LETTER FROM THE EDITORS

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Throughout the evolution of architecture, one thing has become increasingly essential: collaboration. The model of the lone genius is outdated, superseded by the contemporary collective. Architecture is a collaboration between many players— professors, students, professionals, clients— and it's a skill we're always working on; trying to hone our craft towards diverse ends. It's easy to make a drawing, but to make a drawing that responds to each voice within a team—that's a new challenge. Answering 39 voices, manifested as a collection of works in a singular publication was the task *Dimensions* took on, as a team. Here's a look into this "modern" team—

Dimensions 28 was comprised of:

> 12 staff members
> 1 Chair of Architecture
> 2 faculty members
> 5 Wallenberg contributors
> 7 Thesis contributors
> 4 interviewees
> 4 RTM teams
> 3 fellows
> 1 advisor

Our task was to ensure that these voices coalesced into a cohesive record of the work produced at Taubman College.

So how do you manage the workflow that is associated with a disparate body of work and a large team assembling this work? This year, *Dimensions* implemented a new messaging platform for team communication, called "Slack." When you have a group of twelve staff members, it's easy to get lost in the cacophony of words, images, and ideas. We needed something to gather us virtually, filling that void between our central node at Taubman College and anywhere else we might wander off to. It kept us connected as a team and it also kept us connected with the voices of those represented in this volume. Every channel of communication—printing, layout, tasks, et cetera—has a place within the larger conversation that spans for eight months.

Our Slack conversation culminated at:

> 3,500 messages back and forth
> 200 MB of shared documents
> 16 channels of conversation

Our hope is that the conversation doesn't stop after those eight months, but rather, it continues with you, the reader. So, as we often say within the team when we leave our shared *Dimensions* space and head out into our individual lives, "See you on Slack." ■

@bresheenadavis, @dextebro, @gjdoman, @klgurt, @akargl, @ekpierce, @gsardana, @cocoxxds, @weity, @yurongwu, @johnyoon, @wendyz

April 9th, 2015

FOREWORD

SHARON HAAR | CHAIR OF ARCHITECTURE

Sharon Haar is professor and Chair of the Architecture program at Taubman College. Her current research investigates the role of entrepreneurship, design innovation, and global networking in the transformation of architectural practices devoted to social activism and humanitarian relief. Haar's publications include: *The City as Campus: Urbanism and Higher Education in Chicago and Schools for Cities: Urban Strategies*. Her articles and book reviews appear in journals including the *Journal of Architectural Education*, the *Journal of Planning Education and Research*, the *Journal of the Society of Architectural Historians*, *Architect's Newspaper*, and *Architectural Design*. Her recent book chapters appear in: the Urban Ecologies Reader, Embodied Utopias, Shanghai Transforming and On Location: Heritage Cities and Sites. She has presented her research in conferences and lectures across the United States, Latin America, Asia, and Europe.

Professor Haar is the recipient of numerous grants from institutions including the Graham Foundation, Richard H. Driehaus Foundation, Fannie Mae Foundation, National Endowment for the Arts, and American Architecture Foundation. She is also the former Reviews Editor for the *Journal of Architectural Education*.

Professor Haar has taught at Parsons School of Design in New York and at the University of Illinois at Chicago, where she was professor of architecture and the Associate Dean for Research at the College of Architecture, Design, and the Arts. She received her Bachelor of Art from Wesleyan University and her Master of Architecture from Princeton University.

This is Haar's second year as Chair of the Architecture program and she is currently the coordinator of the 2014–15 Wallenberg studio.

What is the most exciting phase of a project?

Teresa Galí-Izard: "When you discover the potential of the place."

Graham Pullin: "…when you are starting to get into detail that things are still able to be changed and are still quite fluid."

Farshid Moussavi: "I think towards the middle is where the main direction of the project is most defined. But then come a thousand new elements that you have to put in and see how they fit or how they can add to the project. It's when the physical materials come in, when the structure comes in…"

Julie Iovine: "…one that never really get's covered, which is six months to a year after it's been used and it's one of the great tragedies of all architecture…that no one does that story."

Finding the meaning of a project, working through it, seeing how it is used. Funny how no one mentions the final review, because, of course, these interviewees are practitioners and critics. For them the project is not a speculation but, ultimately, a building, a landscape, an artifact in the real world. As Moussavi says: "I think the unpredictability of the future is what makes us dream. I'm not interested in speculating about the future; I'm interested in making it." The goal of speculation is the necessity of creating our future built environment.

This is the necessary enigma built into the education of an architect; representation never meets its twin, the thing in the world. For the most part, the student's project remains speculation. But as hard as it is to remember, the final review, the drawings, the models, the carefully crafted texts are not the endgame. We will not see all of the possible futures illustrated through *Dimensions* 28 realized in the world or occupied by their highly theorized inhabitants. Yet they will live on, not merely within this document of a particular moment at Taubman College or as speculations but as propositions to the future. These propositions, of necessity, must be played out through that middle, fluid stage after graduation when the drawings are removed from the wall and ideas and values are tested in the world. ∎

Sharon Haar
April 14th, 2015

WALLEN

Neal Robinson teaches design and construction logics in both the graduate level Master's Thesis sequence and the undergraduate core curriculum. He is the current coordinator of the Summer 3G Design Fundamentals course as well as Design Fundamentals 1 for undergraduates. His recently taught classes include: Thesis Preparatory Seminar, Thesis Design, and Building Anatomy & Technologies. Robinson also participates as a faculty coordinator for University of Michigan's Design + Build Workshop—an occasional program in which Taubman College faculty pair with architecture students to design and construct intensive small-scale environments in and around the collegiate campus.

Robinson received his Master of Architecture from Rice University and his Bachelor of Science in Architecture from the Georgia Institute of Technology.

Robinson was the faculty coordinator for the Wallenberg studio in 2012-13. He also organized the Architecture Student Show in both 2014 and 2015, in which faculty select projects representing the best of student work in both the undergraduate and graduate curriculum, at the beginning of the winter term.

ON WALLENBERG AT TAUBMAN

The annual undergraduate Wallenberg competition studios are the culminating signature of Taubman College's undergraduate experience. The studio is named in honor of Raoul Wallenberg—a 1935 graduate of our program—to celebrate his heroic efforts during World War II that resulted in the saving of thousands of lives from destruction by the Nazi forces. These are not "ordinary" studios. They come with built-in humanitarian weight, design responsibility, and they serve as a moment of genuine institutional pride. Formally, the Wallenberg studio was introduced into the curriculum in 1986 when the Bernard L. Mass Foundation established the Wallenberg Scholarship Endowment as the sustaining catalyst. This endowment remains one of the most generous and significant in the school, and its introduction was transformative to the demeanor and identity of our college. It continues to work its magic of rewarding actionable proposals that capture passionate social, economic, cultural, and environmental ambitions.

Topically, the larger focus of the Wallenberg studio is set by annually rotating faculty coordinators with support from other Wallenberg instructors. The topics vary from year to year and are often loaded with a calculated uncomfortableness—either disciplinarily, ethically, or technically. Each instructor then presents a specific take on the theme to all graduating senior students. Students then cast ballots for studios they think might best allow their emerging voices to be most clearly heard via one of the faculty prompts. This setup is unlike other foundational undergraduate studios that tend towards more prescriptive and directed outcomes. Instead, the Wallenberg studio options act as scaffolds that invite further articulation. As the last experience in the undergraduate sequence, it's the first time the operational or pedagogical equation is presented as explicitly different. The studio charge is now about intense responsiveness and a conscientious attempt to bridge gaps between skill sets and the more intuitive or circumstantially driven passions that many students are eager to express. This is an important terminal step in that, as a school, as a humane individual, as a conscientious thinker, you/we do not want to neglect the emotive artfulness of the architect's role. Skill sets are one thing. You have to have them to thrive in the profession. However, you are also potentially "dangerous" because of them. These skills, and the ends to which they are used, are the fundamental questions of the Wallenberg studio.

The Wallenberg studio options act as scaffolds that invite further articulation.

BERG

ON THE ADVANTAGES OF WALLENBERG

Having the Wallenberg studio as the undergraduate capstone experience serves both as a summation and projection for the college, its students, and its faculty. As a summation, it asks students to reflect upon, and bring a learned focus to, a set of ambitions that require methodologies and insightful strategies of cohesion that have been taught by the faculty. If as a collective faculty we have not adequately equipped the students with proper spatial and decisive ammunition, then it will show in the struggles of the work. In this way, capstone studios always telegraph collective strengths and institutional weakness. The wild card in the capstone equation is "curiosity"—something that arguably cannot be taught. It can be cultivated, but curiosity as a driving desire, is fueled by personal fire. The open invitation of a capstone structure paired with a student's personal fire is when things become live and projective in unanticipated ways. Outcomes becomes risky and students find themselves earning and giving confidence to ideas and ideologies that reach beyond themselves and the formality of their own work. They are engaged. It's in these moments that knowledge is constructed and a readiness to both lead and broaden the scope of human care and cognition is demonstrated. This is extremely gratifying for faculty and students alike and for a public institution whose mission is to facilitate knowledge building; Taubman College celebrates the capstone studio as a significant measure of this charge. ■

Neal Robinson
April 7th, 2015

Taubman College of Architecture and Urban Planning awards undergraduate scholarships every year in honor of alumnus Raoul Wallenberg (B.A. Architecture '35). Following his formative years at the University of Michigan, Wallenberg rescued over 100,000 Jews from Nazi persecution in Budapest, Hungary, during World War II. The Wallenberg Scholarships offered in his name fund exemplary undergraduate students wishing to pursue humanitarian work anywhere in the world. Established by the Bernard L. Maas Foundation in 1968, the award commemorates Wallenberg's lifelong concern for the human condition.

FEATURED PROJECTS:

Zachary Angles

John Arnold

Jeffrey Burgess

Katherine Lanski

Xuefei Yan

2014 RAOUL WALLENBERG COMPETITION AWARDS

Raoul Wallenberg, a 1935 graduate of the University of Michigan College of Architecture and Design, has been called one of the 20th century's greatest heroes. At the college, Wallenberg's legacy lives through our aspirations for architecture as a humane and social art. All undergraduate seniors participate in the Wallenberg studio, in which the students are challenged to develop proposals that address humanitarian, social and/or political issues in architecture.

AWARD WINNERS:

Xuefei Yan (winner)

Muhammad Alshadood (honorable mention)

Zachary Angles (honorable mention)

John Arnold (honorable mention)

Jeffrey Burgess (honorable mention)

Katherine Lanski (honorable mention)

"But the beauty is in the walking…
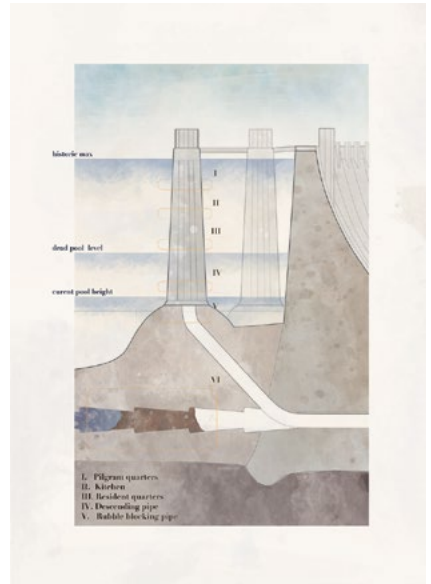we are betrayed by destinations."

-Gwyn Thomas

WHOLLY SECULAR
A POST-ELECTRIC PILGRIMAGE

ZACHARY ANGLES | WALLENBERG STUDIO
CRITIC: JENNIFER HARMON

LAKE MEAD WATER LEVELS

DIMINISHING RETURN

DEAD POOL LEVEL

LUXOR

SUBSTATION

HOOVER DAM

The Luxor casino becomes a Cathedral to the previous theological powers, Electricity and Capital.

In 1882, Friedrich Nietzsche proclaimed the Western God dead, and in doing so, explicated a critical change in the dominant ideology/theology. In 2007, Marc C. Taylor explored how the Western "God" did not perish, but rather was atomized into many institutions, including seemingly disparate entities, such as Capitalism and Modernism, which operate as their own secular theologies.

Wholly Secular uses narrative imaginings as a tool to:

a) explore the latent theological nature of a seemingly purely secular infrastructure of electricity

b) imagine modes of occupying the existing urban fabric assuming new infrastructural conditions (i.e., no electricity, scarce fuel, limited water, et cetera)

Thus, the project attempts to examine how narrative can be used to reveal latent structures, theologies, as a way to address looming hyper-objects, such as global warming.

Wholly Secular uses narratives as a tool of critical investigation, responding to impending energy collapse, rising populations, resource scarcity, and the predicted catastrophic climate change. *Wholly Secular*, rather than embracing popular cynical perspective on the contemporary situation, seeks possibilities in the built world. Seeking states of opportunity occurs by speculating a post-electric future. The goal is not to solve a post-apocalyptic problem, but instead to re-evaluate architectures of power (cultural, electric, and economic). Specifically, this narrative seeks to trigger an evaluation of the secular theologies that figure our world, thus finding states of amnesty in the resulting collective memory and individual narratives.

Opposite: A chart showing the declining water level in the great Lake Mead Basin. A map showing the extant landscape with former Las Vegas. A sectional understanding of the journey from Las Vegas to the Hoover Dam.

Above left: A landscape. The pilgrimage route of a father and daughter.

Above right: A diagram of the intake towers of the Hoover Dam, now occupied by monks evacuating the tunnel below.
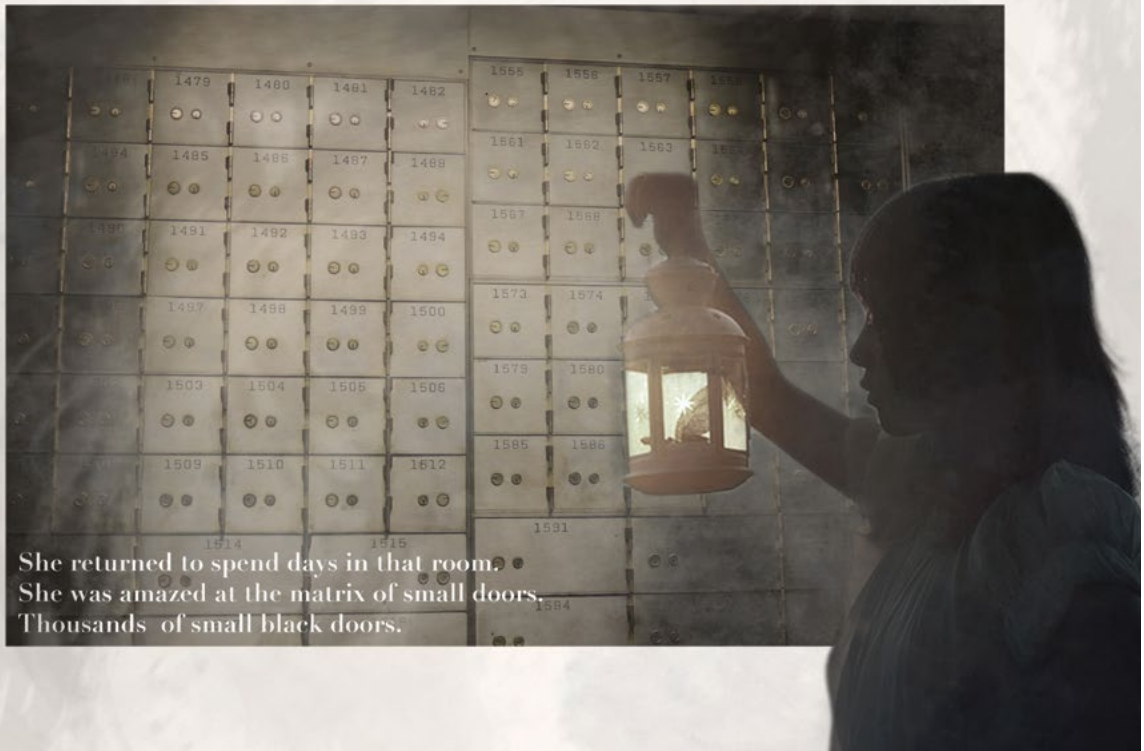
She returned to spend days in that room.
She was amazed at the matrix of small doors.
Thousands of small black doors.

There is a 50 percent chance that Lake Mead, a key source of water for millions of people in the southwestern United States, will be dry by 2021 if climate changes occur as expected and future water usage is not curtailed.

Without Lake Mead and neighboring Lake Powell, the Colorado River system has no buffer to sustain the population of the Southwest through an unusually dry year, or worse, a sustained drought. In such an event, water deliveries would become highly unstable and variable, as explained by research marine physicist Tim Barnett and climate scientist David Pierce.

Similarly, projections are dire for the continued availability of electricity across the globe. This is due to resource scarcity and an exponentially increasing population demanding an ever higher amount of power and thus, fuel. As this crisis moment comes to pass, we can see the monuments of the electrical age transforming before our eyes. The Luxor casino, an Electrical Substation, and the Hoover Dam reveal their latent characteristics of a theological nature. The

Luxor casino becomes a Cathedral to the previous theological powers: Electricity and Capital. The Substation and the electrical lines that trace themselves across the landscape, become chapel and totems to this religion. Finally, the Hoover Dam reveals its monastic qualities—remote, iconic, and generative.

The American road trip can be recast as participating in a complex cultural-theological engine, abstracting the destination as an object of glorification. This glorified object is then taken home with the pilgrim, a memory that is inscribed upon their life. As Mark and Zoe, our two protagonists, make their post-electric pilgrimage, we, as readers, can develop a new lens in which to see our everyday electro-centric worlds.

Above: An image of the vault into which Zoe ventures. An image of the vault that Zoe explores, where she is fascinated by the bizarre sequence of doors.
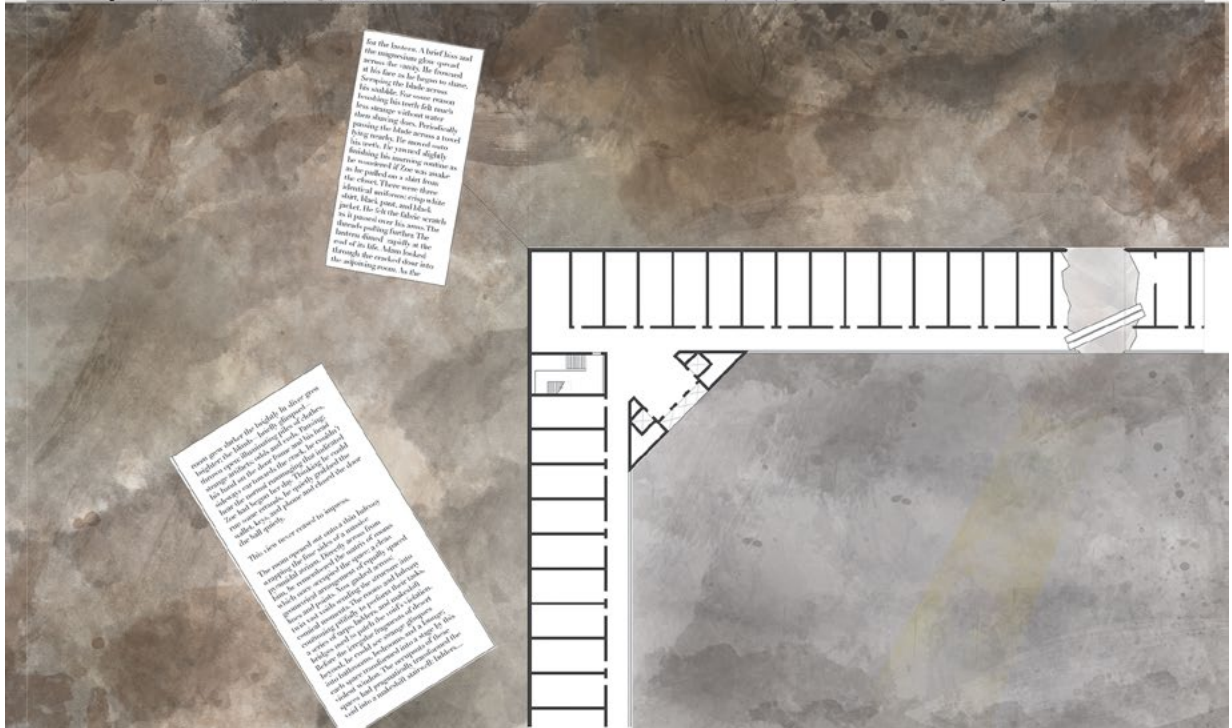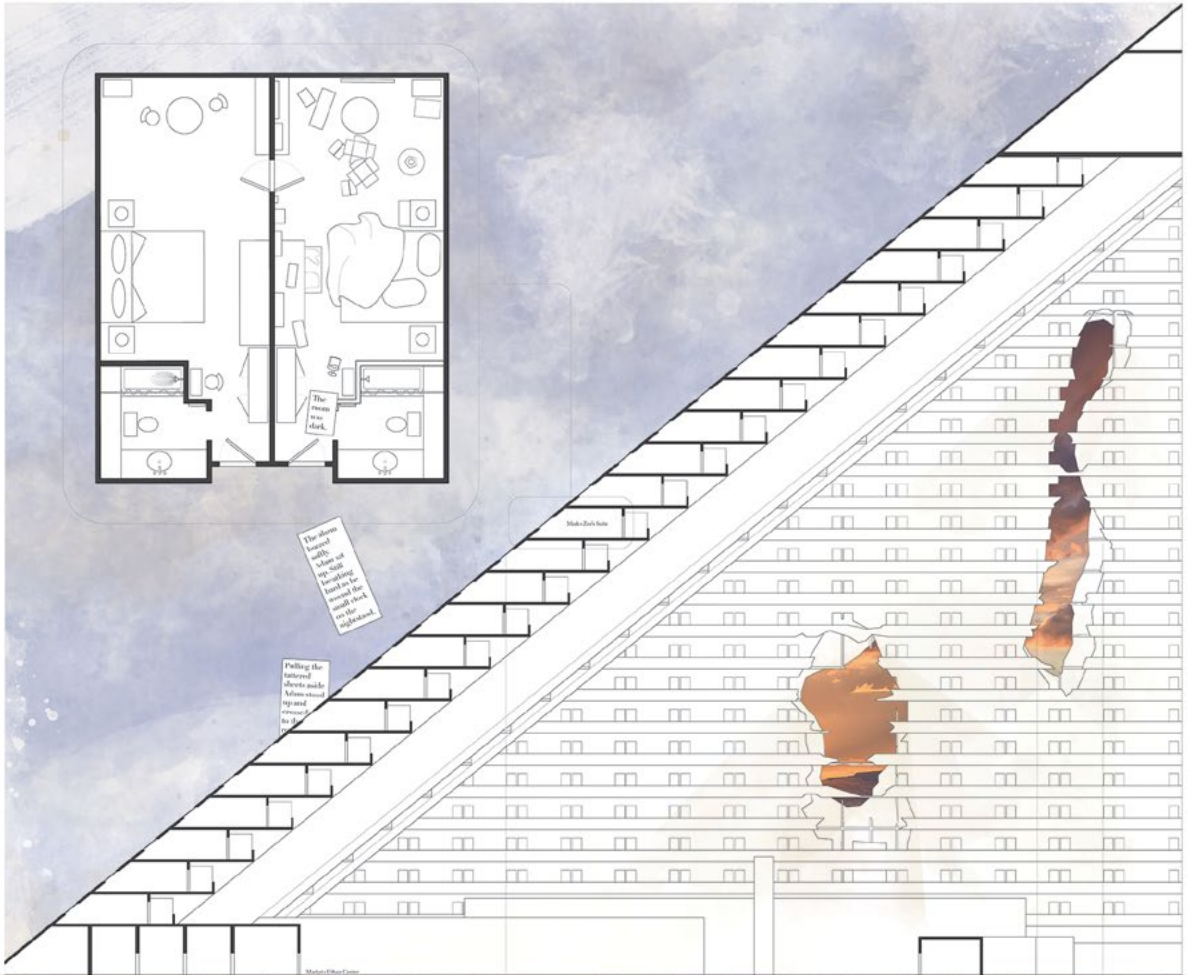
Opposite: A drawing of a city remediated for the post-electric situation by crafting voids into the exterior, such as to draw light into one of the world's largest interiors. A drawing of a cathedral and former casino.

The following are excerpts from the larger narrative *Wholly Secular*.

Every day, Mark would go to the tavern and serve the patrons glasses of crystalline escape. The hanging lights dully reflect the candle light from the tables below. Collectively, the patrons joined Mark in an effort to mentally conjure a nostalgic incandescent flicker. They woke every morning in the rooms on the periphery of the Luxor and went about their business everyday. Adorning their uniforms. Going to work. Making dinner. Having a drink. Going to bed.

Zoe awoke. She checked the clock and with a start—jumped up. She grabbed her bag as she dashed out the door. She leapt up the flights of stairs. She saw the obstacle gap in front of her as she raced forward, and she knew she could leap it, as she had bruised ribs from the many failed efforts. She landed with a dull thud, rose, and passed smoothly through the closed door. The light was blinding. She blinked and the white revealed

INVESTMENT.

