEEKEEPERS

Dan Shen

Portable Life Kit for Nomadic Beekeepers attempts to construct an authentic visual understanding of the working conditions and living environments of nomadic beekeepers in rural China. The project consists of a short film, a collection of videos of rural beekeepers' living environments, and an installation titled "Portable Life Kit" that seeks reinterpret beekeepers' improvisational practice of "portability."

It is evident that our architectural knowledge, built upon an understanding of urbanism, fails at explaining

rural conditions. The countryside occupies very limited space in architectural discussions in comparison to the expansive area it occupies around the world. Instead of providing approaches or solutions, this project attempts to understand China's rural regions and learn from the wisdom of the people who occupy these environments.

China is the world's largest producer of honey and practitioner of beekeeping, with more than 300,000 beekeepers nationwide. Ninety percent of China's beekeepers keep Italian bees that provide longer nectar







collecting seasons and better economic outcomes. Honey farmers transport bees five to eight times a year from southwest to northwest China, chasing flower seasons in an attempt to collect as much nectar as possible. During their transient journey, they individually assemble temporary accommodations with light, cheap, and accessible materials such as tarpaulin, wood, metal boards, and other discarded industrial products. The temporary spaces house nearly all of the beekeepers' basic needs with cooking, sleeping, and storage areas.

Limited to travel restrictions due to the COVID-19 pandemic, online video platforms popular in rural China became an important component of the research.

The profession of beekeeping is often lonely. As a result, beekeepers share their lives through video as a means of connection across the profession. They also livestream their daily work to document the process by which their honey is organically produced as a way to market their products to potential consumers.

By collecting recorded videos and interviews, the short film documents how beekeepers in rural China work, eat, sleep, travel, play, dance, and socialize. The video attempts to construct visual relationships between non-urban environments, humans, and bees. At the end of the observation, the beekeepers' narratives and familiarity with the countryside informed the design of the kit.



Questions developed gradually during conversations with nomadic beekeepers:

How is "portable" defined to beekeepers who on average carry 160 pounds of bees and honey, repeating this 80 times within three hours as part of their daily life?

How is "life" defined when the designer is in an urban context and distanced from beekeepers' living environments and working conditions?

How is "kit" defined to beekeepers who utilize improvisational materials like discarded metal boards as part of their nomadic living environments? Can prefabricated parts be improvisational?



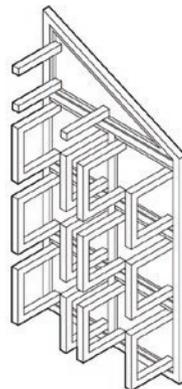
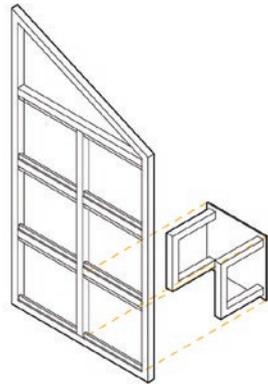
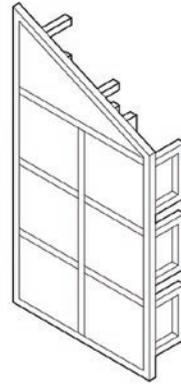
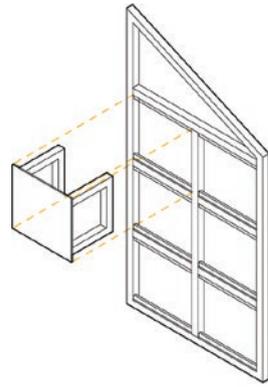


Photograph by Hailang, a beekeeper in Jiangsu, China.

A beekeeper posts a video online, sharing the process of hanging living accessories on a constructed “wall,” which, for beekeepers, often refers to the frames of their tents. To optimize space, beekeepers make use of wire, ropes, clothes hangers, pots, calendars, mirrors, and homemade sausages strung out to dry. Simple architectural elements are used to create a dense space, where beekeepers work, cook, sleep, eat, gather, sing, dance, and extend their domestic life into the wild. Inspired by the flexibility of beekeepers’ tents, the installation translates a similar sense of improvisation. The kit consists of multi-purpose units hanging upon a fixed frame, allowing the reconfiguration of parts to accommodate the needs of sheltering, gathering, and storing.

I would like to express my gratitude to Adam Smith and Lisa Sauvé of Synechdoche Design for their support of the Architecture Student Research Grants, to Jianxin Yi and Jiewen Jiang for their assistance in the fabrication of the installation, and to all the beekeepers who helped me with research and video production. The tremendous support I received made working on this project such a wonderful experience.