Zoe recovers a sample of soil recovered by a monk from the Hoover Dam tunnels. She stores the sample in a reagent bottle she has found.

the early morning landscape. She gazed out of the glazed apex of her pyramidal home. She loved spending the morning here watching the strange lines and objects stretch out before her, although today she had other objectives, so she ventured into the stairs once again. Having removed the sketchbook and lantern from her bag, a dark hall ended in a large metal door—she arrived at her second destination. She squeezed herself into the door and sat on the small table in the middle of an octagonal room. She sat drawing—in rapture from the endless grid of small doors embedded in the wall.

One day, Mark heard of the promise of electricity tucked away in the mountains at the horizon. Enraptured by this promise, he declares that he and Zoe will venture forth in search of the resolution of the promise. Zoe is ecstatic at the prospect of exploring the flat world she knew, from her aerial perspective looming over from the top of her pyramidal home.

Venturing forth, they walked until they could walk no more, each having a unique

Mark stood there under the tower staring into the distance, tears coming to my eyes as the beam once so vivid now decayed. It dissolved into the inky sky until he could not manifest it any longer. His memory incapable of projecting itself like the beam had done not so long ago.

experience. Mark was in limbo between an experience of reality and his nostalgia. Seeing the dead highway lights caused him anguish as he attempted to summon back the light that now was only a ghost in his memory. For Zoe, this was paradise. She reveled in the miscellaneous artifacts they encountered as they traveled. They stopped for the night at an electrical substation.

Mark's journal: I awoke with a start. Looking around, I was unable to find Zoe. I rushed about and spotted the stair to the basement. Descending, I squinted to see dull phosphorescent light from the corner of the space. She sat clutching an incandescent light bulb.

Arriving at the Hoover Dam, Mark snapped back to his childhood and the postcard moments from family trips. The intake towers soar out of the canyon, and the dam's curves smoothly insert themselves into the canyon walls. They moved across the edge of the massive wall, the breeze dramatically blowing them back. They

Opposite top: Some soil; the critical resource of the electrophilic community.

Opposite middle: A miscellaneous key inside a box. A curio collected by Zoe in her exploration. A light bulb; another curio collected.

Opposite bottom: An image of a tower, a shed, and a beam of light. An image of a monument, a pilgrimage chapel, and a memory.

Left: A drawing of a service facility, which is housing a lone acolyte who maintains the facility and the transmission tower around. This chapel in the desert becomes the pilgrimage stop for Mark and Zoe. In the basement, the former storage room is a reliquary to the artifacts of electricity.

Below left: The story, told across a series of collected images and artifacts, of a man and his daughter in the new world.

Below right: A drawing of a light bulb. A drawing of an idol to electricity.
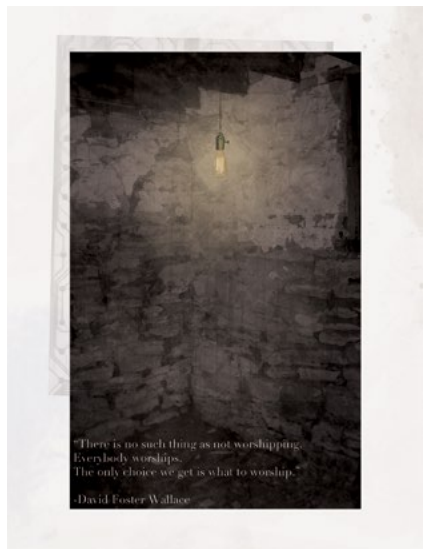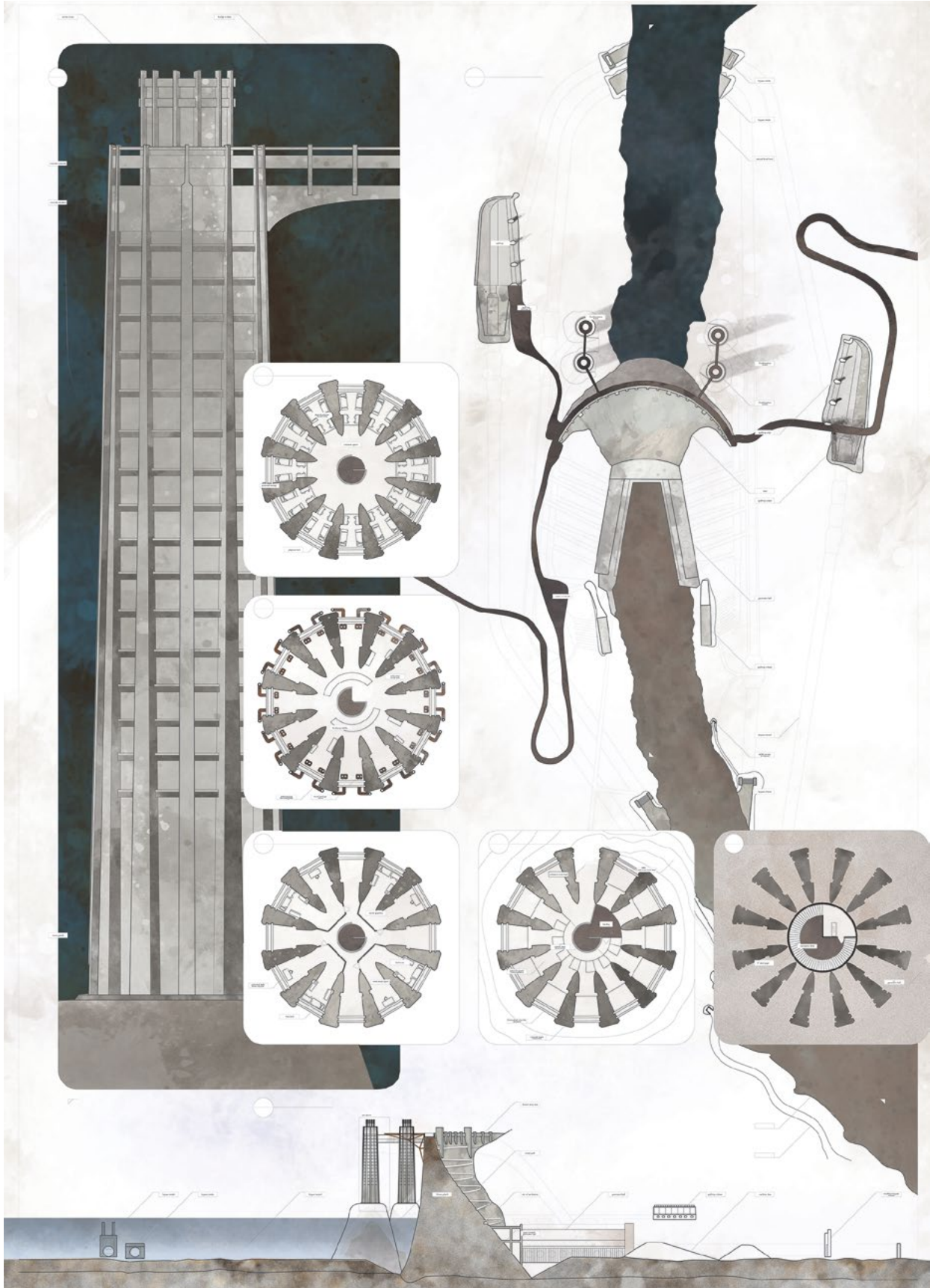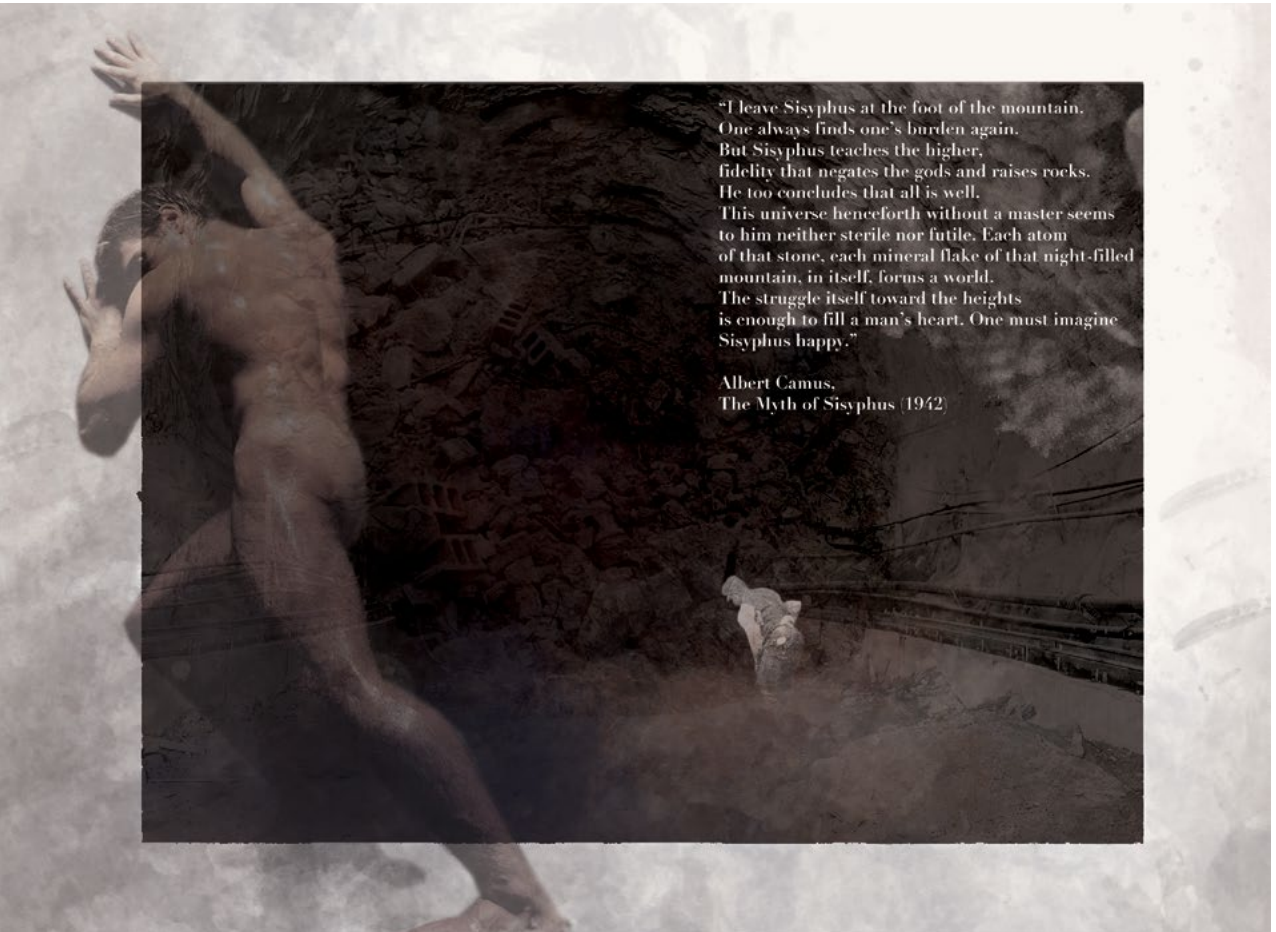
"I leave Sisyphus at the foot of the mountain.
One always finds one's burden again.
But Sisyphus teaches the higher,
fidelity that negates the gods and raises rocks.
He too concludes that all is well.
This universe henceforth without a master seems
to him neither sterile nor futile. Each atom
of that stone, each mineral flake of that night-filled
mountain, in itself, forms a world.
The struggle itself toward the heights
is enough to fill a man's heart. One must imagine
Sisyphus happy."

Albert Camus,
The Myth of Sisyphus (1942)

entered the small building at the top of the tower. It was empty, except for a small grate open in the center of the circular space. Mark was drawn to this void. Closer and closer he moved.

Mark's journal: I couldn't understand the attraction, but it was irresistible. The blackness opened up beneath me, and I saw the square grow larger and larger. I can remember the feeling of my feet slip, my neck tense, and my stomach drop. The blackness rushed past. When I awoke, I didn't know where I was. The bed was soft and the light was coming in behind me. I leaned forward and stretched.

They stood near the bed and Zoe looked over, smiling. The other person began to explain what they did:

We live our lives in one of the towers. We awake everyday, prepare a meal, eat, and then begin the labor. In a long row, we descend into the tunnel beneath the tower. Once full of water from the tower as an intake, the tunnels are now full of stairs, ladders, and platforms. The line of people move ceaselessly into the dark. At the end of this journey is a pile of debris, miles thick. As we arrive at the pile, we remove as much soil as we can carry and then return to the top of the tower. The line extends out onto a platform where we all drop the soil into the air below. We descend back, following the line into the tunnels where we repeat our efforts. We complete this process as much as we can before night falls. This debris was created when the bypass tunnels were plugged to fill the basin. When we clear the debris, the river will be able to flow through the tunnel, which will power a generator and restore electricity to us.

Mark heard this story and decided to join the community in their mission. Every day, he followed this process and their Sisyphean mission. Zoe spent her days exploring the facility and venturing forth into the desert. Eventually, she departed from the monastery and went into the horizon.

These excerpts from *Wholly Secular* occupy the eye of the imagined occupant and project their imagined situation. This speculative condition allows for a re-understanding of existing architectural objects and spaces. It reveals latent tendencies for the seemingly secular world to operate with the same ideological allegiances as the pre-secular world.

This sort of imagining frees the designer to critically interrogate contemporary situations of importance. This doesn't necessarily incorporate the multiplicity of integral variables of the situation, instead allowing for a focused occupation and vetting of possible spaces, places, and situations. As the problems surrounding us become immeasurably more complex and intermeshed, the techniques for disentanglement and elucidation, such as narrative speculation, show themselves as exciting tools to explore possible futures. ∎

Opposite: A drawing of the electrophilic monastery making use of the latent monastic characteristics of the Hoover Dam. The intake towers containing the everyday life of the monks, the dam and halls become space of cloister-esque promenade. The tunnels below hold the promise of the return of electricity and the everyday labor of the community.

Above: A drawing of debris in a tunnel. A drawing of the Sisyphean endeavor they undertake.

IN THE SHADOW OF LIBERTY

JOHN ARNOLD | WALLENBERG STUDIO
CRITIC: FARZIN LOTFI-JAM

1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886

Fundraising and construction efforts begin for the long-planned Statue in coincidence with the Declaration of Independence's 100th Anniversary.

The torch-bearing arm is displayed in New York's Madison Square Park from 1877 to 1882 to aid domestic fundraising efforts.

The Statue is completed in France and disassembled for shipping to the United States.

The Statue arrives in New York Harbor in 350 pieces divided into 214 containers; final assembly begins.

Construction finishes and the completed Statue is dedicated and opened on October 28, 1886.

The Statue of Liberty was born into motion. It spent its formative years in constant assembly and disassembly and traveled halfway across the world before reaching its home on Liberty Island. The Statue's journey across the Atlantic was mirrored by tens of thousands of immigrants traveling to the United States during the late 19th and early 20th centuries. For these immigrants, the Statue represented freedom from plight, tyranny, want, and the promise of a better life. Immigration, as it existed during this crucial point in American history, has ceased.

THE ICEBERG
The Statue of Liberty was inscribed to the UNESCO World Heritage List in 1983 under Criteria I—to represent a masterpiece of human creative genius, and VI—to be directly or tangibly associated with events of outstanding universal significance. In this case, it was the populating of the United States during the turn of the century. If the Statue of Liberty was the symbolic gateway to the United States, as posited by UNESCO, Ellis Island was the literal threshold. One was the disseminated, idealized image; one was the operational reality. Liberty Island and Ellis Island have always been inextricably linked. They are just as closely connected physically, and bathymetrically, the islands are nearly one.

1746
Summer Residence

1807
Ft. Wood – Battery

1910
Bedloe Island – Statue of Liberty

1937
Liberty Island – Statue of Liberty

LIBERTY ISLAND

New technologies have haulted immigration through New York Harbor, and the Statue's role as a welcoming beacon and symbol of opportunity has effectively ceased. In its current state, the Statue of Liberty and Liberty Island are at risk of losing their "value" as determined by UNESCO. Rather than representing an era of immigration and the promise of opportunity, is left for tourism to consume. Hoards of tourists snap photographs of the Statue from privileged views, spawning additional reproductions of an already exhausted cultural image.

ELLIS ISLAND

Juxtaposed with Liberty Island, Ellis Island has suffered an even further exhaustion of cultural value. Originally designed to process immigrants at an unmatched scale, Ellis Island was a complex and beautiful machine. The historic features that remain on the island recount this story. Immigration via transatlantic liner has all but ceased. In its current state, Ellis Island is now a place of real estate speculation. Plans for development on the Island range from residential communities to office spaces. Regardless of the intent, most development plans ensure the destruction of the Island's many historic features.

1776
Private Residence

1780
Unofficial Battery

1813
Fort Gibson – Battery

1820
Fort Gibson – Battery

1854
Fort Gibson – Battery

1890
Fort Gibson – Battery

1897
Ellis Island – Phase 1

1907
Ellis Island – Phase 2

1920
Ellis Island – Phase 3

1954
Ellis Island – Present

The State — An Icon of America

Novelty — A Consumed Image

Luxury — A Symbol of Prosperity
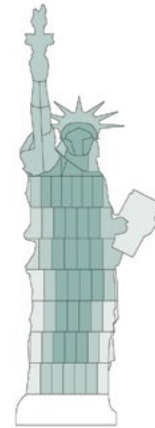
Reappropriation — A Cultural Cliché

Protest — An Emblem of Irony

Ruin — Herald of the End of Times

LIBERTY IN THE PUBLIC EYE

As a cultural object and a disseminated image, the State of Liberty is completely exhausted. The Statue exists more vividly in our minds as a reproduced image than as a physical object. Images of the Statue can be sorted into a number of categories that convey contemporary values contained within the Statue as image.

STRUCTURAL AND SCULPTURAL ANALYSIS

Although perceived as a sculptural form, the Statue of Liberty is comprised of a complex steel structure and a thin (3/32 in.) panelized copper shell. Based on the images cataloged, it is possible to identify areas of the Statue that most frequently appear in each category. By mapping these areas onto the Statue from most to least frequently appearing, we can determine the panels that most significantly contribute to a particular image or symbol.

Most Significant

Least Significant

The State	Novelty	Luxury	Reappropriation	Protest	Ruin
An Icon of America	A Consumed Image	A Symbol of Prosperity	A Cultural Cliché	An Emblem of Irony	Herald of the End of Time

350 PANELS

Understanding the Statue as a complex assembly of components, it is possible to break down the massive structure into such parts. Each component consists of one copper panel, a localized portion of the central steel structure, and the steel members connecting the two. Reducing the Statue to a collection of similarly functioning pieces provides a system through which the Statue can be assembled, disassembled, and reassembled. Replacing the static steel connecting member with a hydraulic piston system mounted on a mechanized ball joint lends the panels full radial motion, as well as the ability to extend and retract.

Existing Panel Logic
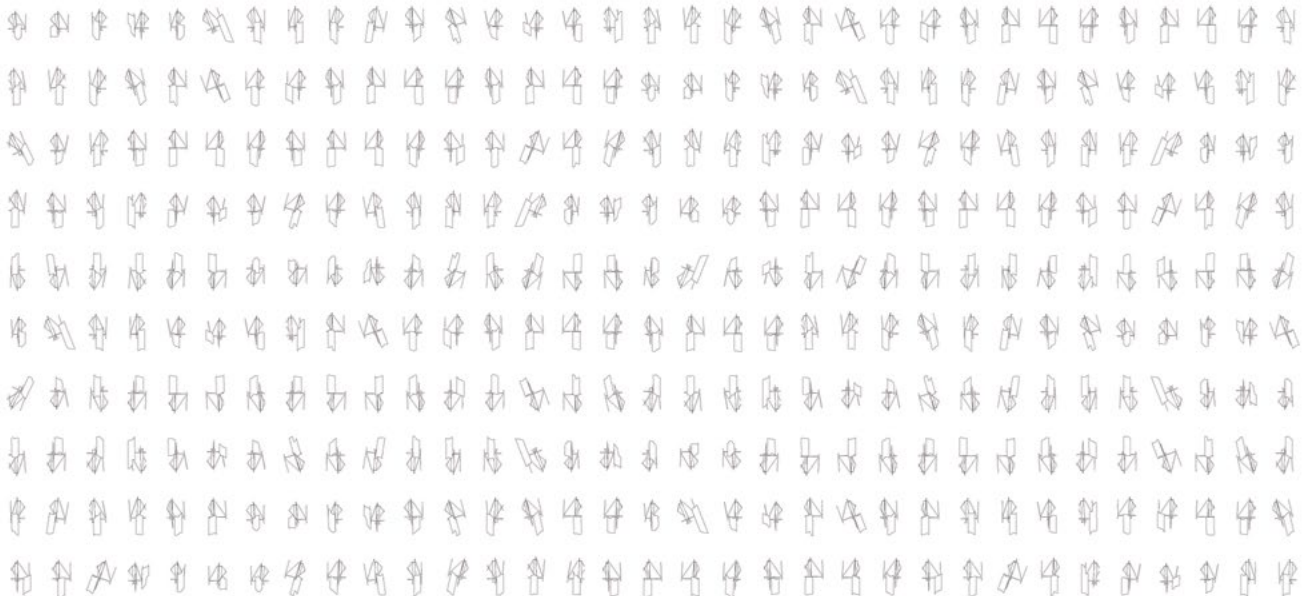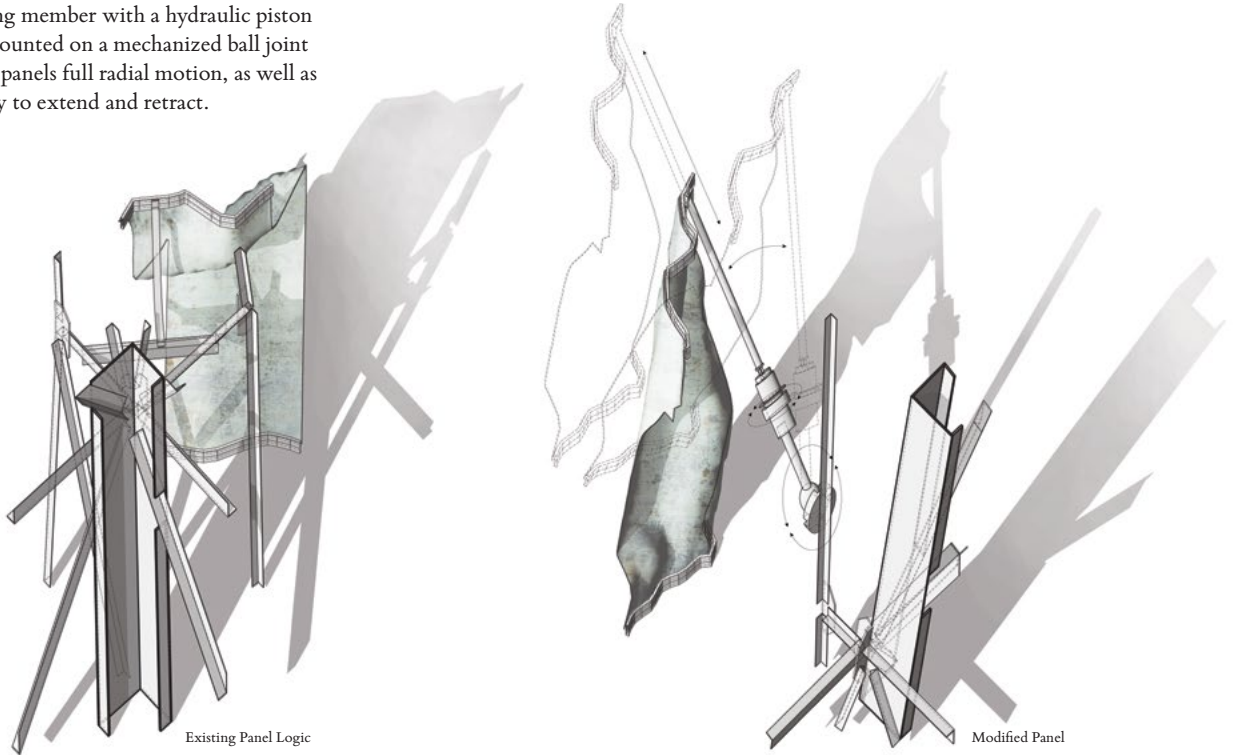
Modified Panel

HER: THE IMAGE EXPLODED

Using the modified panel component, the Statue of Liberty continually re-forms. The constantly reassembling system allows one to perceive the Statue at varying degrees of disassembly. The Statue in motion is meant to posit several questions—how much can the system reassemble before the Statue of Liberty is no longer legible? Do certain transformations privilege particular symbols or images?
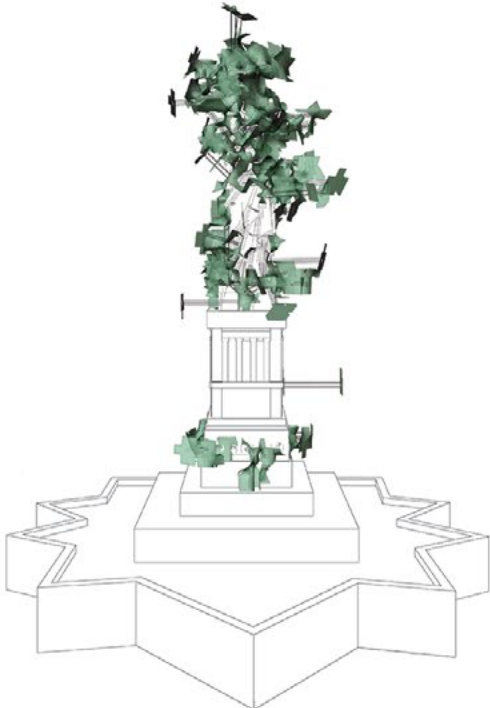
Time 1
The Statue is still legible behind minor transformations.

Time 2
Additional panels transform. The Statue is barely legible but the silhouette is relatively unchanged.

Time 3
Additional panels transform. The State is no longer legible and the silhouette is barely recognizable.
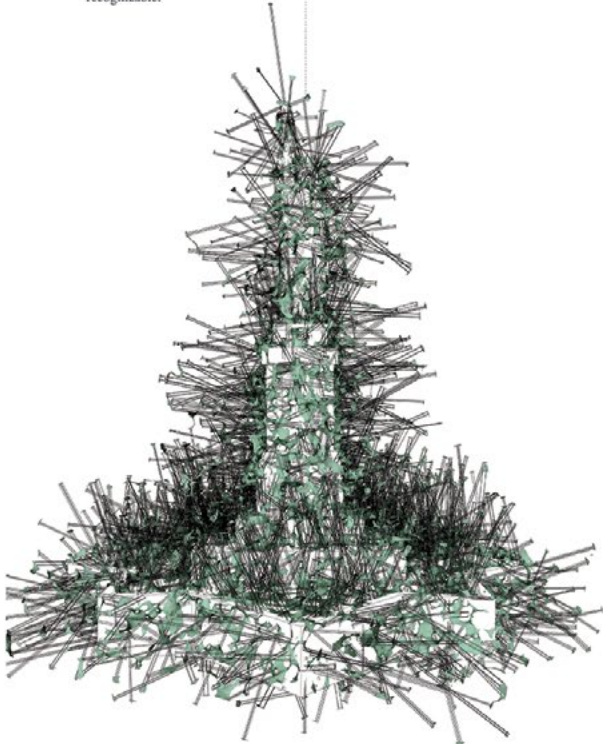
How much can the system reassemble before the Statue of Liberty is no longer legible?
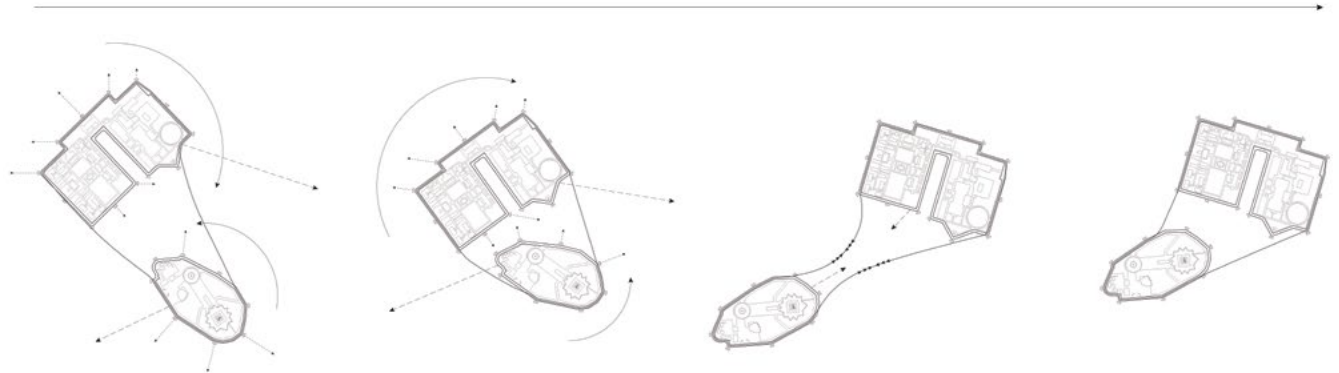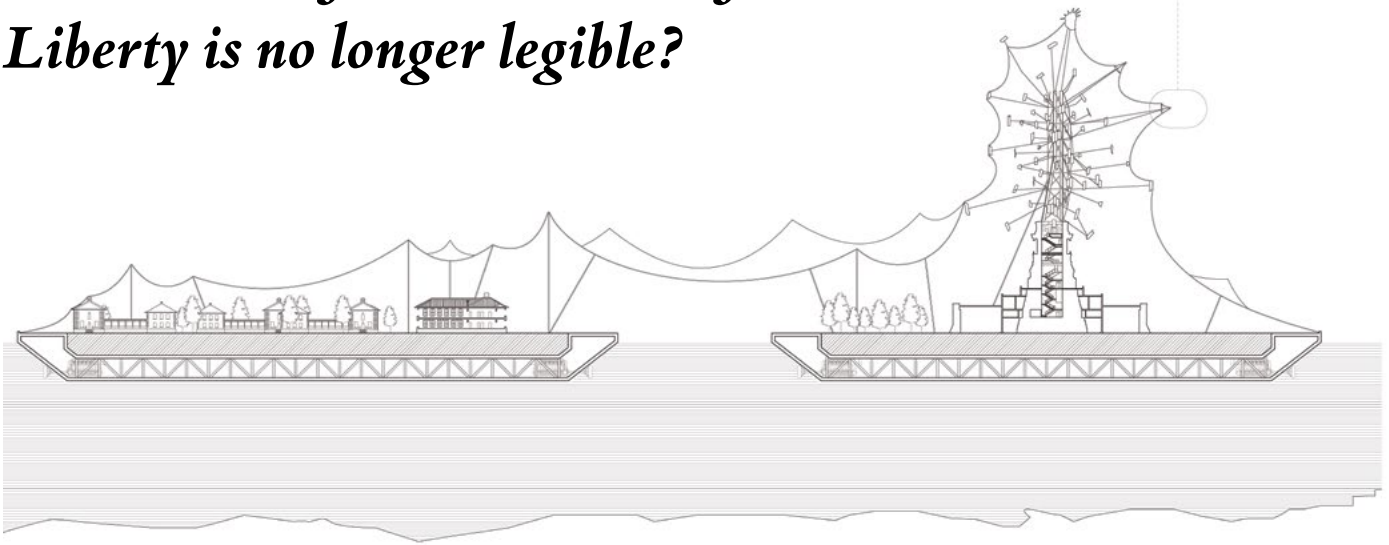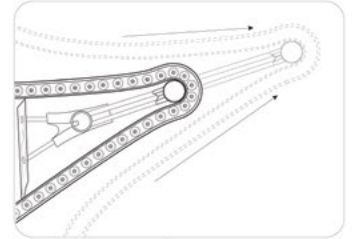
01 – Washington D.C.   02 – JFK   03 – China Town, Manhattan   04 – Corona, Queens
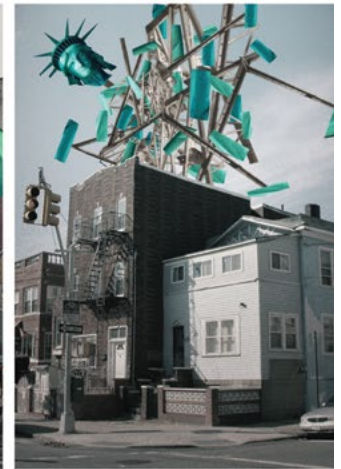
THEM: TWO ISLANDS IN ORBIT

To reconcile the increasingly divergent trajectories of the two islands, they are unified under an elastic membrane and placed in orbit around one another. Both islands are severed from the seabed and set within barges equipped with engines on all sides, allowing for a full range of translational motion. Next, a tensile membrane covers the newly formed Statue and the existing structures on Ellis Island. As these islands move toward future destinations, this membrane ensures that the islands remain physically connected.

Moreover, the sporadic motion, caused by the elastic force of the membrane when the two islands drift apart, creates a malleable interstitial space between the sites.

US: SEEKING NEW SITES

Given that immigration via New York's waterways has all but ceased entirely, the Statue's current context serves only tourists aboard ferries. Floating of the two islands allows the Statue to seek new sites in need of new opportunity. Removing the Statue from New York Harbor immediately terminates the process of touristic

consumption, as its current context is an integral part of the contemporary tourist's experience. Finally, severing the Statue and Ellis Island from their historic context ensures a re-imagining of their symbolic value. ∎

+0.84 µSv
+0.88 µSv
+1.24 µSv
+1.20 µSv
+0.96 µSv
+1.04 µSv
+1.13 µSv
+0.46 µSv

REGISTERING RADIOACTIVE HYPER-OBJECTS

JEFFREY BURGESS | WALLENBERG STUDIO
CRITIC: DAWN GILPIN

██████████
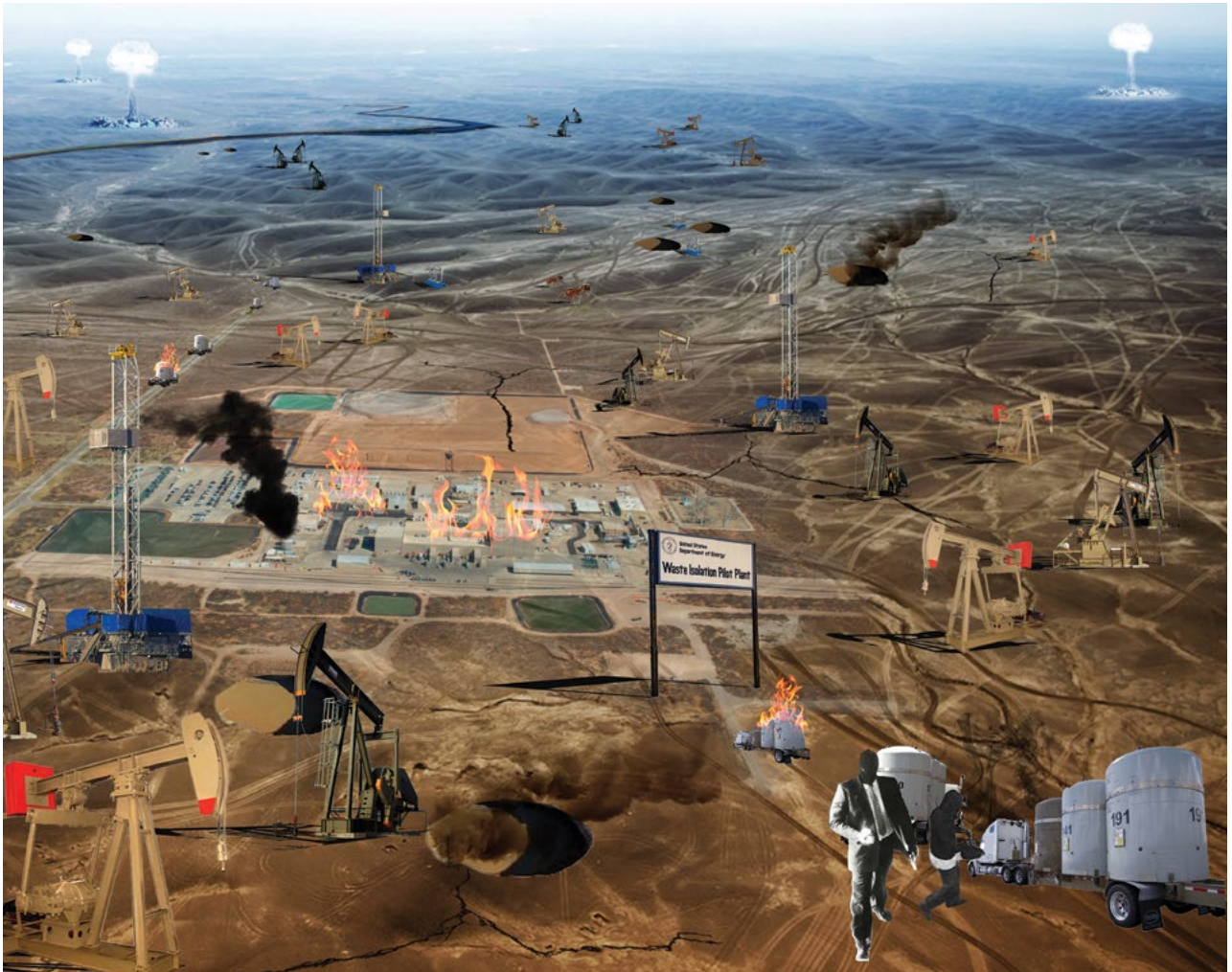
Registering Radioactive Hyper-Objects deals with sites of nuclear crisis and how we can study places and events of past disaster to create a didactic architectural intervention on a site that is currently grappling with issues of nuclear technology and the social, political, and economic consequences of this research and advancement. Eddy County, right outside Carlsbad, New Mexico, contains the Waste Isolation Pilot Plant and also becomes the site of a field of crystalline

Above: A narrative reading of the "unseen" elements in New Mexico: possibilities of the nuclear waste transportation trucks being stolen and used for weapons, recent fires at the Waste Isolation Pilot Plant, and the earth cracking and opening up from the oil pump jacks.

Right: The desert landscape will be covered with a field of soft pink lights.

Opposite: Possible uses for the future of the Chernobyl exclusion zone: allowing nature to take over the site or using the already contaminated property to conduct dangerous scientific experiments.
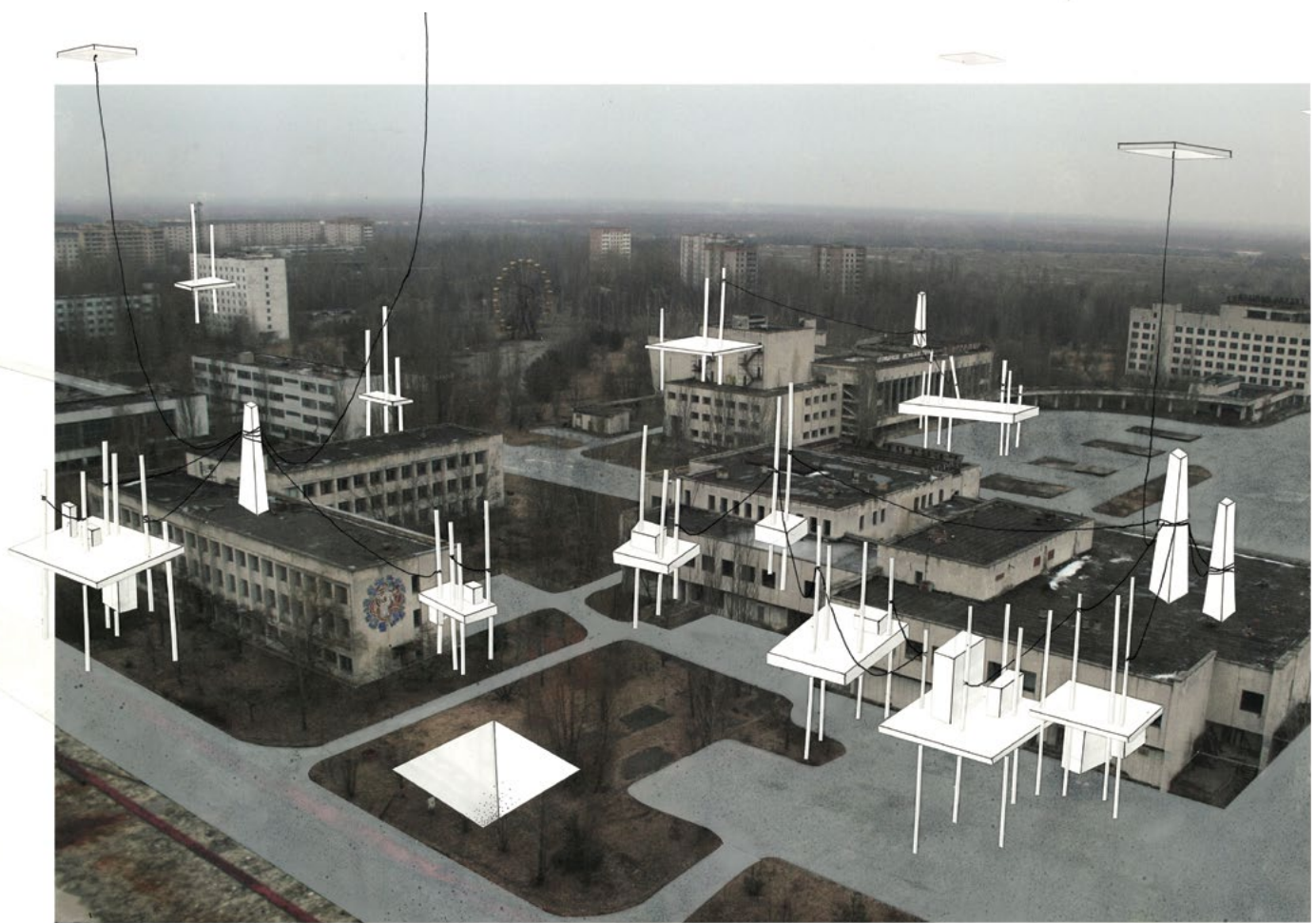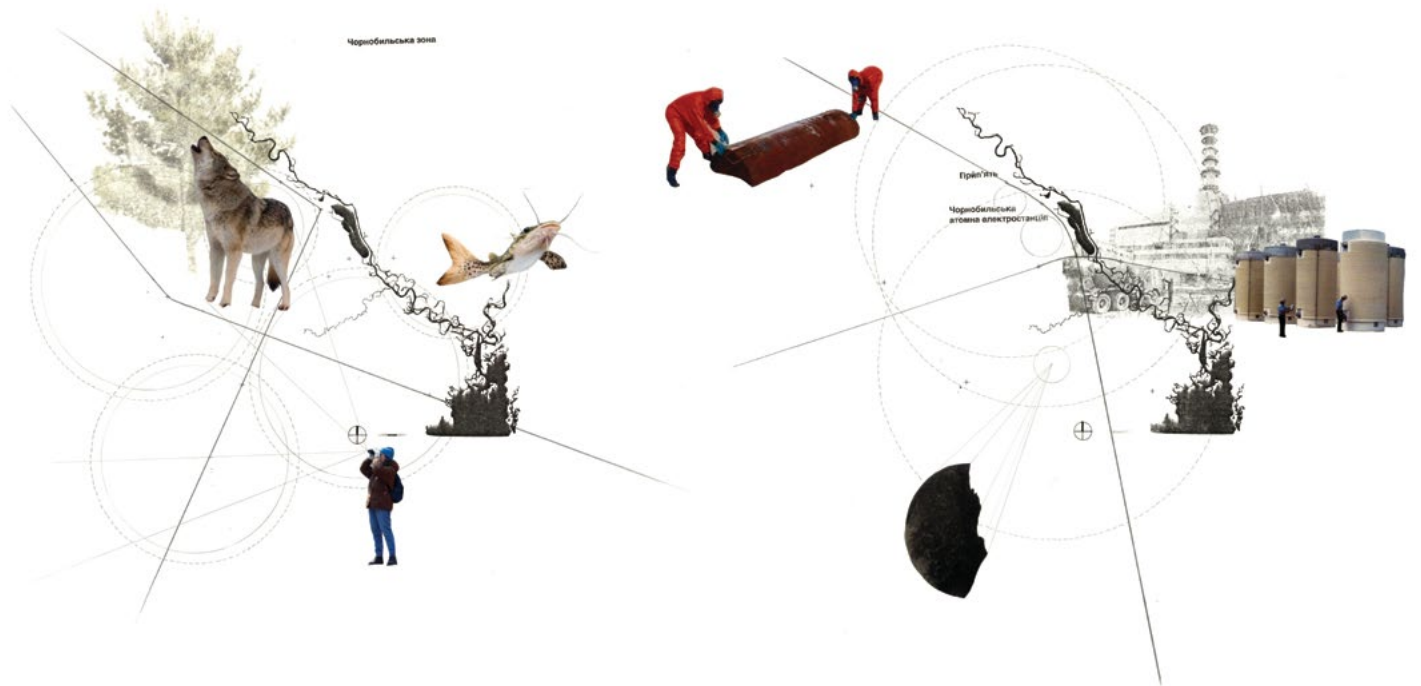
structures that registers the underground nuclear waste on the earth's surface.

A truck drives cautiously down the highway from Hanford, Washington toward Eddy County, New Mexico. This is not an ordinary semi, but a truck monitored by geosynchronous satellites carrying ten foot tall containers of transuranic waste, or the radioactive artifacts from nuclear weapons technology. This waste will remain underground in the Waste Isolation Pilot Plant outside Carlsbad, New Mexico for tens of thousands of years.

The earth is dangerously delicate, constantly shifting, and scarred by our industrialization. We have propelled the anthropocene. Our society is becoming more and more complacent to the ascent of nuclear technology—the seemingly abandoned terrain of development is completely synthetic, with experimentation

and contamination happening underground and behind closed doors.

We are relying on architecture and vast landscapes to protect us from large-scale disasters despite catastrophic events we have recently witnessed in the Fukushima, Japan and Chernobyl, Ukraine. By examining sites still afflicted with memories of calamity, how can we operate on a site that has yet to see such despair?

The proposed intervention is a field of artificial tectonic collisions that emerge from the depths of the earth, registering the ubiquitous, radioactive particulates with a soft pink incandescence, creating small spaces of amnesty. The reflective surface of the small structures not only camouflages the forms within the New Mexico desert, but it also mutates our image and perception of the surrounding landscape. In this desert landscape, the architecture now plays a

didactic role in revealing the incredible scale and unfortunate submission to the invisible threats that have been brewing underground for decades and will continue to do so until 12,000 A.D. The slow procession to the interior begins with a sloping cut to acquaint the visitor with the feeble storage medium of soil and concludes and contrasts with isolated views of inscrutable atmospheres. ∎

Above: Speculation of a formal future for the Chernobyl Exclusion Zone.

Opposite top: Qualitative map of expected current radiation levels in Pripyat, the village right outside the Chernobyl Nuclear Power Plant.

Opposite bottom: Currently, the Chernobyl Exclusion Zone has many tourists because of the increased exposure and fascination of the site from documentaries, horror films, and video games. Despite the high radiation levels, wildlife has taken over—wolves outnumber the daily tourists and fishermen are catching fish up to 60lbs.
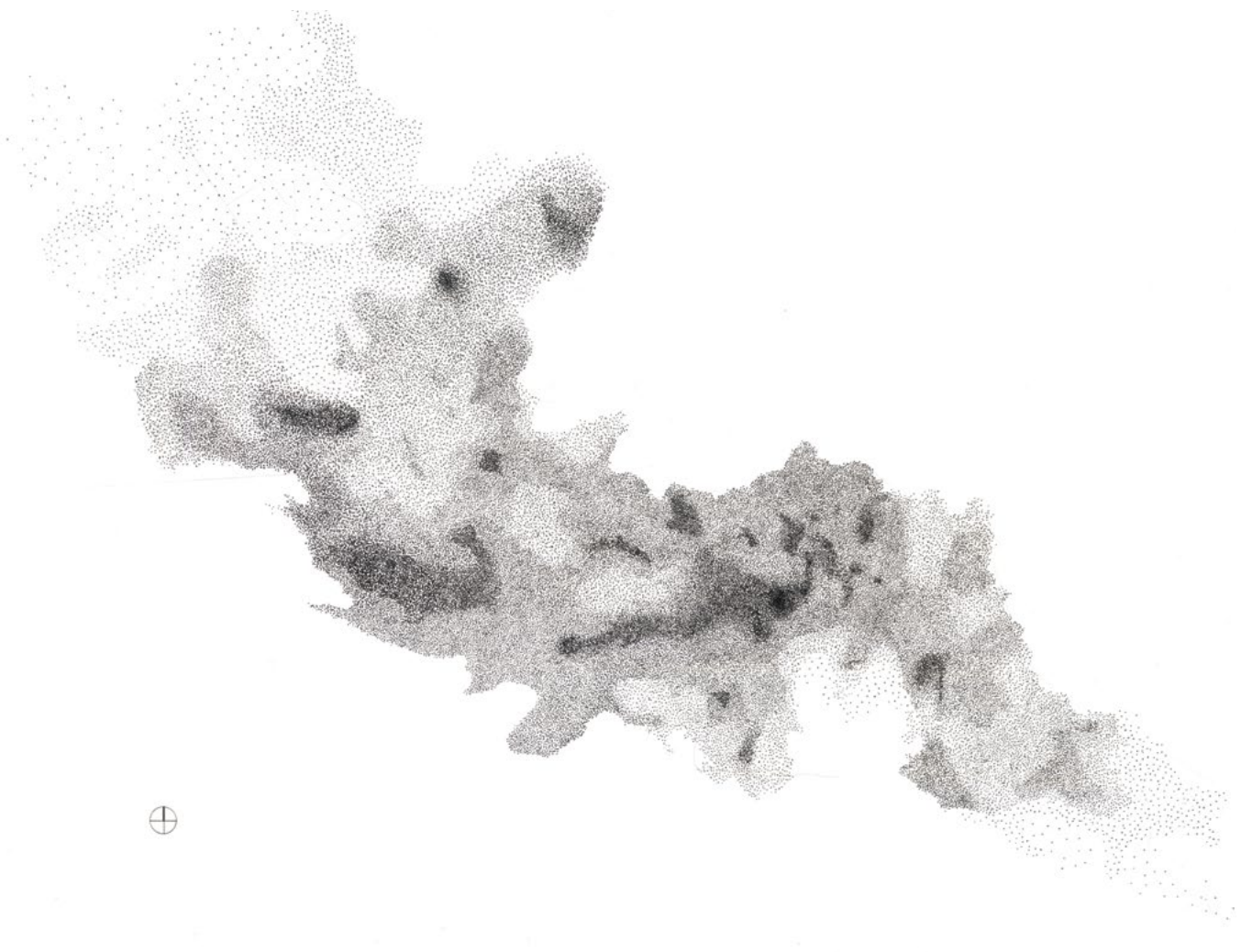
The architecture plays a didactic role in revealing the incredible scale and unfortunate submission to invisible threats that have been brewing underground for decades.
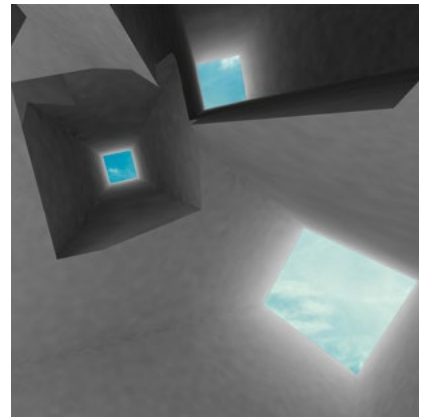
REGISTERING RADIOACTIVE HYPER-OBJECTS

Opposite left: Construct showing the field of structures that spans over the desert and how it registers the underground nuclear particles from the Waste Isolation Pilot Plant with a pink glow.