Postscript

A postscript is defined as a written addition to something already finished. And each year, like clockwork, I compose some reflections as the journal is at pre-press just weeks prior to end-of-year reviews.

Not this year. Following graduation, as compression gave way to release, the work resumed, with the entire book undergoing revisions and refinements – a vast 200-page postscript all its own. Finally, in summer, most of the book is now printed as the press patiently awaits this text.

In 1992, the British band Ride released their second LP *Going Blank Again* – a triumphant sophomore effort that rivaled their first release. That same year I enrolled in the architecture program at Michigan as a junior. It marked a subtle, yet seismic shift in my education (and life!) I recall being especially enthralled after receiving a copy of *Dimensions 6* on the first day, thinking “you can make a magazine in architecture school!?” In the studio, my CD player rotated among a series of shoegaze albums, while my own gaze was steadily down upon the drawing board.

I am reminded how much things have changed as monochromatic models and crisp ink drawings dot the pages of my now faded and stained copy. While twenty-seven students are credited as part of the *Dimensions* staff that year, in contrast to the band of five students that made this book, the ambitions to document the concerns of the day have not.

Time did strange things this past year, and the so-called ‘great pause’ has proven sticky and turbulent as we unpause. The staff of *Dimensions 34* produced a marker for us from which to re-evaluate our current condition as we chart possible ways forward. The discipline still has a lot of work to do, and as this time gives rise to our future, I’m reminded of a few lines from Ride’s opening track:

*Wheels turning around
Into alien grounds
Pass through different times
Leave them all Behind*

*Just to see
We’ve got so far to go
Until we get there
Just let it flow*

July 2021

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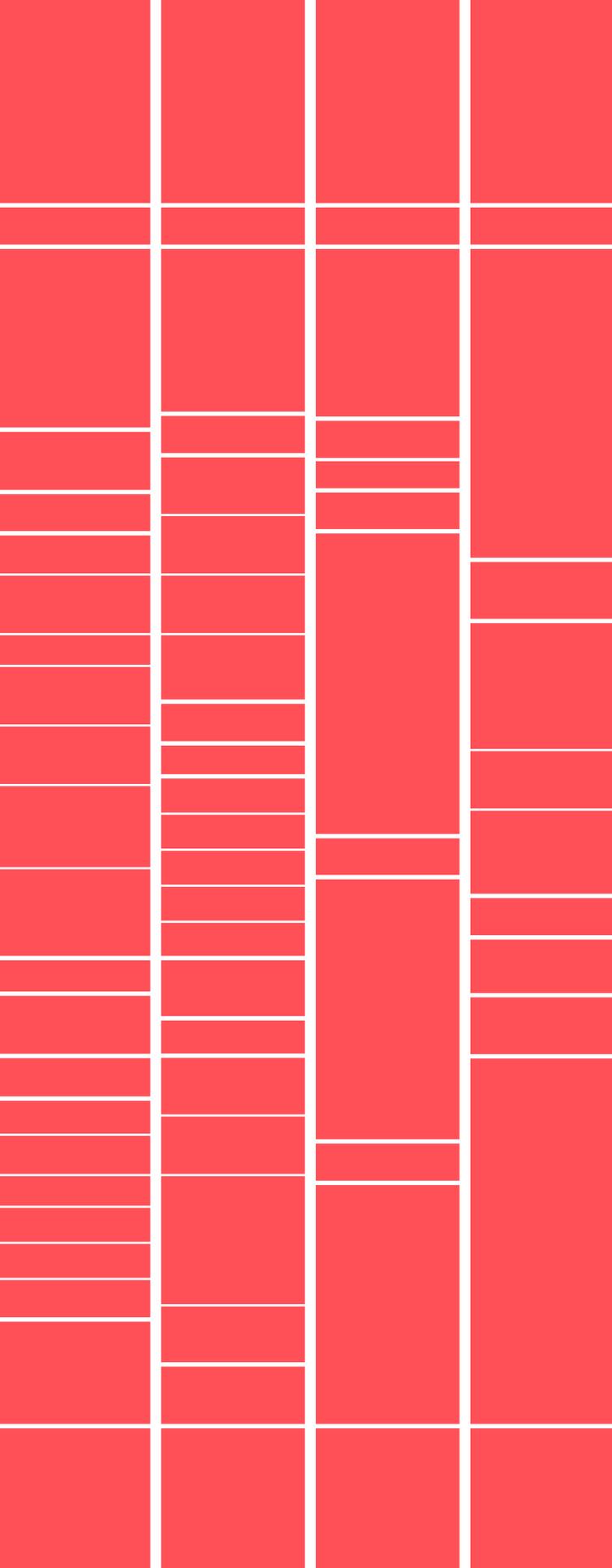
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