Opposite right: The structures that "emerge" from the earth reflect and distort the surrounding landscape. Just like the radioactive waste underneath your feet, you know it is there but the form is intangible.

Left: A vertical section of the anthropocene—the many figures and objects that have transformed our landscape over the past and will continue to change it as time goes on.

THE CLEANING CUBE
IN A DIRTY MINE

KATHERINE LANSKI │ WALLENBERG STUDIO
CRITIC: CLARK THENHAUS
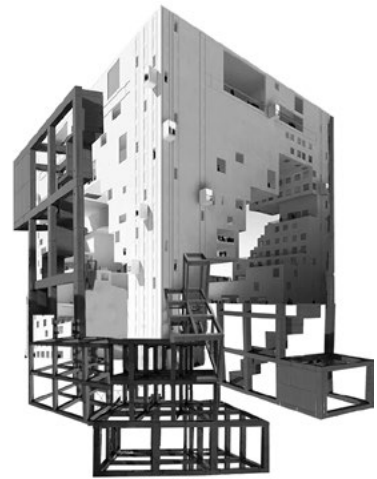
The Cleaning Cube in a Dirty Mine acts as an architecture of amnesty in which two opposing sides co-exist. While architecture may, in some situations, provide a solution to a problem, it need not always provide a solution. In the latter case, the architecture can act as a lens through which a problem is revealed or mediated, and function as a non-biased narrator for social change. This holds true in the case of *The Cleaning Cube*.

Salt Lake City's Rio Tinto Kennecott Mine, located in nearby Bingham Canyon, is one of the largest and most polluting surface mines in the world. It produces gold, silver, molybdenum, sulfuric acid, and nearly one-quarter of our country's copper needs. In 2011, the mine employed 17,781 people and helped sustain Utah's economy through $1.2 billion in spending.

Above: Formal mashups, studying visually light objects v. visually heavy objects and structural objects v. massing objects, were used as a form-making strategy, which analyzed part-to-part v. part-to-whole relationships. From these mashups, the themes of pixellation v. striation and visual lightness v. visual heaviness were applied in the design of three formal objects. These mashups and objects then became the basis of design for the formal qualities of *The Cleaning Cube*.

Right: Diagrams of how form was created, using three cubes and intruding/protruding cones.
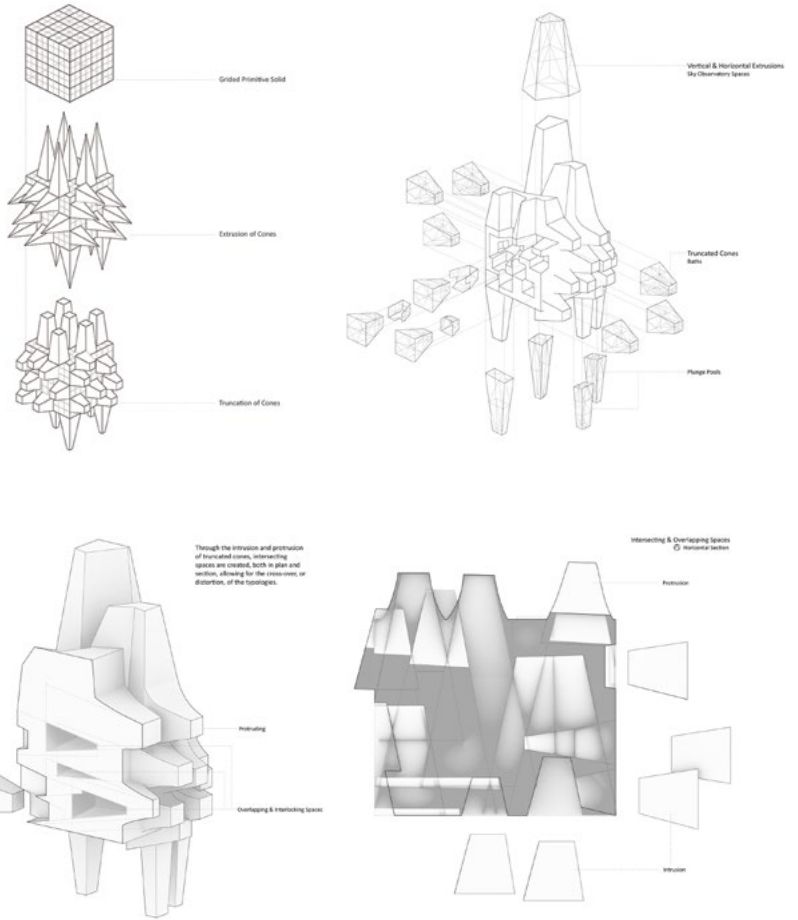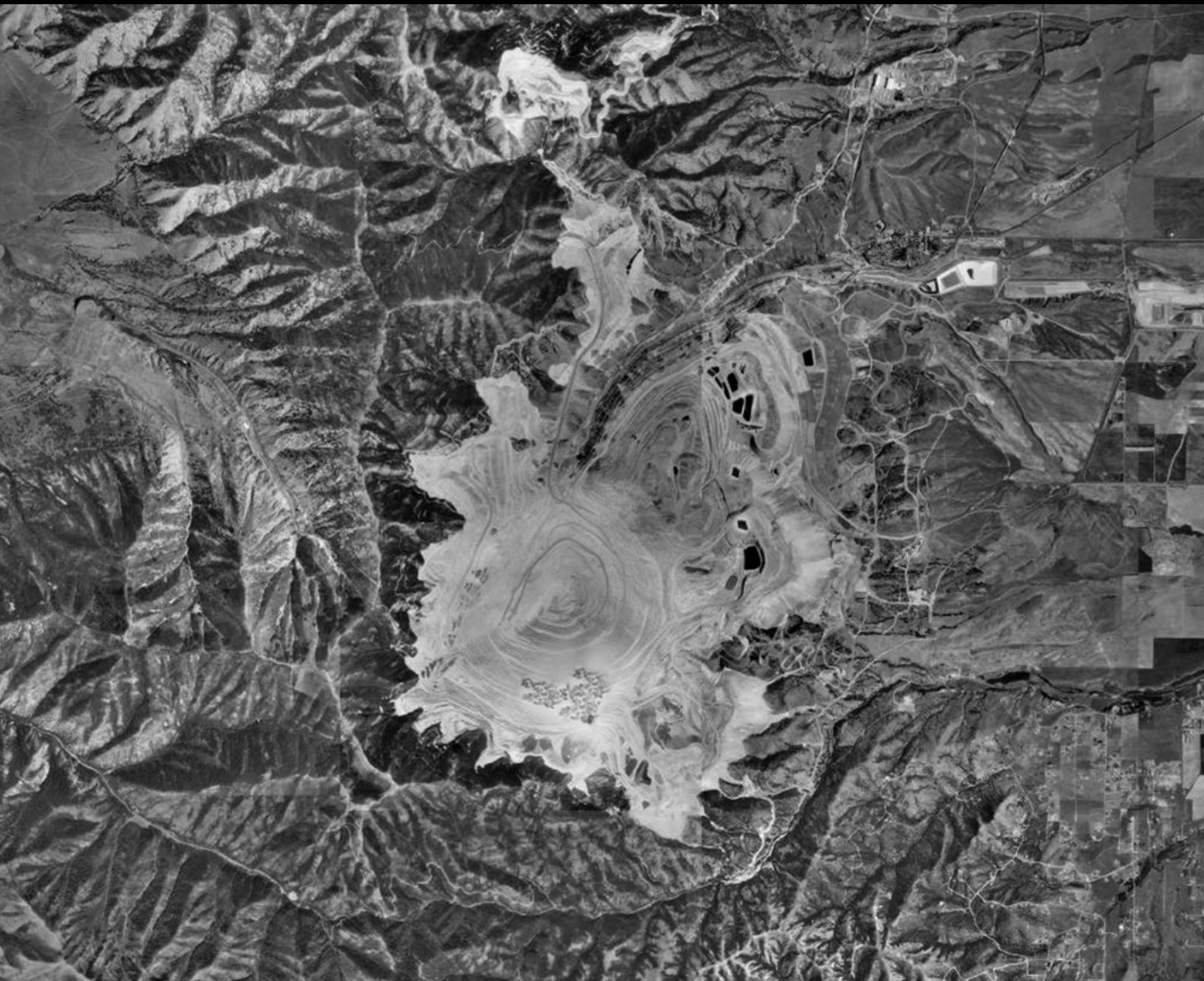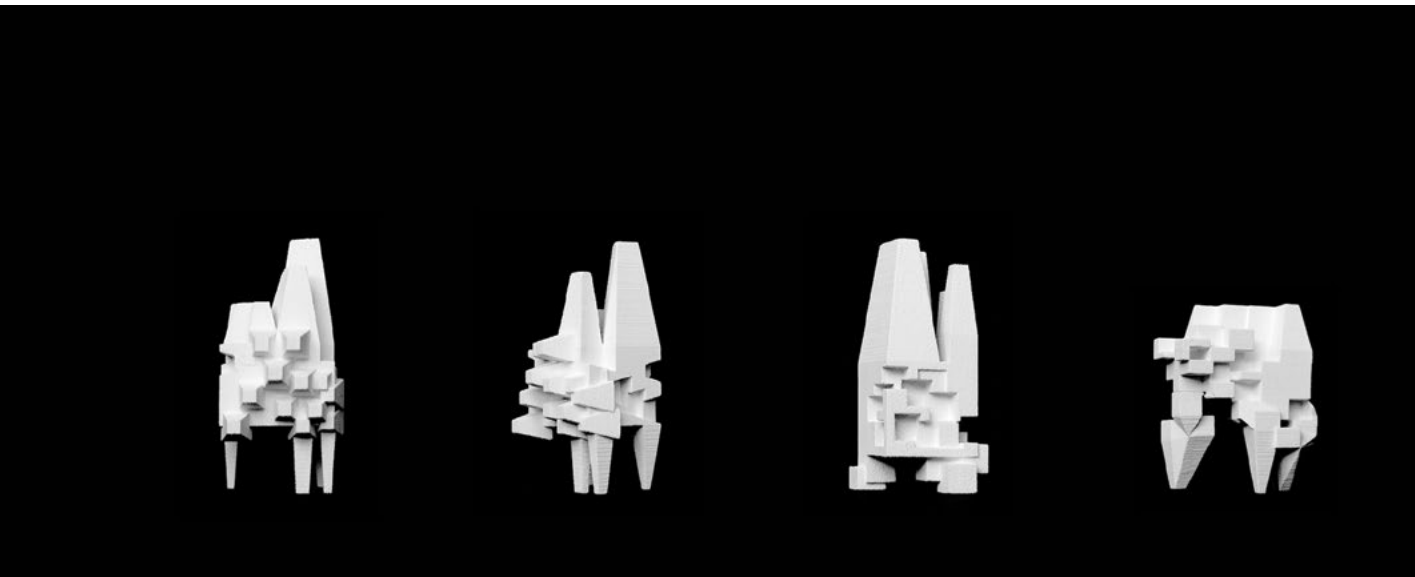
THE CLEANING CUBE IN A DIRTY MINE
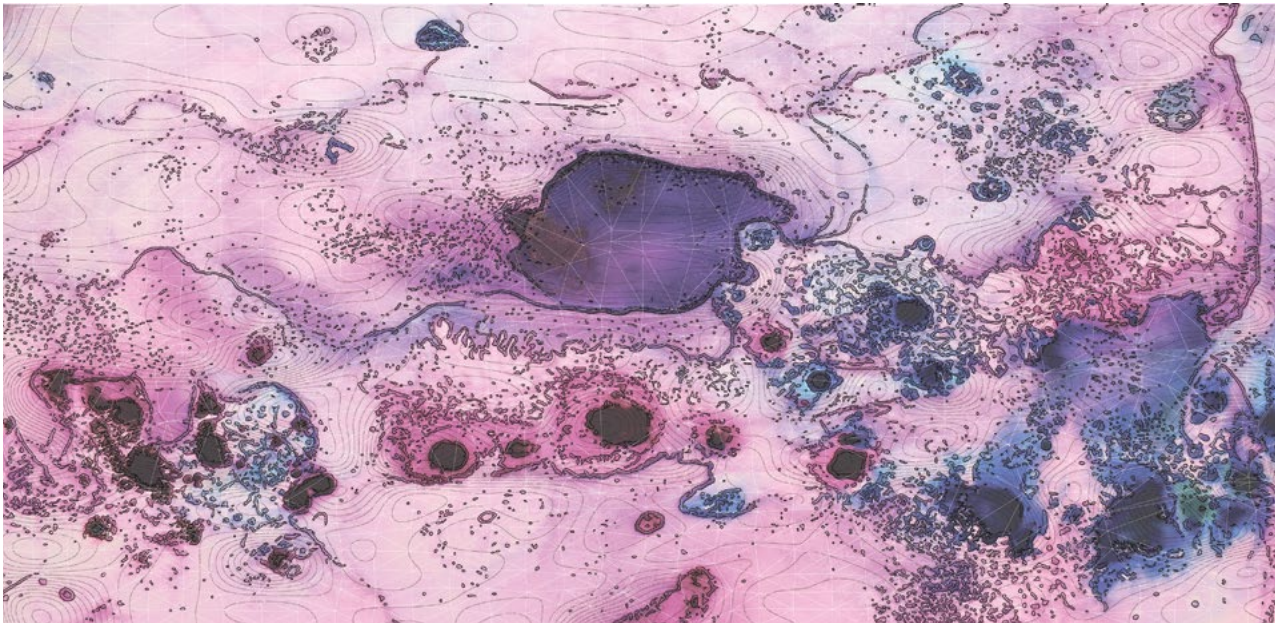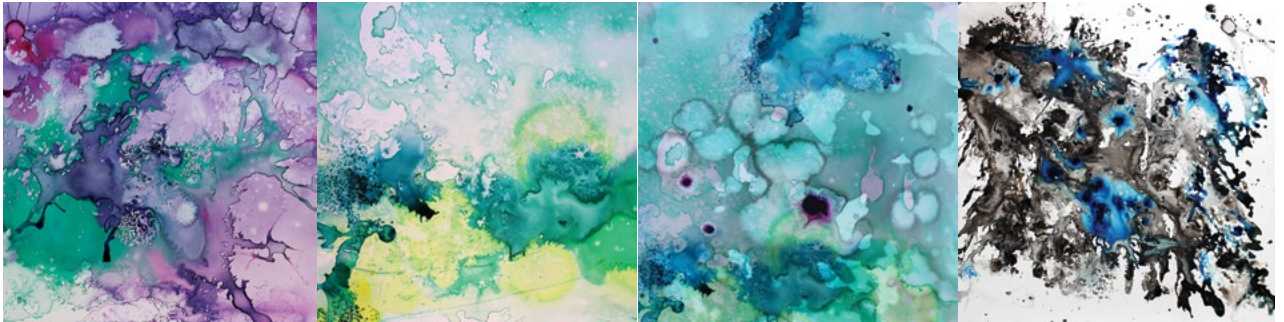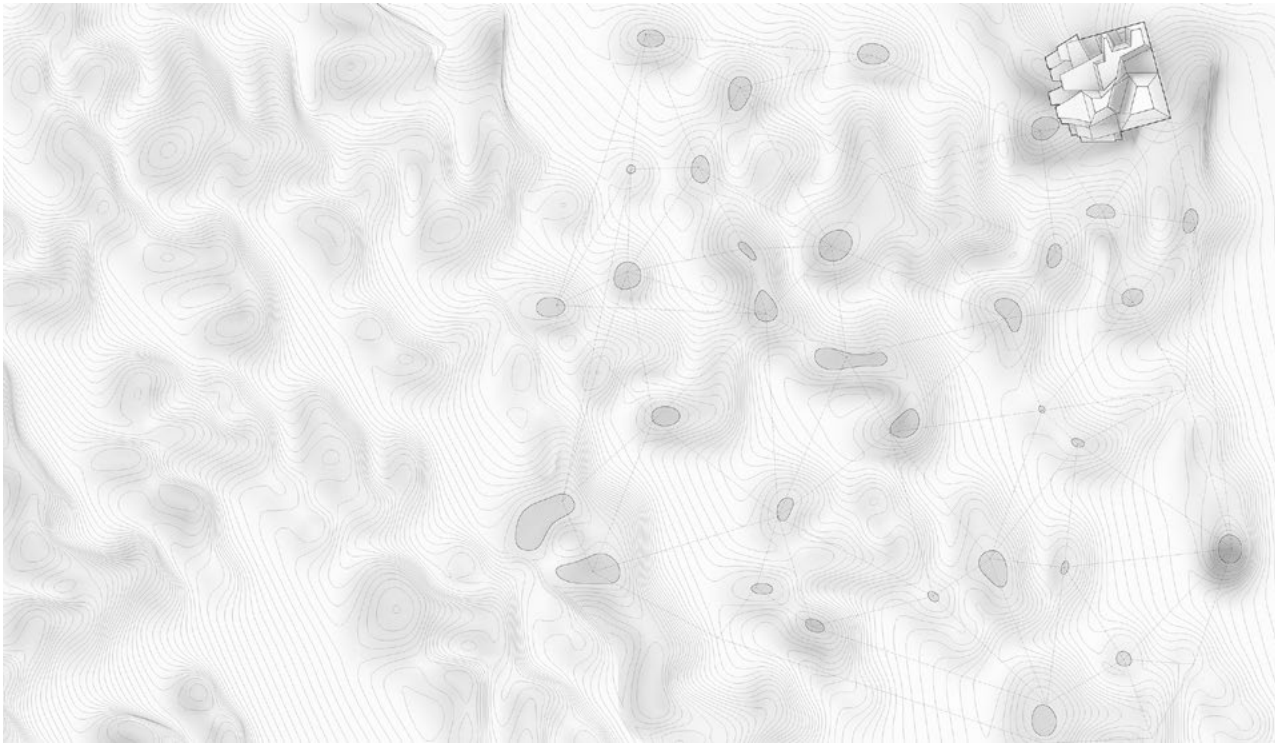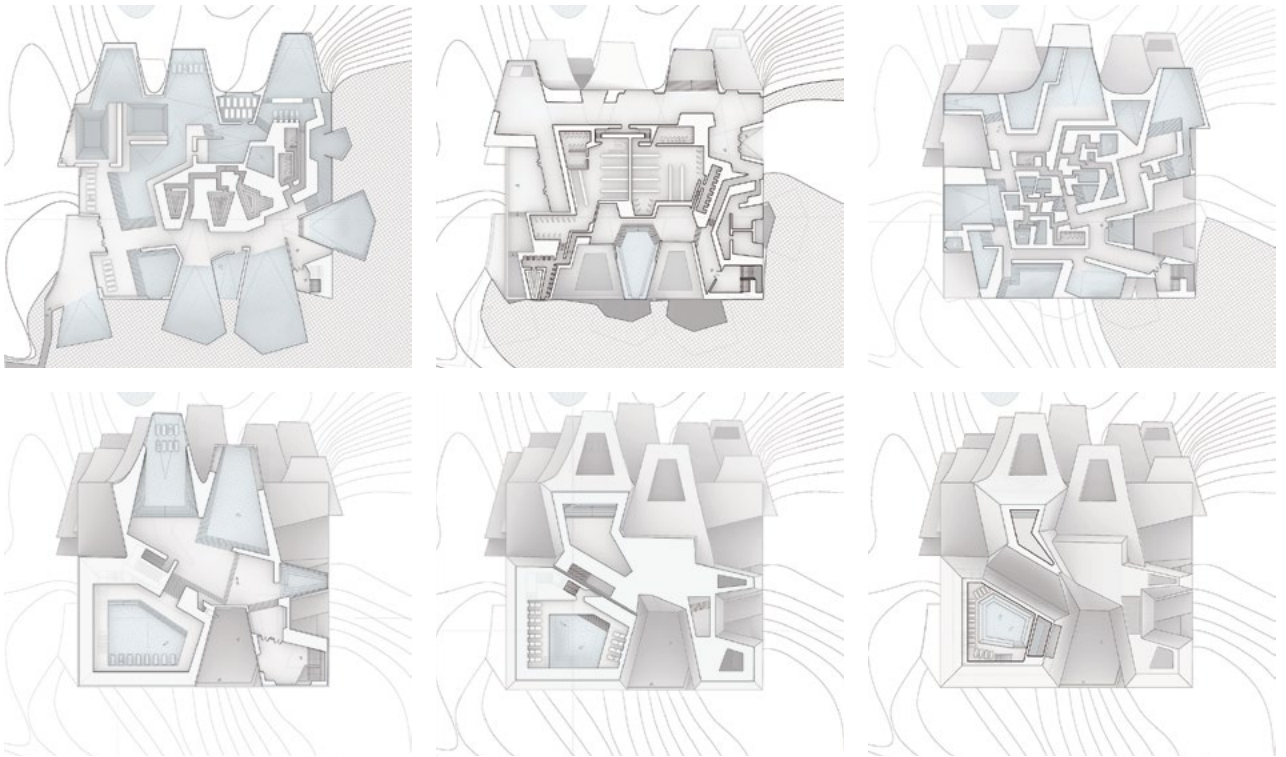
At 2.75 miles in diameter and nearly one mile in depth, Rio Tinto Kennecott expels over one-third of the pollutants in Salt Lake City, endangering the entire ecological system of Salt Lake City, as well as threatening the only existing salt lake within the United States. The threats posed by Rio Tinto have been exacerbated by recent technological advancements, and while providing for faster extraction rates of minerals, they also result in an increased rate at which pollutants are released into the atmosphere.

Over the next few years, the Rio Tinto Corporation plans to expand the mine. This is due to a landslide that occurred in 2013, which traveled at 100 mph and filled roughly one-quarter of the mine. This massive landslide resulted in six mini-earthquakes. This was the first occurrence on record of an earthquake resulting from a landslide, when this typically happens in the reverse. It also has broken the record for the largest non-volcanic, terrestrial landslide known to man.

Opposite middle: Using form-finding strategies, ink drawings were produced, interpreted, and translated to create the field condition. Projection of these ink drawings onto the mine resulted in a vertical distortion of the existing landscape, creating exterior baths and networking tunnels.

Opposite bottom: This translation merges an ink drawing with the mine's topography to study the ways the ink drawing could be projected onto and subtracted from the site.

Through a blurring of the typologies of bathhouse and observatory, The Cleaning Cube provides moments of introspection as well as extrospection.
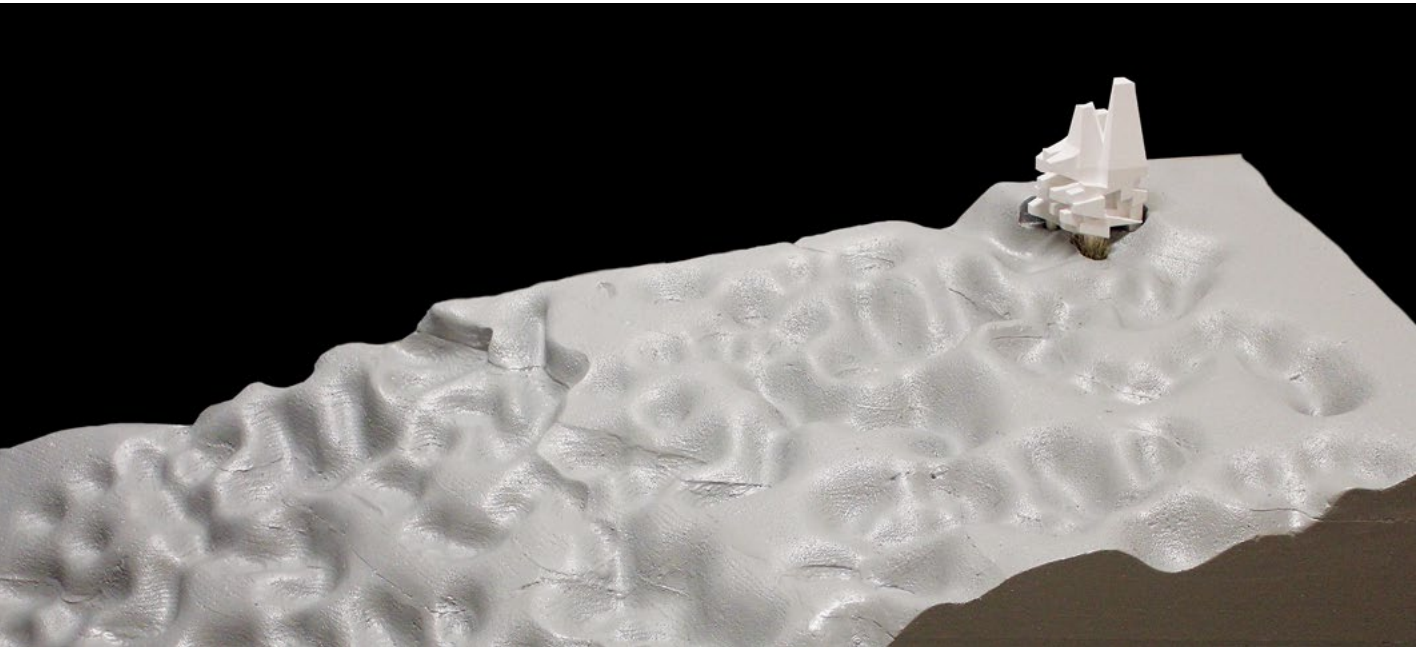
Currently, the residents of Salt Lake City are petitioning to have the mine shut down, but Rio Tinto is countering with the argument that an expansion of the mine will provide for thousands of jobs, resulting in an economic boom.

Perching within the mine, *The Cleaning Cube* provides a space of amnesty wherein these two opposing sides may coexist. This object attempts to solve no issues; rather, it acts as a non-biased mediator for social awareness and change.
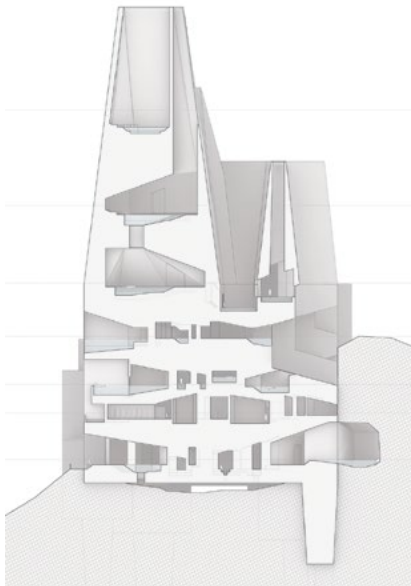
The Cleaning Cube blurs the typologies of the bathhouse and the observatory. Bathhouses provide spaces for self-reflection, while observatories provide spaces for reflection on the environment and society around oneself. Colliding these typologies holds to the serene, reflective spaces found within, while blurring the lines between introspection and extrospection.

Containing baths of differing temperatures, depths, and sizes, *The Cleaning Cube* provides observational moments to the surrounding landscape and sky. This includes observations of the mine itself, the Great Salt Lake, and a fog-covered Salt Lake City. Because of the dense fog, it often is hard to see the stars at night from the city. Therefore, the upper-most story contains a sky-observatory bath, as site of the project is outside of the Salt Lake City fog.

The Cleaning Cube uses pixellation and striation, i.e., a distortion of the cube, as a basis for exterior form. These formal qualities stem from an initial study of the collision of formal binaries found in architecture—visually heavy objects versus visually light objects, and structural objects vs. massing objects. This collision influenced the design of three formal objects reflecting the qualities of pixellation and striation. These three objects then became the basis of design for *The Cleaning Cube*.

The facade of *The Cleaning Cube* is the result of truncated cones intruding and protruding through the primitive cube, creating dynamic, pixellated surfaces. In addition, truncated cones were further extruded vertically, creating moments of striation. These extreme vertical moments contain plunge pools and sky observatories.

The intrusion and protrusion of truncated cones create overlapping and interlocking spaces within the object, thereby distorting the two typologies found within. These areas hold sensory deprivation baths, chemically altered baths, hidden baths, and spaces that directly alter typical elements found within the typologies; windows distort and pixellate the landscape, and lounge seating extrudes above eye level. This allows for new ways to occupy and circulate within the baths while providing fragmented observations of the mine.

The surrounding field condition, designed through a form-finding process using ink studies, allows for exterior circulation and occupation. Projecting the ink studies onto the site resulted in a vertical distortion of the landscape, creating exterior baths and networking tunnels. These baths and tunnels run both above and below ground, muting the landscape and blurring the lines between mine and object. ∎

PEOPLE'S REPUBLIC OF AMNESIA

XUEFEI YAN | WALLENBERG STUDIO

CRITIC: ROBERT ADAMS

Known as the most representative and iconic landmark of modern China, Tiananmen Square is an unceasing witness to the social-political events and radical urban transformation of China. Despite its peaceful and harmonious appearance, Tiananmen Square is an extremely sensitive situation with many unspeakable voices under surveillance and state control. As a young Chinese generation, to tackle such a contested space is a risk in terms of perspective and position; to suggest a series of scenarios, apparatus, and augmented atmosphere is to render the experiment volatile. In the 25th anniversary of the Tiananmen Square incident, this project deploys architectural and theatrical means to reframe a palimpsest of suppressed memories in order to provide refuge and provoke discourse on basic human rights. The project as a whole illustrates a possible future of both Tiananmen Square and Chinese society within the seemingly impossible environment.
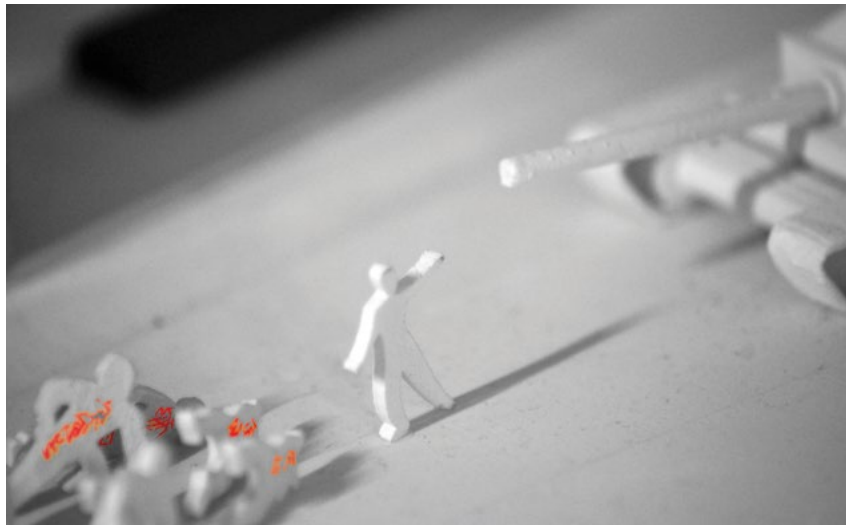
In the space of amnesty,
you can stand up and speak up.

中华人民健忘共和国
PEOPLE'S REPUBLIC OF AMNESIA
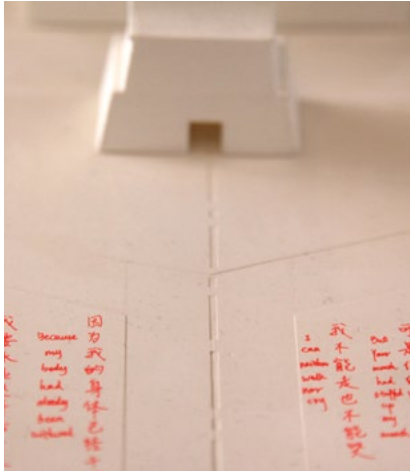
SMOKING MAO
Micro-Climate Mediation

The fog machine acts as an atmospheric generator that theatrically mediates the micro-climate of Tiananmen Square. This act creates slack space and reinvigorates Tiananmen Square as a space of action.

Below top: Chairman Mao was an avid smoker.

Below bottom: China conducts cloud seeding before the 2008 Beijing Olympic to control the weather and plants.

THE SEED BANK AND DNA MUSEUM
Underground Seeding

The underground space is both a gene-level seed bank and a June Fourth memorial museum. The physical lives are gone, but the remaining trace and "seeds" are left and inherited. This metaphor of reconciliation and remembrance is spatially manifested as an interactive and engaging experience for visitors.
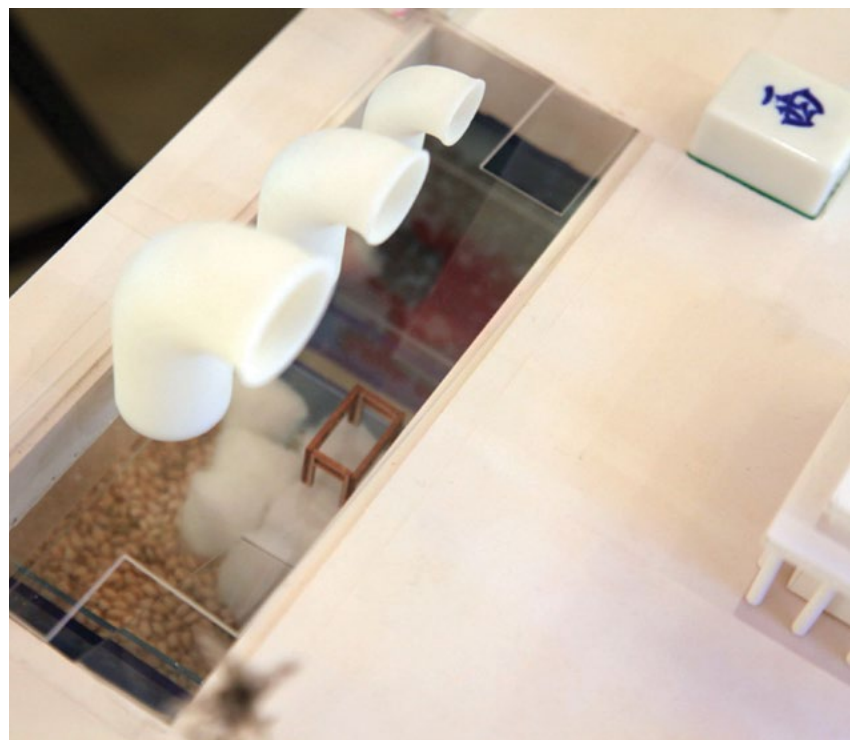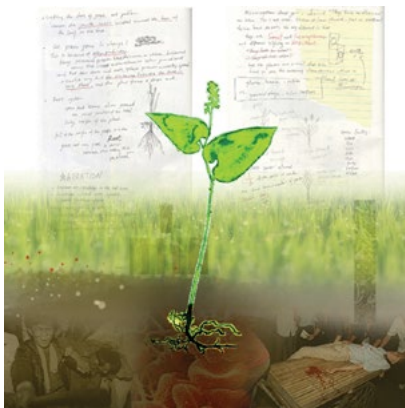
TANK MAN
Massacre Yesterday, Silence Today,
Speaking Up Tomorrow

The performance takes place on the same
spot where the "Tank Man" stood twenty-
five years ago. The figures are tagged with
the massacred people's names and are in
either aggressive or crawling poses. These
constitute bodies of architecture through
which the passed pioneers are redressed
and memorialized.

Right: The Tank Man—a student who tried to stop the tank
during the June Fourth incident. His information and whereabouts
have been unclear ever since.
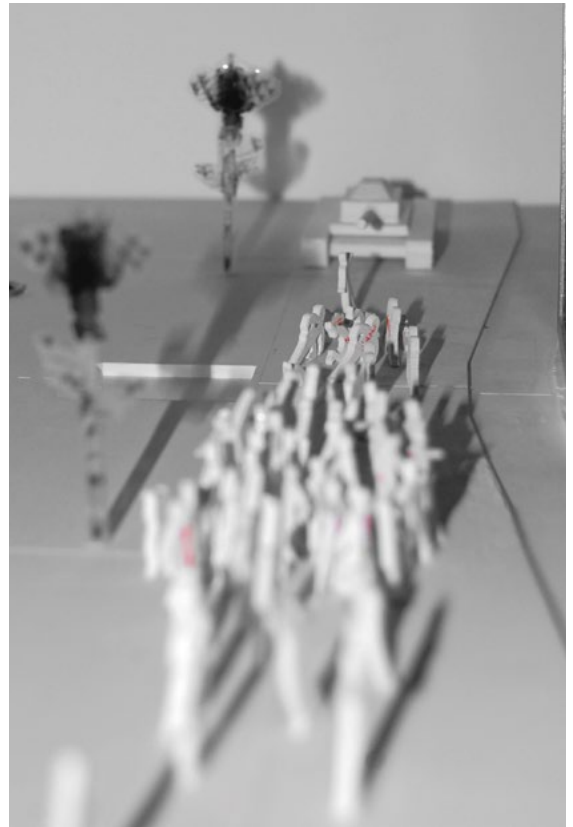
BURY ALL
Personal Graffiti Work

In July 2011, a bullet train crashed in
China. The government irresponsibly
buried all of the wreckage after a rough
rescue. In response to this social event, a
young student created this sarcastic graffiti
(*left*) at a university in Shanghai—which
was quickly covered by the school. The
voices of "disharmony" are doomed to
oblivion under the state control. This is the
first act of dissidence that stimulated the
development of the project.

Above: Bullet train accident in Wenzhou, China. The number of
deaths was 39, according to an official report and 259, according to
non-governmental statistic.

"A RED CLOTH"
Temporal Calligraphy

Inspired by water calligraphy and Song Dong's breathing performance on Tiananmen Square, the temporality of the practice of architecture holds an acute presence within the space. A mobile apparatus reproduces temporary inscription of the lyrics from the song "A Red Cloth" on the ground.

Right top: Lyrics from "A Red Cloth" by the Chinese rock-n-roll star Jian Cui. He performed for the student hunger strike at Tiananmen Square and encouraged them in 1989.

Right: *Breathing*, performance art by Dong Song, 1996. He breathed for 40 minutes on the ground of Tiananmen Square in winter at midnight until a thin layer of ice merged and left no trace the next morning.
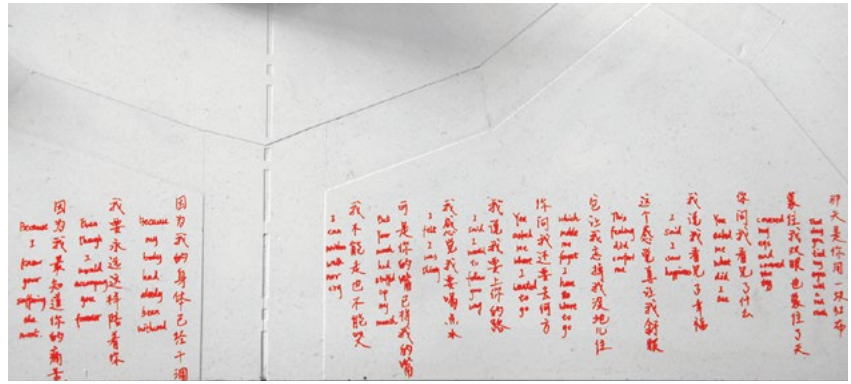
THE STAGE
Center of Center

Tiananmen Square is located at the geographical and political center of Beijing. This 880 meter x 500 meter "hot space" is the symbol of dictatorship, state control, and surveillance. The social-political traumas have been suppressed, raising the temperature of this hot space. The June Fourth Movement is a representation of such scars on a generation's memory.

Left: The centralized and symmetrical plan of Tiananmen Square.
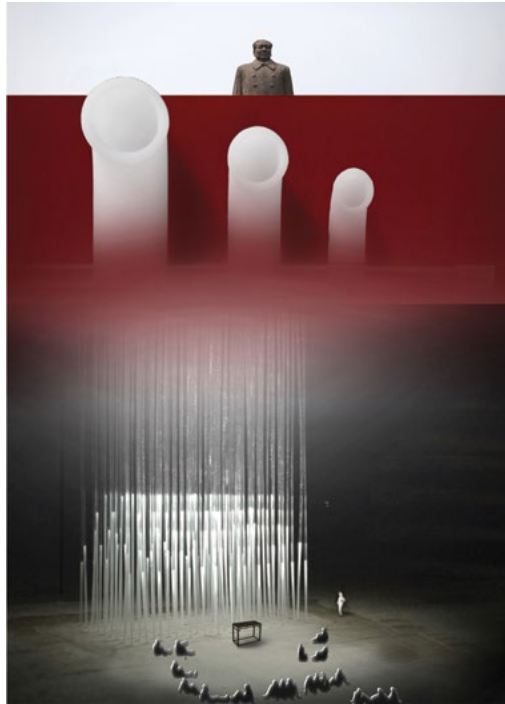
TELL THE STORY
Story Table and Megaphone

As there are many unspeakable voices and prohibitions on Tiananmen Square, this underground urban room is designed for people to be able to tell their story to an audience or themselves.

The sound is transmitted through "wigged" mechanical facilities to the ground level.

Above: Students study on Tiananmen Square at midnight, 1980 before the National College Entrance Examination.

WRAPPING THE INSTITUTION
Revelation through Concealment

The Great Hall of the People—as a symbol of institutional power—is covered with cheap-looking advertisements, which are a common but representative scene in Chinese urbanism. The contrast between institution and mundaneness theatrically renders the playful atmosphere of Tiananmen Square. ∎

Below top: Competition photography, Qingsong Wang, 2011.

Below bottom: "Wrapping the Reichstag," Berlin, installation art, Christo and Jeanne-Claude, 1995.

Acknowledgments: Video projection by Jess Yu.

THESIS

McLain Clutter is an architect, author and Assistant Professor at the University of Michigan Taubman College of Architecture and Urban Planning. Clutter's design and scholarship focuses on the role of architecture within the multidisciplinary milieu of contemporary urbanism. He has exhibited work and participated in conferences internationally. Clutter's book, *Imaginary Apparatus: New York City and its Mediated Representation* was released by Scheidegger & Spiess (Park Books) in March 2015.

Clutter received a Bachelor of Architecture from Syracuse University and an MED from the Yale School of Architecture, where he was the recipient of the Everett Victor Meeks Fellowship. Clutter has practiced professionally in offices in New York and Chicago, working on projects ranging in scale from residential renovations to campus master planning. His Ann Arbor based design and research practice is named Master of None.

Clutter has been the faculty coordinator of M.Arch Thesis for the past four years.

ON THESIS AT TAUBMAN

Taubman College has required graduate architecture students to complete a thesis for fifteen years. At precisely the time that so many other institutions began cutting thesis from their curriculum, this school reasserted its belief in the value of the thesis experience. I've been involved in the college's thesis for five years—the past four years as the coordinator, and one year prior to that as a thesis faculty member. My understanding of the history of our thesis format is that it has always been—as it is now—in constant evolution. Throughout the years, we've changed from individually-led thesis sections, to sections led by pairs or groups, and back again. In each case, the format has been tweaked in response to the composition of our student body, the nature of the work that the faculty are leading, and the state of our discipline as a whole. Today, we also try to offer a combination of studios asking students to form individual theses, and those that operate under an umbrella thesis for the entire section as a whole. I think an important ingredient in the vitality of our thesis year is that we keep the definition of thesis deliberately broad, and we're continually tweaking the structure. I think this nimble model allows for a thesis year that is less invested in being a definitive or culminating educational experience for the school, and more invested in being an intellectual crucible—a wild and swirling mix of the ideas, techniques and expertise running through the school at any one time—that might reverberate across our curriculum and into practice through the students we enroll.

For the past several years, thesis sections have been based on explicit topics proposed by faculty. As faculty, we draft these proposals and submit them to the Chair of Architecture. The Chair then selects the thesis section from the proposals received. This model places a lot of responsibility on our faculty to be attuned to the contemporary state of the discipline, and I think this has paid off. Our thesis topics, across the range of offerings, are timely and important.

ON THE ADVANTAGES OF THESIS

In my experience, schools love to hate thesis. No single school that still offers a thesis is completely satisfied with its structure, and in each school, you'll find faculty and students wishing thesis away. Even here at Taubman College, the contribution of the experience is continually debated. At some point during the year, you can find thesis, faculty, and students leading the prosecution. There are a lot of reasons for this. For one, thesis often requires students to be proficient at a much wider range of skills than a typical design studio. In some sections, students are challenged to read, write, theorize, design, draw and present—all at a very high level.

This can be a source of great frustration for students and faculty. We all have different strengths, just as there are many different roles to be played in practice or academia. Thesis sometimes asks students to play all of the roles, but in my mind, this is still a valuable struggle to engage. It is often said that architecture is a generalist's discipline, bridging between the high arts, social and physical sciences, culture, aesthetics, theory, and more. Thesis, as it is framed in some of our sections, is the one moment in our curriculum that prompts students to synthesize these many valences of our discipline. I think that makes better architects—be they team members in a large office or auteurs.

I also think thesis is valuable simply because it can be so controversial. It often prompts debate about architectural pedagogy like no other curricular topic, and I think debate is very healthy for a good architecture school. In a related way, thesis can be a kind of mirror to the school—reflecting our strengths, weaknesses, fascinations, and idiosyncrasies in ways that can be sometimes uncomfortable, but often productive. In thesis, different opinions about the validity of contemporary problems in the discipline can be made vivid like no place else in the curriculum. Again, I think this feeds discourse and debate, which should be at the core of any academic endeavor.

For students, I have a very clear idea of what I think the thesis experience offers. One common narrative is that thesis is the student's last chance to do "real" architecture before entering the dirty and compromised world of the profession where ideas all fall prey to the bottom line. I don't believe in this narrative at all. To the contrary, I think thesis is the beginning. In my mind—and in my personal experience—thesis loads a young architect with still-nascent ideas, techniques, and infatuations about architecture to take into practice. It's not always easy to implement those ideas in the professional world. It may takes years, and occur only in piece-meal installments. Reflecting and drawing upon the thesis experience can help to reassure and renew the young architect's commitment to architecture as an art, an intellectual practice, or a cultural agent while she strives to find the opportunities to assert these capacities of our discipline. ■

McLain Clutter
April 1st, 2015

The product of a year-long investigation, thesis occurs in the final semester of the graduate sequence. A self-directed creative project, students engage in the process of research, critique, and synthesis to create works that engage with architectural discourse. Capping the studio is a review by outside critics and a week-long public exhibition of the work.

FEATURED PROJECTS

Johnny Dwyer

Lyla Feinsod

Reid Fellenbaum

Andrew Isaac Ng

Christopher Pine

Andrew Wald

Samuel Xu

2014 THESIS AWARD WINNERS

Johnny Dwyer

Lyla Feinsod

Reid Fellenbaum

Jennifer Komorowski

Eric Meyer

Gyo Max Obata

Christopher Pine

Andrew Wald

Nathan Walker

Thesis loads a young architect with still-nascent ideas, techniques, and infatuations about architecture to take into practice.

RUGGED

JOHNNY DWYER | M.ARCH THESIS
ADVISOR: ELLIE ABRONS

This thesis looks to propose the architectural aesthetic of *The Rugged* as a means to slow the rate of consumption of architectural aesthetic, and as a result, pose a new type of "naturalistic" interior that cultivates the uncomfortably strange or crude that nature seems to create with ease.

Going back to the problem—these infinitely smooth and infinitely thin interiors that have emerged as a result of digital formalism have allowed their architectural aesthetics to be understood and "digested" very quickly and at face value, demystifying all spatial curiosities at first glance, and as a result, removing the desire for a return visit. This quick digestion of an architectural idea slowly removes the intellectual supremacy of the architect and places the control within the eye of the subject or consumer. By loosening the reins and embracing the irregular, we—designers or architects—are able to allow the qualities of the abnormal, awkward, or strange to come to the surface and postulate something new within the conversation.

The introduction of rough, uneven, or crude texturing within the provided interiors provoke haptic urges and arguably take longer periods of visitation and analysis to be fully understood—something which nature appears to accomplish effortlessly. In order to slow this rate of consumption, it is proposed that using nature's rather unpredictable essence as a design element in an effort to introduce a neo-primitive roughening of the interior that, in turn, can potentially provide new techniques of the naturalistic. This allows us to explore architecture's manifold relationship with nature, one that is usually focused on envelope and environment, but now interior as environment.

Rugged attempts to take the current, rather trendy state of "naturalistic" and offer an alternative that attempts to create something even more closely tied to nature in order to slow the digestion rate of architectural aesthetics. With this background in place, the definition of "rugged" can be set forward.

RUG-GED /ruhg-id/
adj. full of roughness; possessing characteristics of the rough, uneven, crude, or uncomfortable variety; challenging smoothness; expressing unpredictability through odd distribution of high and low [matter]; embodying the spirit of the nature in which it resides.

UNEVEN VALLEY [NATURALISTIC FORM]
Embracing unevenness and unpredictability of events, 'the rugged' is able to link itself to its primal origins by reproducing moments similar to those that exist in nature

SPLIT CUSP [NATURALISTIC FORM]
Branching moments such as arms, cusps, and bulges hint at conversations of growth, decay, and entropy... Producing "odd" moments where somewhat lifelike qualities come to fruition

CREASING OF QUALITIES [MATERIAL AGENCY]
Meeting points of different qualities hint at new possibilities to push the aesthetic forward... opening up new doors for unknown origins to exert themselves into the rugged

ROUGHED BRIDGE [NATURAL INSTABILITY]
Unpredictable geometric formations produced by meetings of material, process, and maker produce analogous relationships to those of geometric formation when systems collide within nature.

SMOOTHING FIELD [NATURALISTIC FORM]
Low cannot exist without high and high cannot exists without low. Undulation, creasing, and roughness are less effective without their normative counterparts enforcing their presence within the conversation

SHOULD YOU SHIELD THE CANYONS FROM THE WINDSTORMS, YOU WOULD NEVER SEE THE BEAUTY OF THEIR CARVINGS
-ELISABETH BUBBLER ROSS

IN AN EFFORT TO BECOME A PART OF NATURE ITSELF AND PRODUCE A NEW TYPE OF NATURALISTIC AESTHETIC, 'THE RUGGED' LOOKS TO EMBRACE ROUGHNESS, AND UNEVENNESS AS TOOLS TO CONNECT THE FERTILE GROUND OF THE INTERIOR WITH THE NATURE IN WHICH IT RESIDES. THIS STAGE OF SWATCH REPRESENTS EXEMPLARY EXAMPLES OF ROUGHNESS AND UNEVENNESS WITHIN THE RUGGED AESTHETIC... LETTING MATERIALS AND PROCESSES DEPOSIT THEIR MARKINGS ON THE PRODUCTS OF THEIR CREATION JUST AS THE WIND LEAVES ITS MARKS ON THE CANYONS. IT IS HOPED THAT THIS ACCEPTANCE OF THE UNPREDICTABLE ALLOWS US TO MOVE CLOSER TO PRODUCING THE UNCOMFORTABLY STRANGE... SOMETHING THAT SEEMS TO EMERGE EFFORTLESSLY WITHIN NATURE

FULL OF ROUGHNESS

Embracing rough in every sense of the term. Roughness in texture, process, thinking, and form making allows the irregularities of process—as pulled from nature—to come into the conversation.

Allowing roughness to live within the aesthetic allows a greater sense of material agency within the work by allowing materials to leave their metaphysical traces behind in the work, and allowing the objecthood to embed itself within the architecture instead of being placed in opposition to it.

PATCHY TRACES [NATURAL AGENCY]
Alternating patterning within the surface texture creates a system of general understanding while also providing moments of extreme uncertainty and curiosity

PROMISCUOUSLY BEARDED [NEO-PRIMITIVE]
Utilizing bearded qualities to acheive a sense of crude natures, the promiscuously bearded patches of the rugged create a series of indexical sensorial moments along with new haptic findings... creating new indexical memories

BRANCHING BRIDGE [NATURALISTIC FORM]
Moments such as this that peel away from the surface generate growth characteristics similar to those of different tree species

BULGING MASSES [NATURALISTIC FORM]
Bulges along with branches call out to different growth patterns of varying species within the anthropocene. Almost appearing as parasitic growths on the surface, these moments become pivotal in pushing the aesthetic away from merely a surface treatment

NEO-PRIMITIVE ROUGHENING [MATERIAL AGENCY]
Created from hybrid work of material, process, and maker, this patterning creates metaphysical traces that allow neo-primitive conversations on the topic of roughening and rustication to come to the surface

"ART SHOULD COMFORT THE DISTURBED AND DISTURB THE COMFORTABLE"
-ANONYMOUS

PROVIDING A SYSTEM FOR 70-90% PREDICTABILITY CREATES AN INTERSTITIAL SPACE IN THE DESIGN PROCESS WHERE MATERIAL AND PROCESS AND PROVE THEIR AGENCY IN THE DESIGN. THIS RELATIONSHIP BETWEEN MAKER, OCCUPANT, MATERIAL, AND PROCESS BECOMES ONE OF CONTINUAL GROWTH, UNDERSTANDING, AND INTERACTION. SWATCH 02 REPRESENTS THE CONCEPT OF ALLOWING A SMALL AMOUNT OF UNPREDICTABILITY WITHIN THE CREATION PROCESS. WITH THIS, MAN IS ABLE TO EMULATE THE CHANCE-BASED CREATION PROCESS OF NATURE MORE CLOSELY AND CREATE UNCOMFORTABLE OR SOMETIMES DISTURBING FEATURES THAT PROVOKE MORE CONVERSATION AND SLOWED DIGESTION RATES BY THE USER... REQUIRING RETURN VISITS BEFORE FULL UNDERSTANDING CAN BE ACHEIVED.

EXPRESSING UNPREDICTABILITY THROUGH THE ODD DISTRIBUTION OF HIGH AND LOW MATTER

Probably one of the more specific requirements of the definition springs from Bataille's theory of "base materialism," in which "high" and "low" classifications of matter become intertwined and upset the hierarchy of what is to be considered the "base" matter and what is additive or subtractive. *Rugged* does not simply want to be a surface plastered on the inside of a box, but instead would rather dance with the box, allowing the unpredictable patchiness of its distribution within the environment to manifest itself in the object as a whole.

POSSESSING QUALITIES OF THE ROUGH, UNEVEN, CRUDE OR UNCOMFORTABLE VARIETY

These four descriptors exist mostly as key terms in describing *Rugged*, but do not serve as the only four existing adjectives. They attempt to highlight the oddness and strangeness that *Rugged* can bring to the conversation and allow the qualities that we as designers usually abstain from to live forward. Embracing the crude and uncomfortable in a rather awkward or rude manner with the use of hair—or bearded-ness—creates a whole new index of sensorial and cognitive instances.

QUESTIONING SMOOTHNESS

The ability to question smoothness allows a whole variety of possibilities when designing the surface qualities of *Rugged* because it merely asks that the surficial qualities of the work push away from smoothness as the default definition of a surface. As digital formalism has made this more possible in both the digital realm and in reality, *Rugged* looks to push back at these notions in an equal and opposing manner.

EMBODYING THE SPIRIT OF NATURE IN WHICH IT RESIDES

Embracing nature's unpredictable essence as a design tool will allow the idea of irregularity and chance to come to— and through—the surface. It is argued that this embodiment of nature's qualities within the interior creates a blended environment not so easily distinguished as *inside*, *outside*, *natural*, or *manmade*, something which the current state of naturalistic is having a hard time accomplishing.

RIDGE FEATURE (NATURALISTIC FORM)
Creases, pinches, and ridges within the surface geometry place the object in conversation with natural geometries such as mountain ranges and river canyons formed by tectonic shifts

DEPOSITED MATERIAL ORIGINS (METAPHYSICAL TRACE)
The material deposits within the rugged lie somewhere between the mineral deposits of glacial shifts and the tooling marks of a craftsman on his work

BULBOUS PEAK (NATURALISTIC FORM)
Bulbous undulations not only appear as a reflection of activity below the surface but also as hints of livelihood, wildness, and primacy

CRUDELY BEARDED (SUB-PRINTING)
One of the main techniques for producing the uncomfortably awkward or crude nature of the rugged is the use of hair. Deposited mostly from fabrics, this fur brings new life to the aesthetic and allows the user to link it with former memories of the crudely bearded

PLOP FIELD (UNPREDICTABILITY)
Embracing moments of the unpredictable become pivotal design elements in allowing the material and process to infer their agency within the design process... putting the output aesthetic in conversation with the material, process, and maker.

"THE FIRST QUESTION I ASK MYSELF WHEN SOMETHING DOESN'T SEEM TO BE BEAUTIFUL IS WHY DO I FEEL IT'S NOT BEAUTIFUL? AND VERY SHORTLY YOU DISCOVER THERE IS NO REASON"
-JOHN CAGE

BY ALLOWING THE AESTHETIC OF THE CRUDE, GROTESQUE, AWKWARD, DISTURBING, OR UNCOMFORTABLE TO COME TO THE SURFACE, 'THE RUGGED' IS ABLE TO INCITE REACTION BOTH PHYSICALLY THROUGH HAPTIC TOUCH (OR LACK THEREOF) AS WELL AS THROUGH INDEXICAL SENSORY RELATIONSHIPS LINKING THE USER TO PREVIOUS INTERACTIONS WITH NATURE AND OBJECTS WITH AESTHETICS OF LIKE ORIGINS. SITTING AT THE DISTURBING END OF THE SPECTRUM, STAGE 03 SWATCH REPRESENTS AND UNCOMFORTABLY AWKWARD... USING BEARDED QUALITIES AS A LAUNCHING POINT FOR 'THE RUGGED'

WHY A CABIN?

The Rugged will first realize, the cabin as refuge from the contemporarily smooth, using it as a site of experimentation for this new architectural aesthetic. Utilizing the creation of several oddly bearded interiors serving as springboards for the proposed aesthetic, new conversations surrounding rustication, material agency, palatability, affect theory, and strangeness come into the current discussion. That is not to say that the cabin is the only container that can properly hold a rugged interior, it exists simply as a launching point towards further conversation on potential containers.
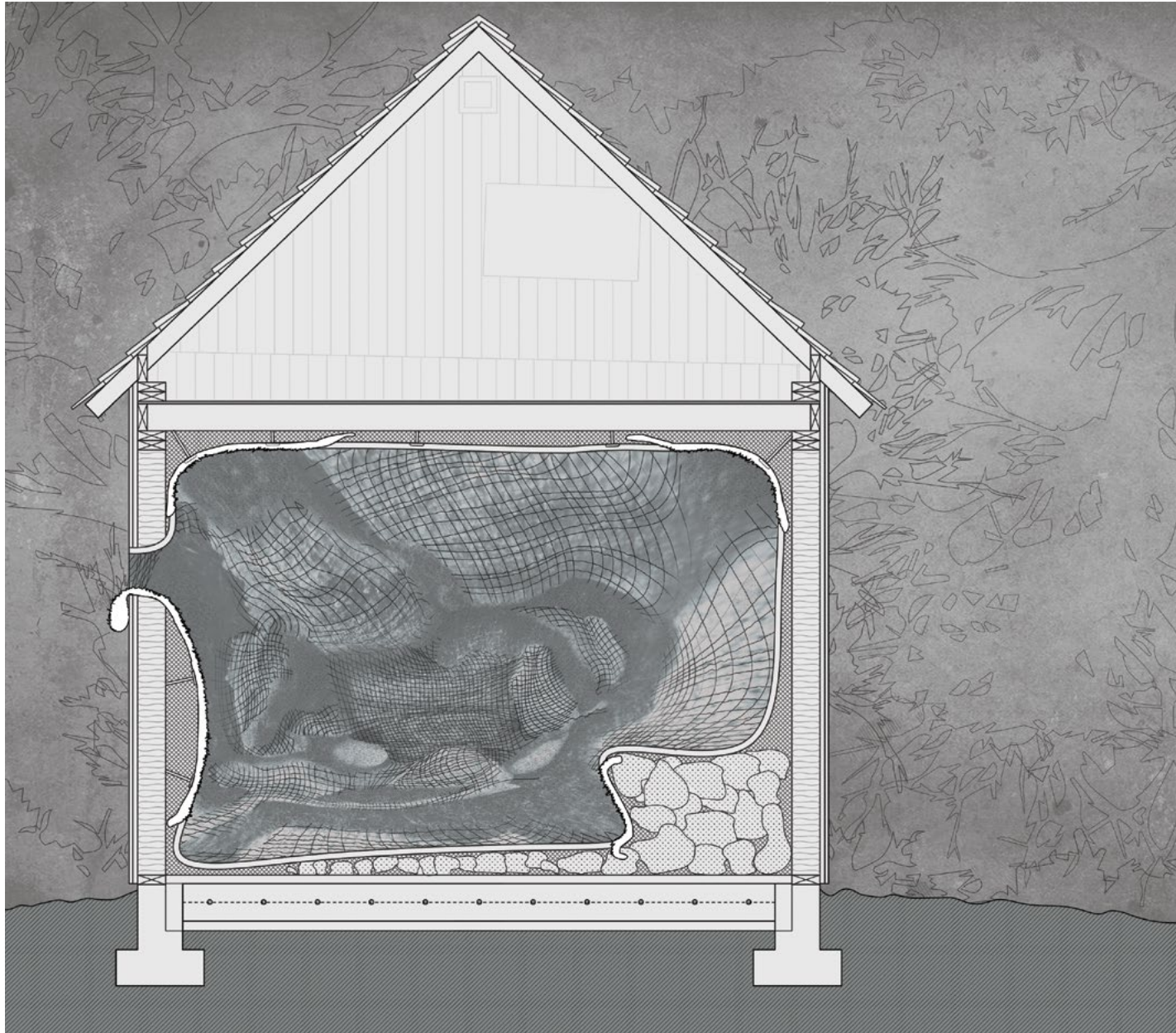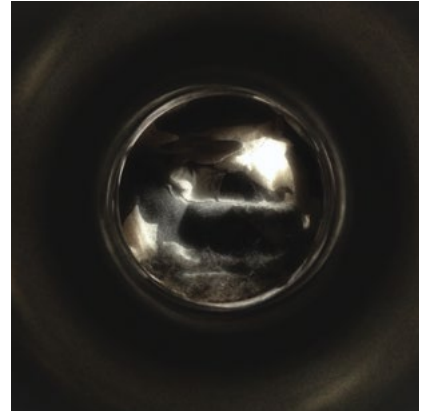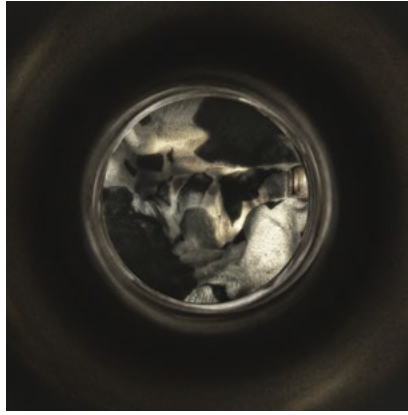
AESTHETIC DISTANTIATION

Why must everything be perceivable, comprehendible, and understandable at first glance? Why can't we take a bit of time to get to know something before we begin to criticize it, by distancing the viewer from the subject and the user from the environment through various methods of aesthetic distantiation? Similar to Brecht's methods of distatiation within theater and the Picturesque's drawing practices that required a "sustained attention" to understand their full worth within the work, *The Rugged* looks to provide this sustained attention with a material and aesthetic that happens to resist that very notion, making the user want to pull away from it's rather abject notions of reality. Pushing the boundaries of the palatable and looking to move into an aesthetic realm in which curiosity, palatability, sublimity, and rustication are in conversation with each other, the swatches, peepholes, and their respective dioramas attempt to provide an effectual environment in which this conversation can take place. This viewing environment begins to introduce the neo-primitive roughening of the contemporarily smooth aesthetic.
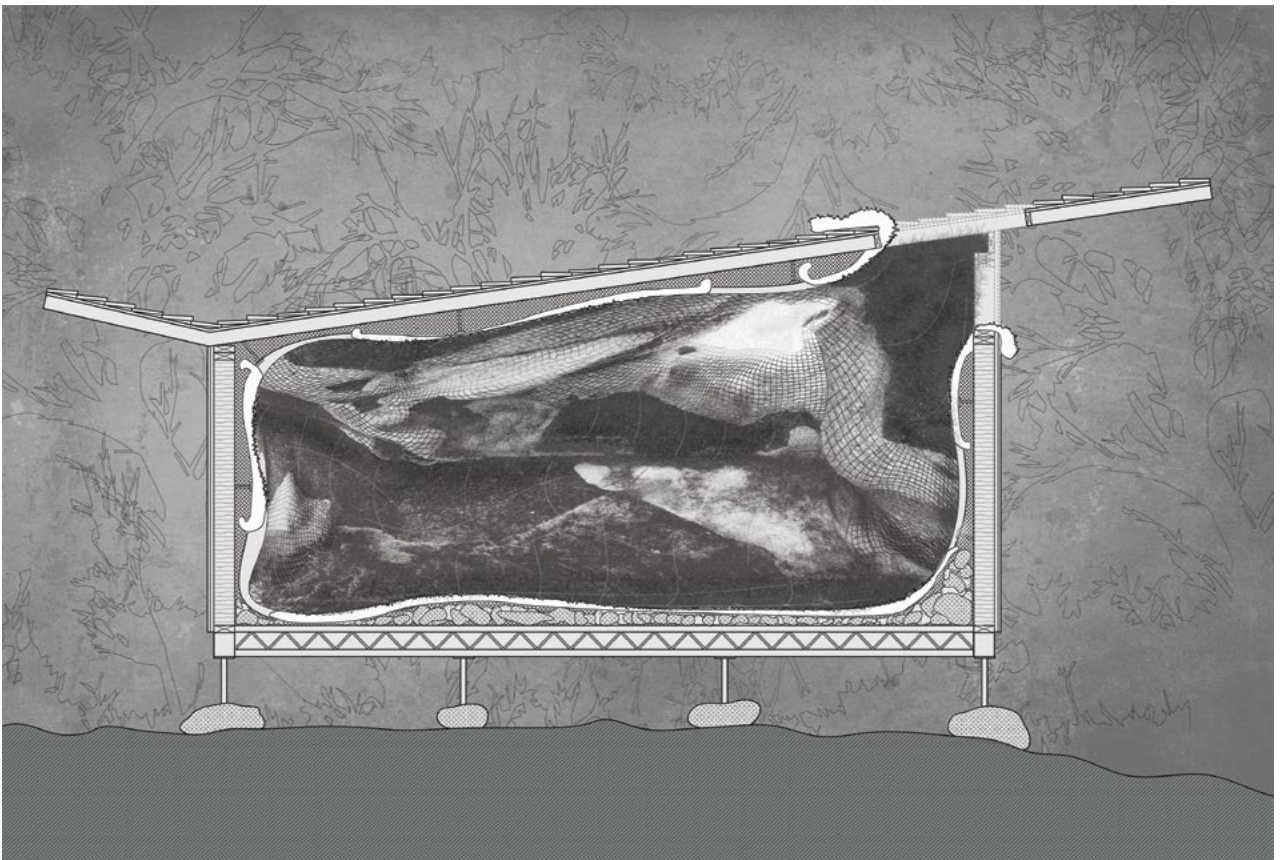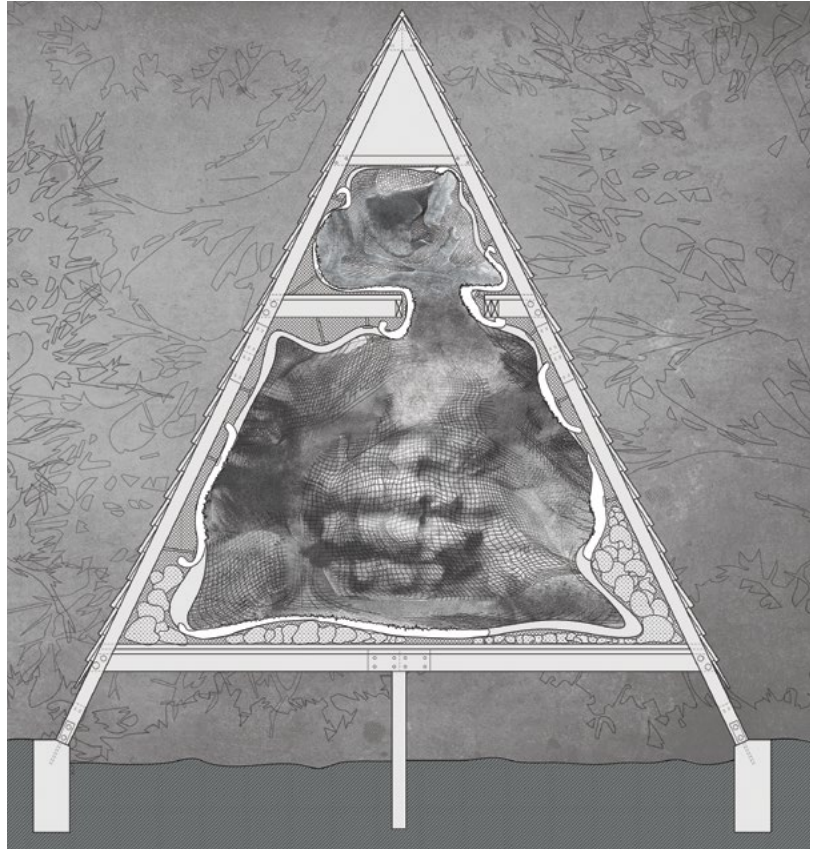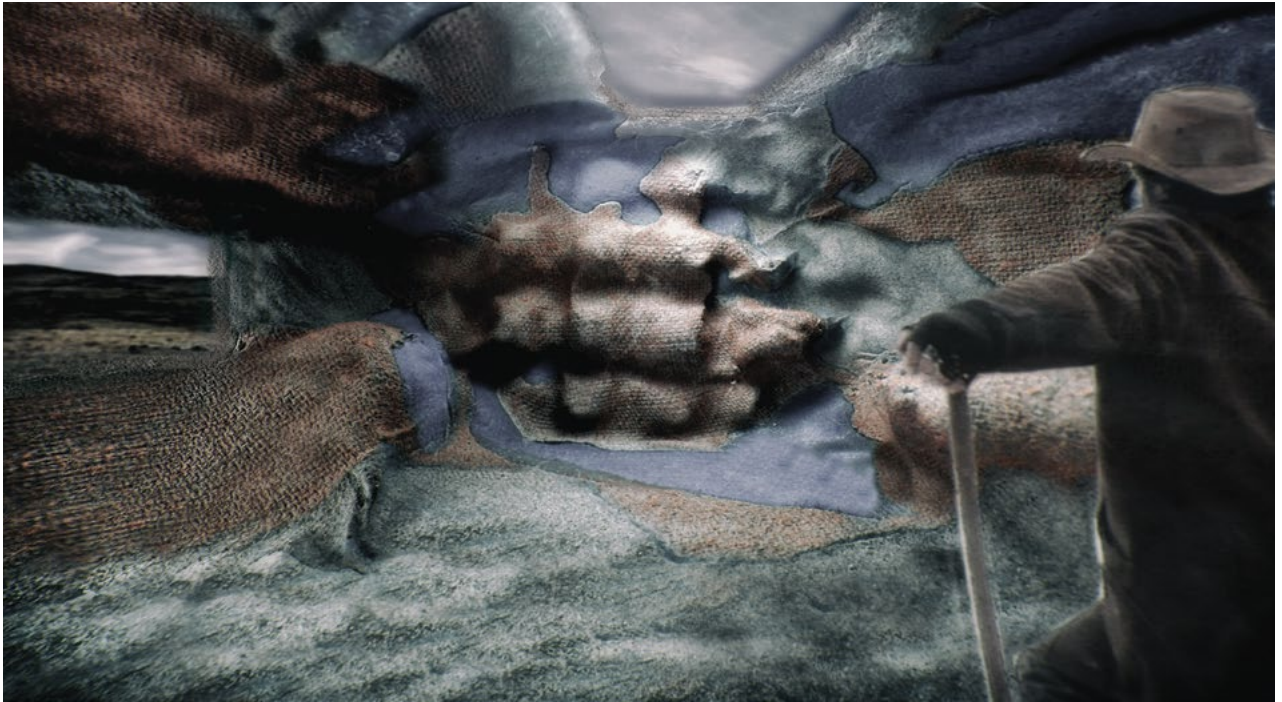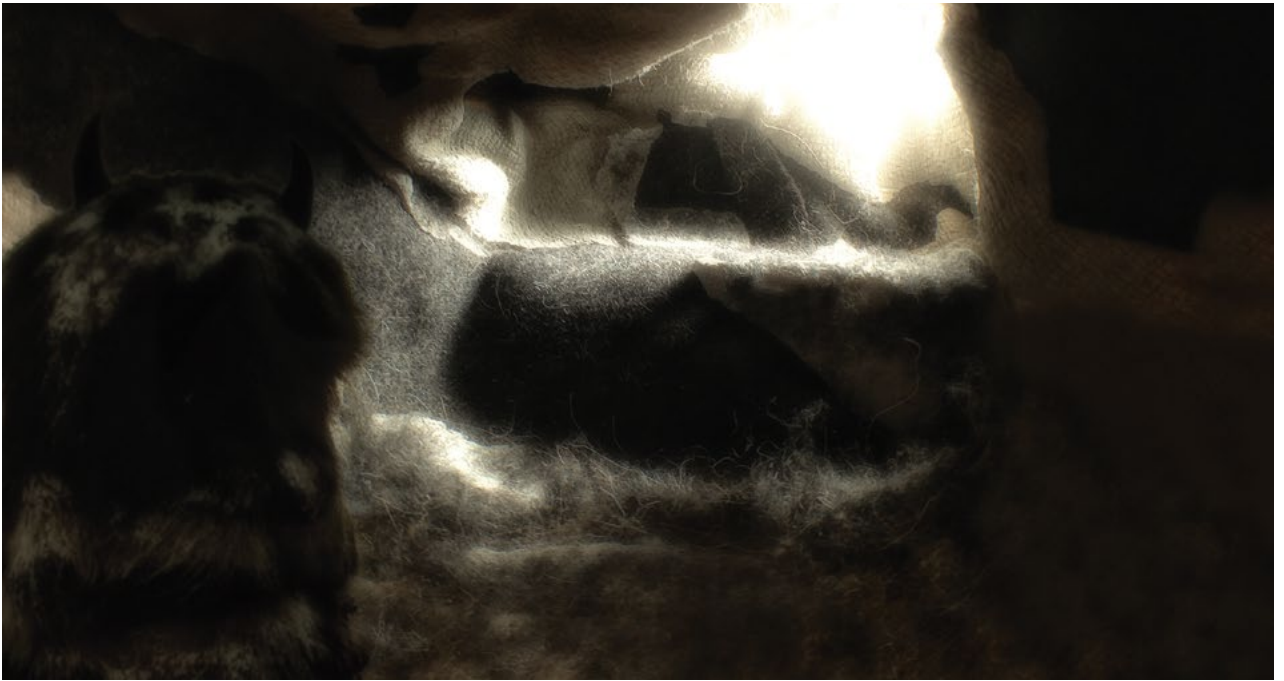
ARCHITECTURAL AESTHETICS

As designers, we are constantly exposed to new styles, aesthetics, and movements. Differentiating which ones are worth the intrigue and which are simply not able to hold attention is often a difficult decision. That being said, sometimes the ones that require a longer digestion period are the ones that often bear more fruit. The birth of new aesthetics in architecture not only allow the field to move forward by simply bringing new items into the current conversation but also lets us reflect on the past methods and build on them. We often become plagued by anachronistic conversations in texture, hapticity, and truthfulness that surround work of this variety—and aesthetics as a whole—but it is hoped that this work, as well as many other emerging aesthetics can move us forward into more interesting conversations of affect theory, interior rustication, material agency, strangeness, and palatability within the discourse. By embracing some of the qualities that we often push away from, and by allowing them to produce interiors of questionable palatability we can move forward onto talks of their usefulness in discourse and how to validate their effectiveness within the discourse as a whole. ∎

MANUFACTURED DESTRUCTION

LYLA FEINSOD | M.ARCH THESIS
ADVISOR: CHRISTIAN UNVERZAGT

In studying environments that do not welcome habitation, there began a provocation of a deeper curiosity and understanding of the skin layers of Earth. The inner skin is the core, the uninhabitable region of the earth. The second and outer skin is the surface where humans inhabit. This thesis focuses on the moments in the second layer that begin to be uninhabitable; moments of space destroyed by man. This area of the skin poses the possibility of there being a third skin. The moments of interest are specifically identified throughout on the act of mining, an economy-driven, destructive process that leaves land a desolate, useless environment. It is an inevitable process that will continue to grow with the rapid rate of urbanization. The focal point is on the moment where urbanization meets the condition of the mine.

Cerro de Pasco is a city in Peru where mining has defined its past, present, and future. It is a city bound by its geographical confines. Its mine takes up half the area of the city and continues to eat the surrounding urbanization, including a population of 70,000. The local mentality towards the mine is of extreme disgust and antipathy, yet it is their economic salvation.

Right: Mine in its current state.

Below: Mine evolution.

c. 1800

800 m

800 ft

3000 ft

1300 ft

c. 1900

5000 ft

2600 ft
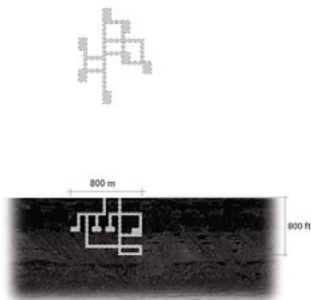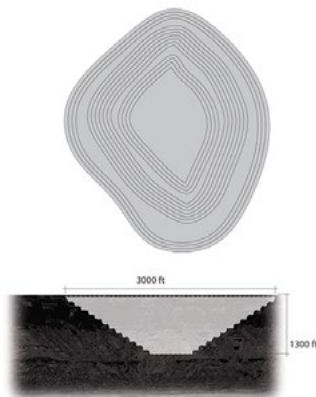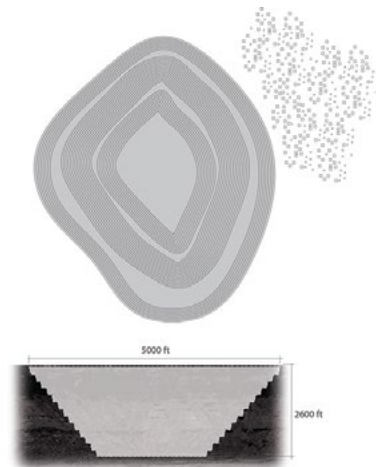
c. 2000

To approach the monumental scale—6,000 feet by 3,000 feet in dimension and 1,200 feet deep—the conditions were studied that occurred in the surrounding city and the connection points between those locations. This was a way to break up the site and break down its scale, which began to inform formal moves of circulative infrastructure and the introduction of architecture. From studying the site in sections, research strategies of landscape architect Alan Berger were applied. These strategies in relation to minescape rehabilitation, their stages of stabilizing contours, and impenetrable surface allows a rehabilitative process to take over. This begins to redefine the conditions of environmental and architectural opportunity. This logic supports sectional manipulations of the site, while understanding its context and future use.

The role that architecture plays is the extension of the multiple skins and layers of the landscape. Architecture typology thus becomes one to be claimed and circulated through by humans and nature. It is designed for these types to inhabit it as the site progresses and changes. The way it is utilized is thus always changing and the claiming of place by humans is changed by the way the landscape claims and moves through the architecture. Elements and materials used anticipate this change with multiple layers of porous skins, understanding the relationship with outside elements such as the sun, rain, water, drainage, and vertical geography.

Right: Phasing strategy.

c. 1800

c. 1900

c. 2000

Future Growth

City + Mine Location

Site Location

Cerro de Pasco Evolution

1973

1999

2014

Future Condition

Phase 1 - Architectural skin, growing vegetation, Modes of Human Occupation
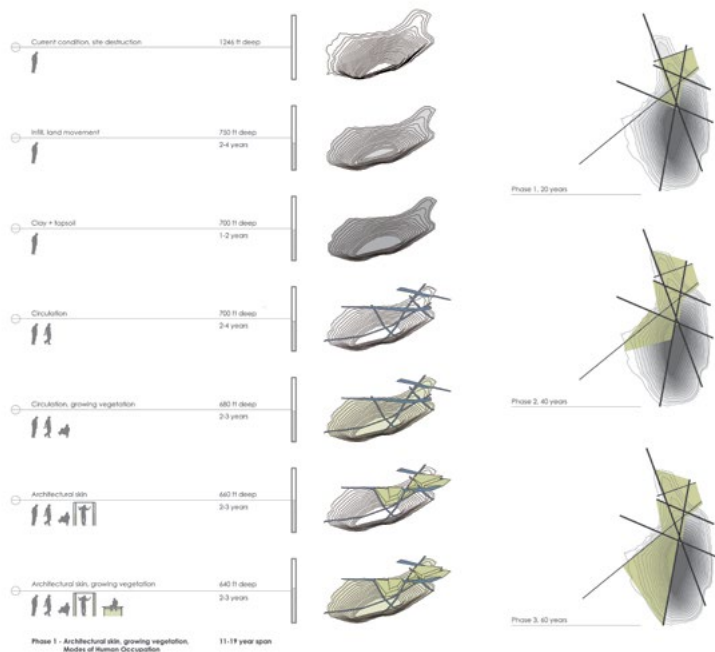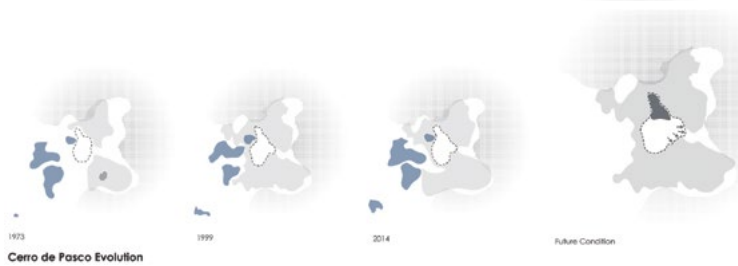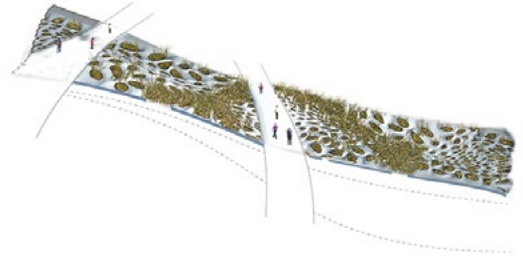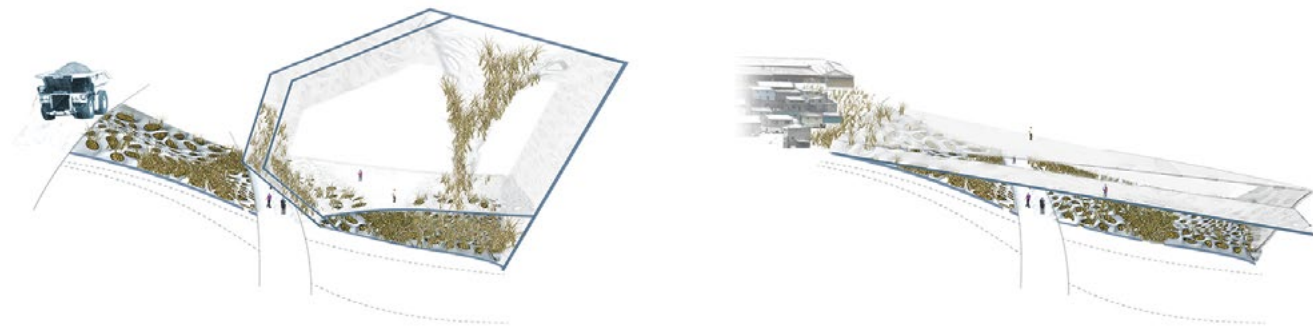
By documenting the research processes that occur and their effect on the relationship of how the role of the body changes, it anticipates how this becomes a typology or methodology that can be applied throughout the site or in sites with similar conditions over a period of time. This research explores the role of architecture in conditions that are not suitable for existing typologies to plug in. Thus a new way to approach the role of architecture and how it can be applied in these uninhabitable environments arise. ∎

Opposite: Mine building future.

Above: Moment diagrams: path, arch, edge.

Below: Existing interior mine in its current state.
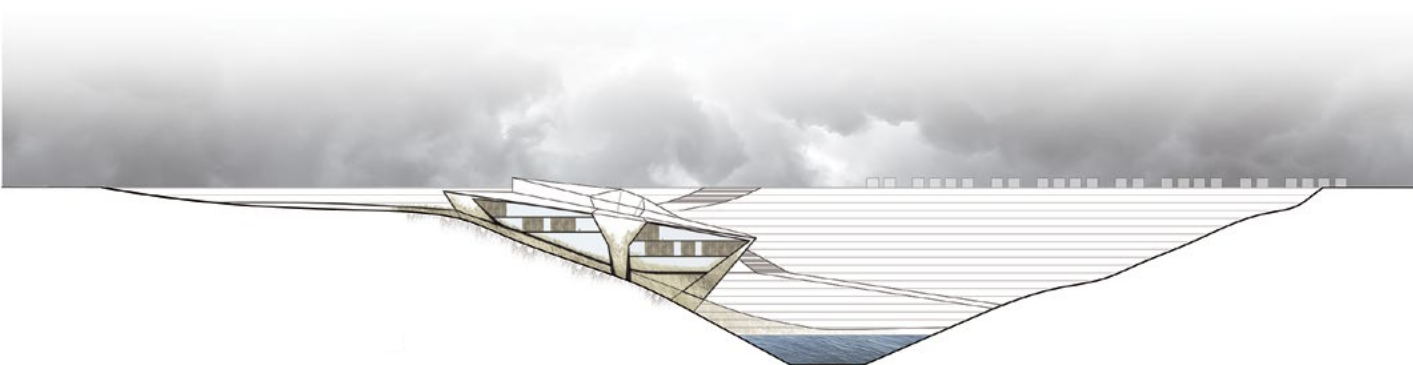
> *The role that architecture plays is the extension of the multiple skins and layers of the landscape.*
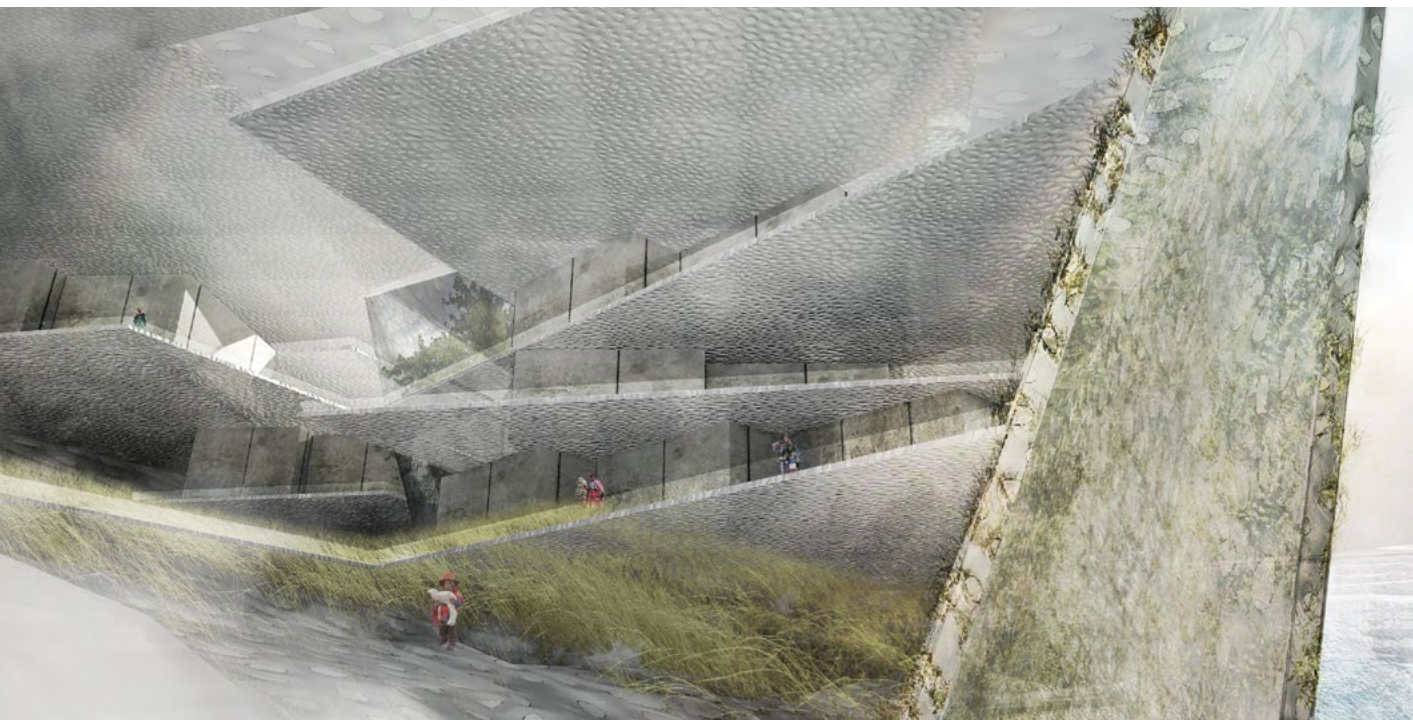
MERIDIAN OF FERTILITY

REID FELLENBAUM | M.ARCH THESIS
ADVISOR: RANIA GHOSN

loam

silt

silt
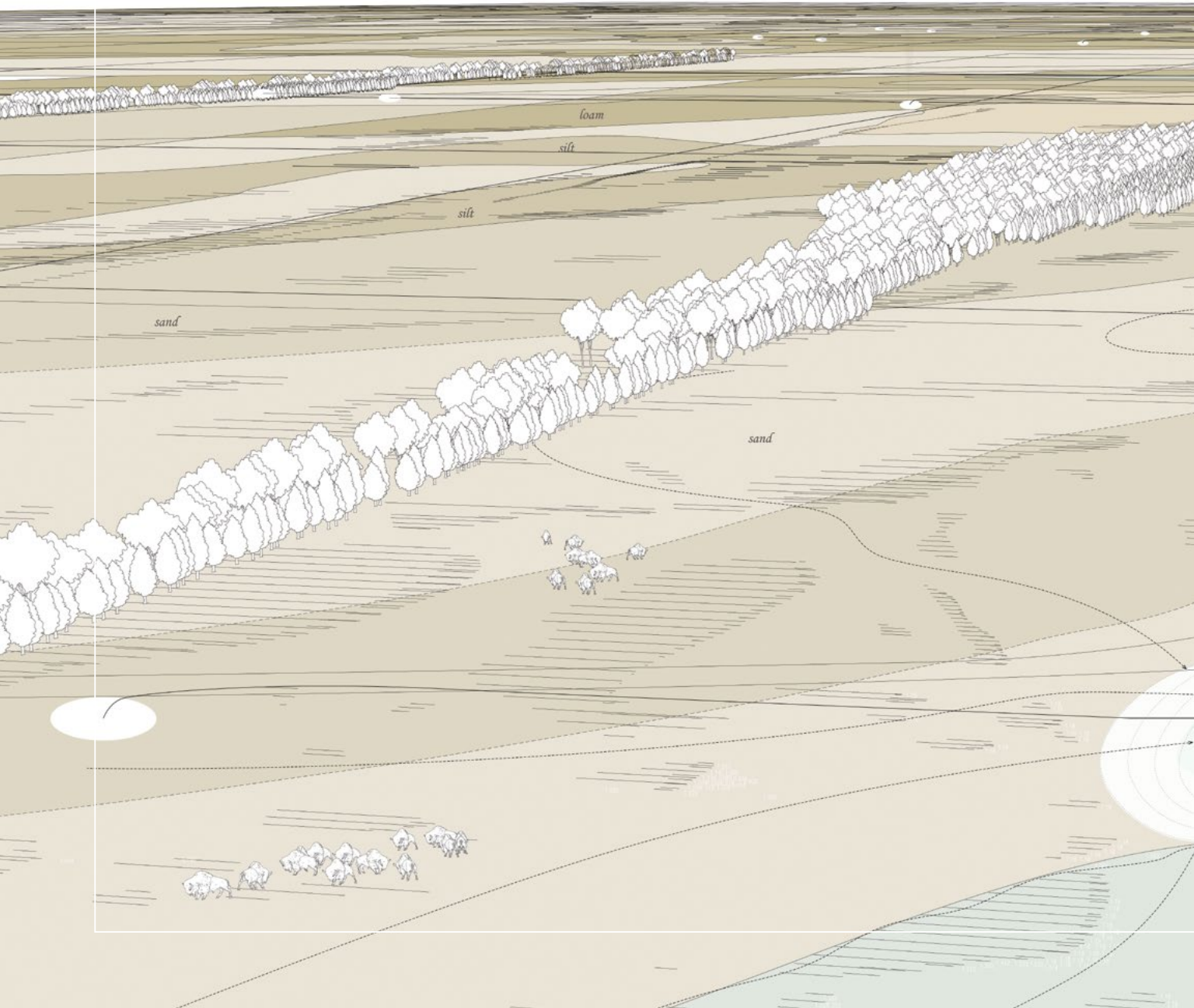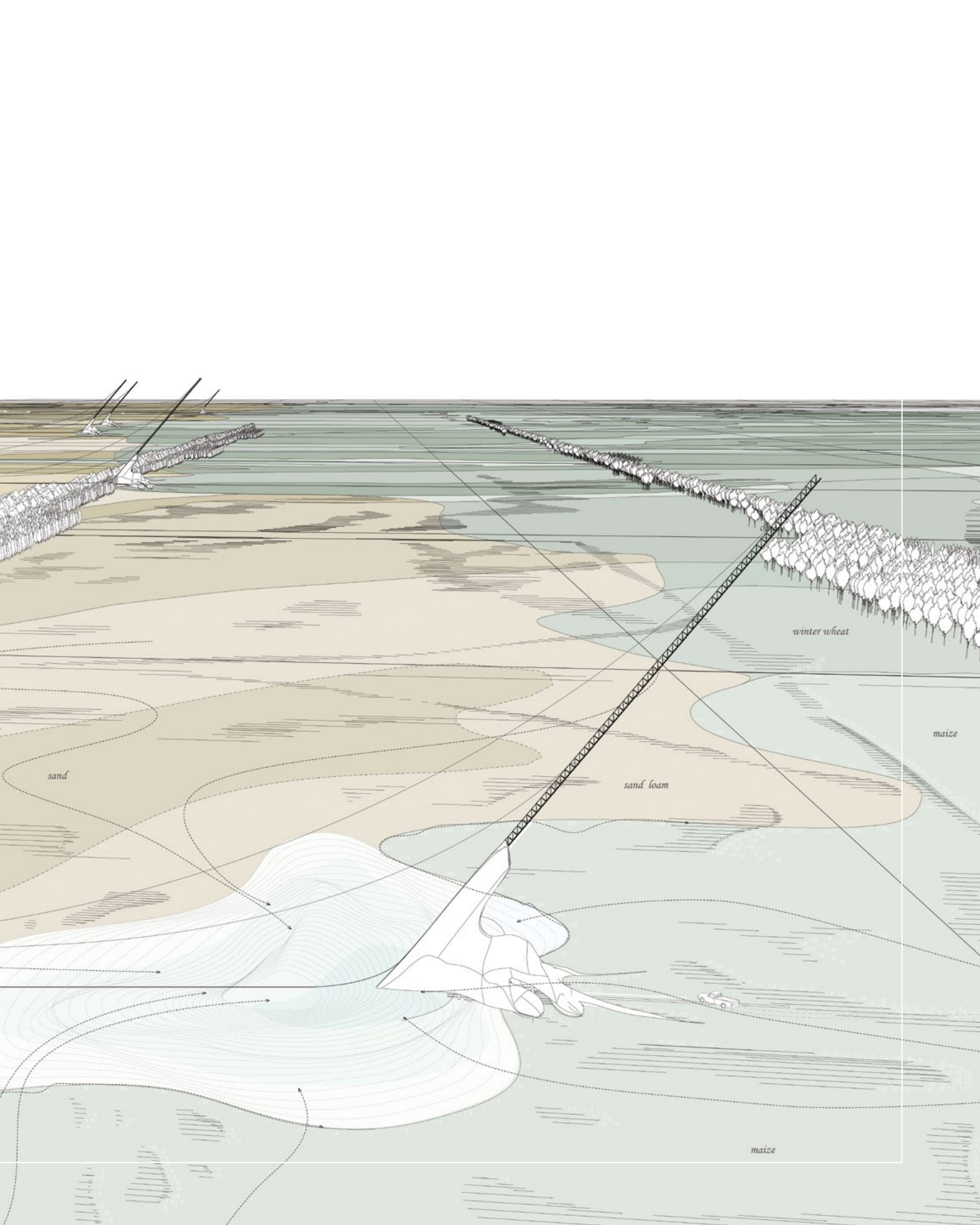
sand

sand

sand

sand loam

winter wheat

maize

maize
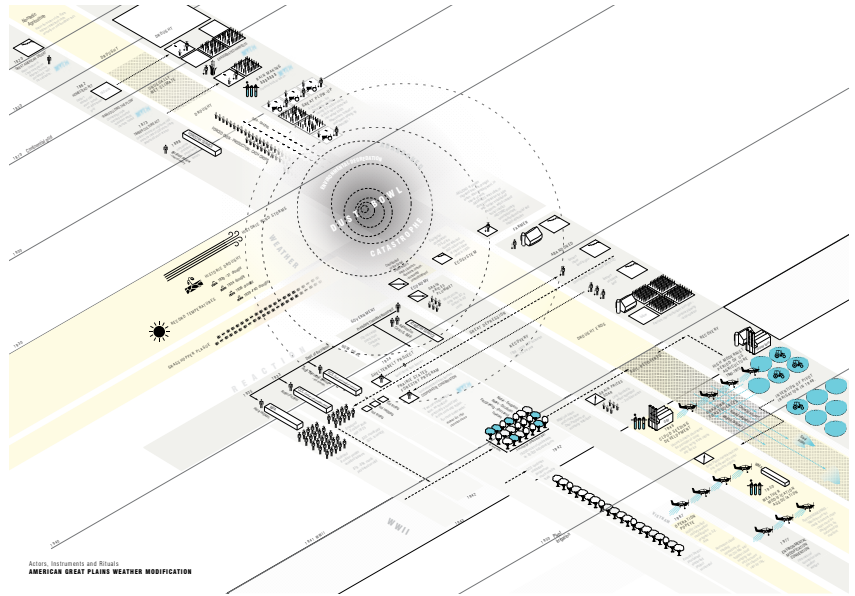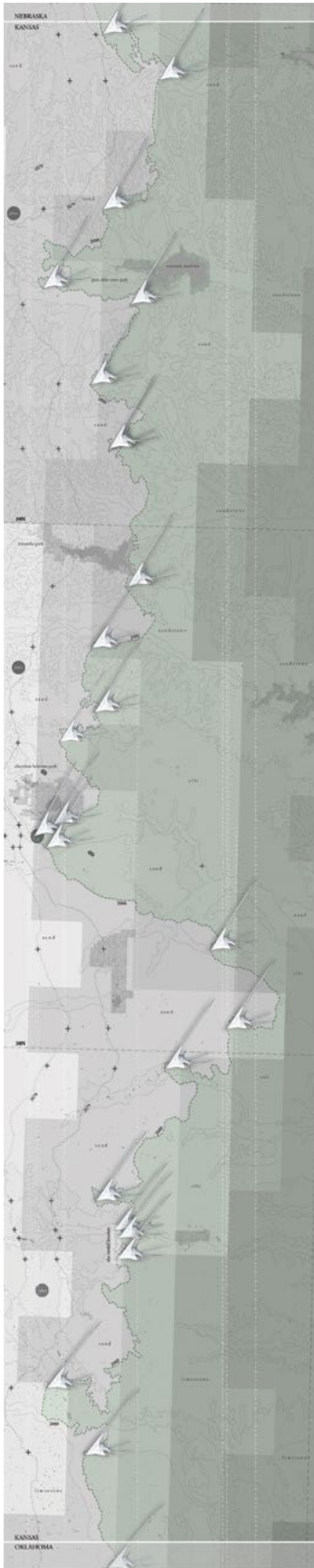
Actors, Instruments and Rituals
AMERICAN GREAT PLAINS WEATHER MODIFICATION

1750-1850: 'Rain follows the Plow'
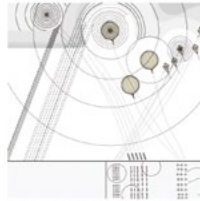
1890: US Government explosive balloon rainmaking experiment

1893: Kansas newspaper advertising traveling rainmaker

1893: Hatfield the Rainmaker
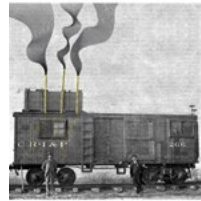
1895: Rainmaking Laboratory car - Chicago Rock Island & Pacific Railroad

1890- 2014: Various dowsing instruments used to locate ground water

1890: Rainmaking Funnels, Nebraska
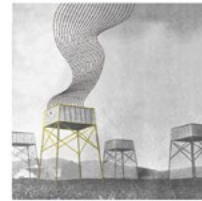
1890-1900: Hatfield's rainmaking towers

1800-1940: Belief that trees create water

1934: Forester Rafsel Zon leads New Deal Shelterbelt Program

2014: Automatic Gas Hail Cannons

1940: GE invents 'cloud seeding' using dry ice and silver iodine

With current models predicting aquifer depletion as early as 2080, the Great Plains region approaches a critical threshold that will test the resilience of its productive landscape.
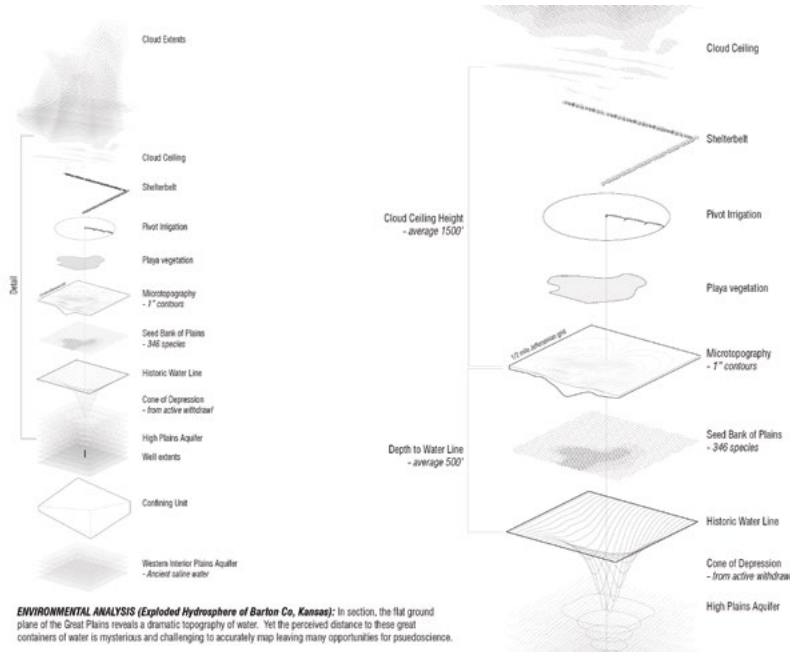
ENVIRONMENTAL ANALYSIS (Exploded Hydrosphere of Barton Co., Kansas): In section, the flat ground plane of the Great Plains reveals a dramatic topography of water. Yet the perceived distance to these great containers of water is mysterious and challenging to accurately map leaving many opportunities for psuedoscience.

PERIODS OF GREAT PLAINS PRODUCTIVE LANDSCAPE ORGANIZATION

- 1800: PRE-RAILROAD

-Nomadic dry-farming
-LIMIT: Soft floodplain
-INSTRUMENT: Digging Stick, Bone Hoe

1800-1960: JEFFERSONIAN GRID

-Sedentary dry-farming
-LIMIT: None
-INSTRUMENT: Plow, Horse, Tractor

1960-2050: AQUIFER

-Sedentary irrigated farming
-LIMIT: Aquifer
-INSTRUMENT: Pivot Irrigation

2050 -: POST-AQUIFER

-Nomadic dry farming
-LIMIT: Hyper-local climate prediction + crop insurance
-INSTRUMENT: Weather Station

IRRIGATED GREAT PLAINS and FARM INCOME

Average Net Farm Income (by county)

■	$45,000. and up
■	$30,000 - $45,000.
■	$15,000 - $30,000.
□	Great Plains Region	$0 - $15,000.
▨	High Plains Aquifer	

HISTORICAL ANALYSIS (Landscape Organization): The current Great Plains economy and productive landscape organization depends on irrigation from the High Plains Aquifer. At the current rate of depletion the aquifers will not be able to support agriculture by 2050.

Upon his return from a government-sponsored expedition of the Arkansas Territory in 1820, Major Stephen H. Long wrote that the region was "unfit for cultivation and of course uninhabitable by a people depending upon agriculture." Long decisively labeled this region as the "Great American Desert" on his influential federal survey map. This uncontested, official government label would trigger over a century of private—even federally sponsored—counter-myths aimed at dispelling the American public's image of a waterless, infertile West.

These counter-myths flourished in the 1890s fueled by American optimism and faith in the machine. The various actors, instruments and rituals of climate modification took advantage of the wide gap between science and uncertainty by filling it with ideologies and illusions that suggested a rationalized control of nature. These instruments and rituals of climate modification have persisted in the faith and folklore of the American Great Plains since its inhabitation by man.

Opposite left: Reginal site plan projected average rainfall for 2080 (NOAA) and soil geology determines the annual Meridian of Fertility across Kansas. Punctuated by an infrastructure of climate chapels, the Meridian defines the edge between Western short grass prairie and Eastern insurable productivity.

Opposite top: Historical analysis (actor network diagram) historic analysis of the actors, instruments and rituals of weather modification on the Great Plains. The uncertainty of climatic extremes encouraged the Great Plains to become a testing grounds for weather modification.

*Opposite bottom:* Historical analysis (actors, instruments, rituals) fostered through American optimism and faith in the machine, the gap between science and uncertainty is filled with ideologies, rituals and instruments whose illusions suggest a rationalized control of nature.

Top: Environmental analysis (exploded hydrosphere of Barton Co., Kansas) in section, the flat ground plane of the Great Plains reveals a dramatic topography of water. Yet, the perceived distance to these great containers of water is mysterious and challenging to accurately map leaving many opportunities for psuedoscience.

Bottom: Historical analysis (landscape organization) the current Great Plains economy and productive landscape organization depends on irrigation from the High Plains Aquifer. At the current rate of depletion the aquifers will not be able to support agriculture by 2050.

Precipitation   Average Wind Speed   Soil Quality   Soil Moisture

NOAA CLIMATE PREDICTIONS: 2080
Average precipitation
■ high
□ low

Average wind speed (concentration of wind chapels)
high
medium

species range
current
2050
2100

Juglans nigra – Black Walnut
Projected Migration out of Kansas

species range
current
2050
2100

Bumelia lanuginosa – Gum Bumelia
Projected Migration into Kansas

Windward Side   Leeward Side

Shrub Evergreens Med. tree Tall trees Med. tree Shrub

Zone of increased yield (200-300m)

wet

typical

dry
1967   2014

SHELTERBELT (Infrastructure + climate data): An infrastructure of Shelterbelts are planted with the anticipation that certain species are also migrating to and from the region. The Shelterbelt serves two purposes, first slowing the migration of the Meridian by preserving microclimates of soil moisture and second by planting future hyper-localized climate data that will further refine the model.

BLACK WALNUT - dendrochronology - hyper-local climate analysis through tree ring measurement BLACK - latewood (summer) BLUE - earlywood (spring)

Nearly two centuries later, the "desert" Major Long described, now known as the Great Plains, has become one of the world's most productive agricultural landscapes. Yet its history as a productive landscape began long before Major Long ever set eyes on the "Great American Desert." Research and analysis concluded that there have been three major stages of productive landscape organization in the Great Plains:

PRE-RAILROAD (–1800)
Plains Native Americans were nomadic dry-farmers whose simple instruments, the digging stick and bone hoe, limited agriculture to the soft floodplains.

JEFFERSONIAN GRID (1800–1960)
Early pioneers were sedentary dry-farmers whose sturdy plows could upturn the hardest prairie soil and whose organized landscape put few restrictions on settlement.

AQUIFER (1960–2050)
With the discovery of the High Plains Aquifer system in the 1940s and the wide-spread use of pivot irrigation systems by the late 1960s, sedentary irrigation farmers were able to substantially increase crop yields and were no longer tied to the volatile threat of drought.

Top: Annual meridian migration (big data analysis)—as the projected 20 inch annual precipitation line—minimal quantity of rain required to dry farm—slowly migrates east so does the Meridian Line. Continuously refining itself with newly harvested data, the climate model analyzes projected changes in numerous variables to determine the productive land that cannot be insured for the upcoming year.

Bottom: Shelterbelt (infrastructure + climate data)—an infrastructure of shelterbelts are planted with the anticipation that certain species are also migrating to and from the region. The shelterbelt serves two purposes, first slowing the migration of the Meridian by preserving microclimates of soil moisture and second by planting future hyper-localized climate data that will further refine the model.

However, the relentless mining of ground waters, primarily for agricultural irrigation, is forcing the High Plains Aquifer to rapidly approach exhaustion. With current models predicting depletion by 2080, and climate models warning that the precipitation lines will gradually migrate to the East, the Great Plains approaches a critical threshold that will test the resilience of its productive landscape. At this moment, the post-aquifer agriculturalist will once again be at the mercy of the uncertain climate, forcing yields to decline dramatically and faith in the landscape's fertility to falter. The region will have two options:

1) Return to dry farming: resulting in a 50 percent decrease in yields and increased vulnerability to drought.

2) Abandon the Great Plains: a concept introduced by the Rutgers professors Frank and Deborah Popper in the 1980s as "the Buffalo Commons," who proposed the eventual depopulation and restoration of the Prairie—both of which are dramatically occurring today.

Top: Playa (climate data extraction + seed bank)—western Kansas alone contains over 22,000 small, ephemeral wetlands called playas. Each playa functions as the runoff collection point for a localized watershed and as such is very sensitive to minor fluctuations in soil saturation. A soil core sample reveals clay stratifications that can provide historical, hyper-local climate data. The moisture maintained in a playa contributes to its function as the largest and most diverse seed banks of the Great Plains.

Bottom: Microtopography (palimpsets from past organization)—past productive practices have been inscribed in micro-topographic alterations of the flat Kansas landscape. These various palimpsets provide microclimates that are advantageous to certain crops and therefore are identified and productively utilized.
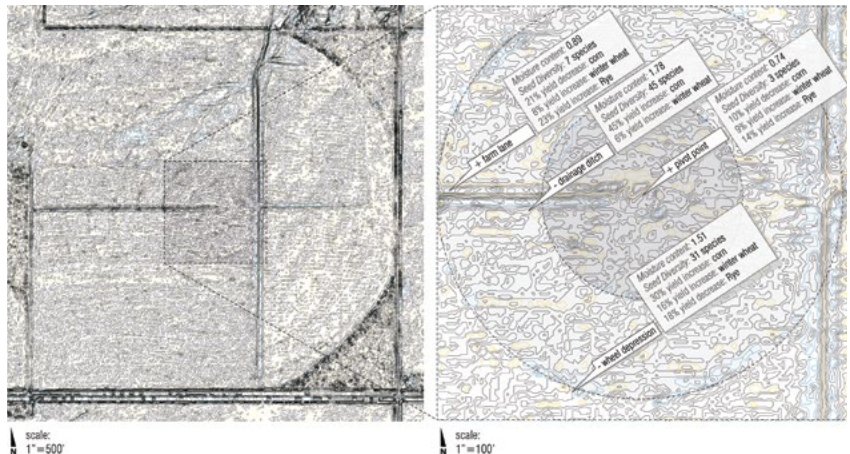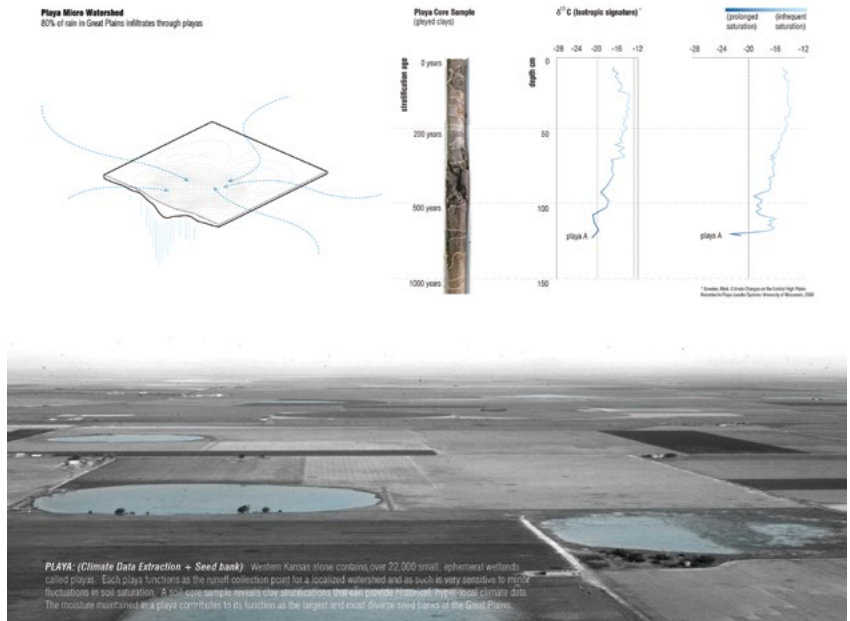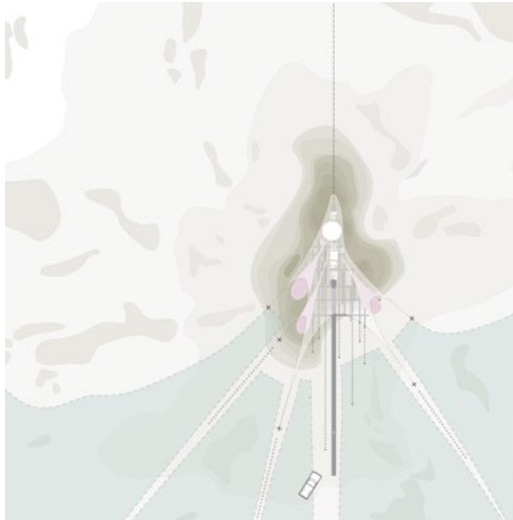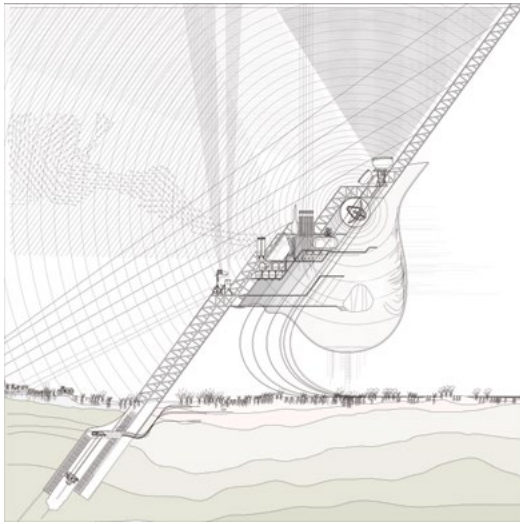
This project responds to these options by envisioning that the next stage of productive landscape organization will break from its rigid sedentary practices to embrace hyper-local climate prediction and a return to the nomadic sustainable agricultural practices of the Native Americans. Current climate modeling predicts that the realm of land suitable for dry farming will steadily migrate to the Northeast. By deploying and utilizing a shifting infrastructure of playa, shelterbelts and climate stations, and hyper-local prediction outposts, the climate model inscribes a new line—the Meridian of Fertility—across the Great Plains, defining the edge where insurable productivity ends and short grass prairie begins.

PLAYA (CLIMATE DATA EXTRACTION + SEED BANK)

The playa is the keystone of the hydrosphere, a subtle ephemeral wetland that functions to infiltrate eighty percent of the water falling from the clouds above into the great aquifers below. Each playa functions as the runoff collection point for a localized watershed and as such, its distinctly clayey soil is highly sensitive to minor fluctuations in soil saturation. A soil core sample from a playa reveals clay stratifications that can provide decades of hyper-local climate data. The moisture maintained in a playa also contributes to its function as the largest and most diverse seed banks of the Great Plains. Western Kansas alone contains over 22,000 playas that persist despite regular abuse from farmers who ignore their quiet importance to the region.

SHELTERBELT (CLIMATE DATA EXTRACTION + WIND BREAK)

An infrastructure of Shelterbelts is planted with the anticipation that certain species are also migrating to and from the region. The Shelterbelt serves two purposes: first, slowing the migration of the Meridian by preserving microclimates of soil moisture, and second, through its

2079 A.D. chapel location
(now subterranean data
probe)

soil sampling tube

hyper-localized climate records that are preserved in its growth rings. The science of dendrochronology can extract highly localized climate data from tree core samples that will further refine the model. In a sense, the Shelterbelt establishment is planting future data.

CLIMATE CHAPEL
(CLIMATE DATA HARVESTING AND INTERPRETATION CENTER)

The main organizational node securing the Meridian is at once an instrument harvesting and feeding data to a climate model as well as an interpretation outpost that disseminating model conclusions to the landowners and public. Sited on a playa, the chapel harvests historical climate data embedded in soil horizons, and monitors the current climate through a vertical array of instruments which tailored to specific horizons of the hydrosphere. Before each new year's planting, an updated meridian line is determined and the chapels reluctantly coordinate in a ritual of Eastwardly retreat—a sign of the advancing climate model. The chapels leave their embedded core behind, now just a scar in the recovering prairie landscape, to continue to extract localized data and to establish a visible record of regional climate change.

Like the trees of Roosevelt's Great Plains Shelterbelt—which, provided the migrant farmer with a reassuring mark of sub-humid fertility in the semi-arid landscape—the Meridian of Fertility and its infrastructure of climate chapels provide the technologically credulous American with a reassurance in their perceived fertility of this important productive landscape. ∎
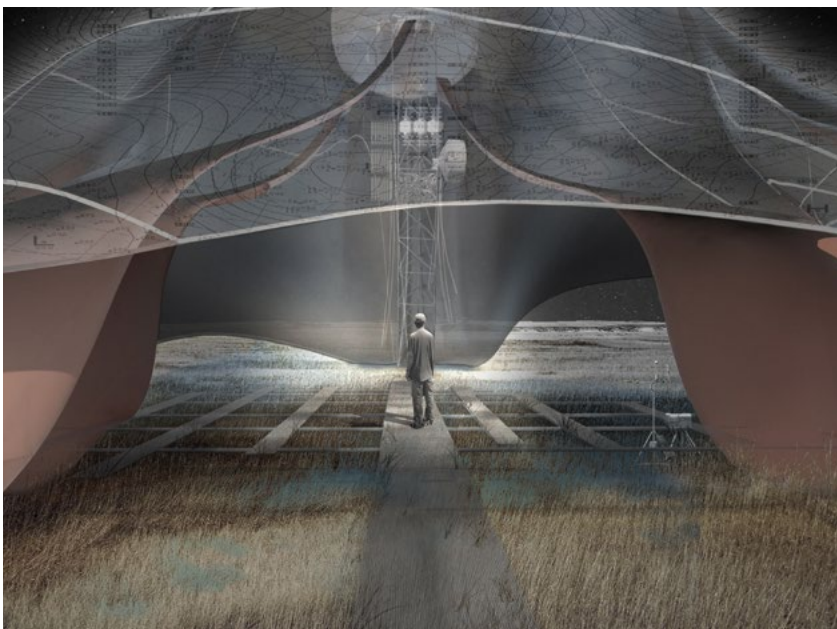
Opposite top: Climate chapel—like the trees of Roosevelt's Great Plains shelterbelt, which provided the migrant farmer with a reassuring mark of sub-humid fertility in the semi-arid landscape, the climate chapels provide the technologically credulous American with a reassurance in their perceived fertility of landscape.

Opposite bottom: The main organizational node marking the annual Meridian features an active tensile skin that is at once an instrument absorbing data and a veil over the central core of instruments inside. The two stations, Wind and Vapor, hover above a playa or wetland and are tailored to a specific realm of data collection which is reflected in their careful regional siting.

Top: Climate Station—walking east through the recovering prairie a small probe is seen embedded in the ground—a visible record of a changing climate.

Bottom: Climate Station—the hovering expanded-metal pathway is a level datum accentuating the subtle playa microtopography. The path is beginning to blur with the landscape as it becomes embedded in the grasses.

IMMEDIACY AT EXTREMES

ANDREW ISAAC NG | M.ARCH THESIS
ADVISOR: ELLIE ABRONS
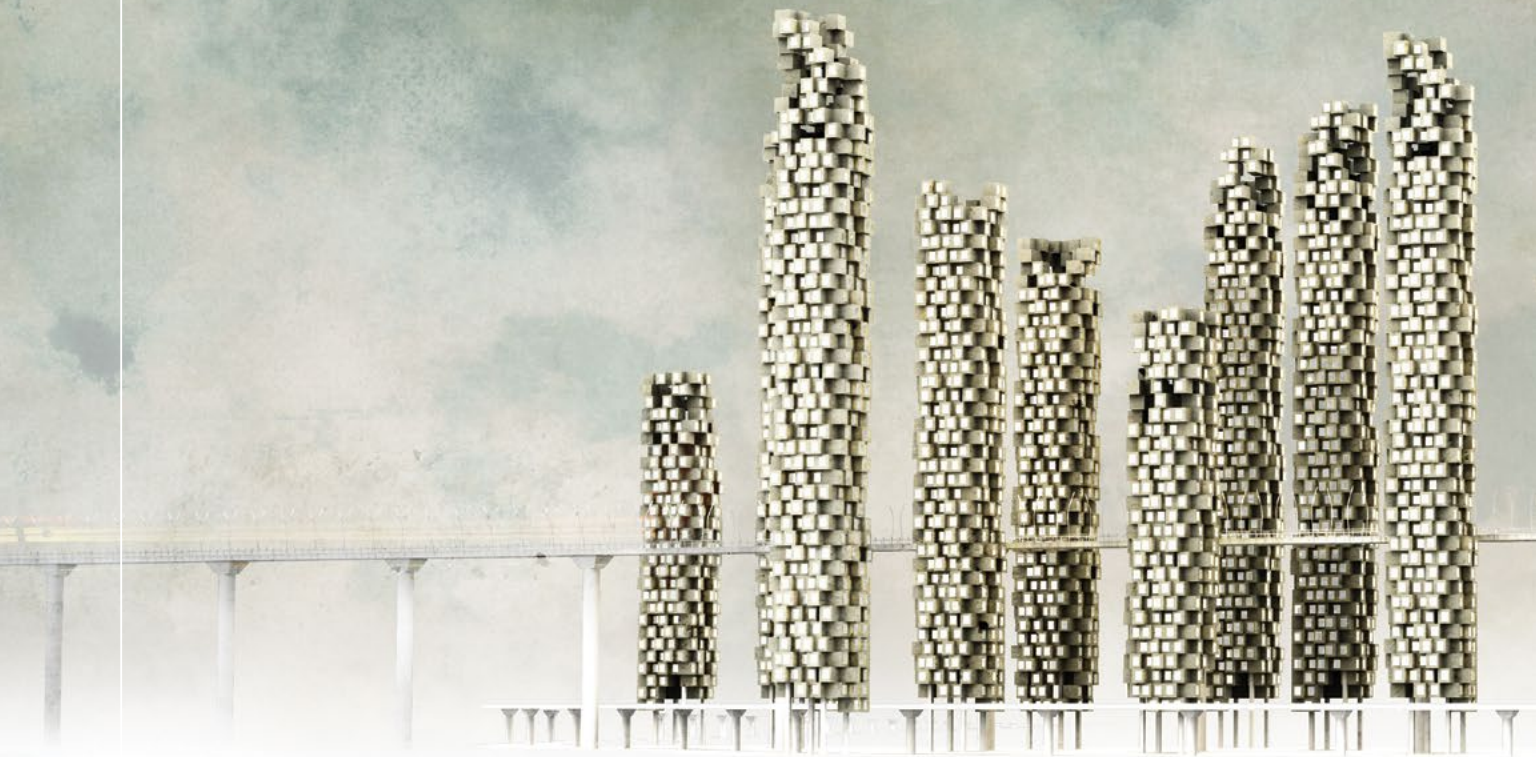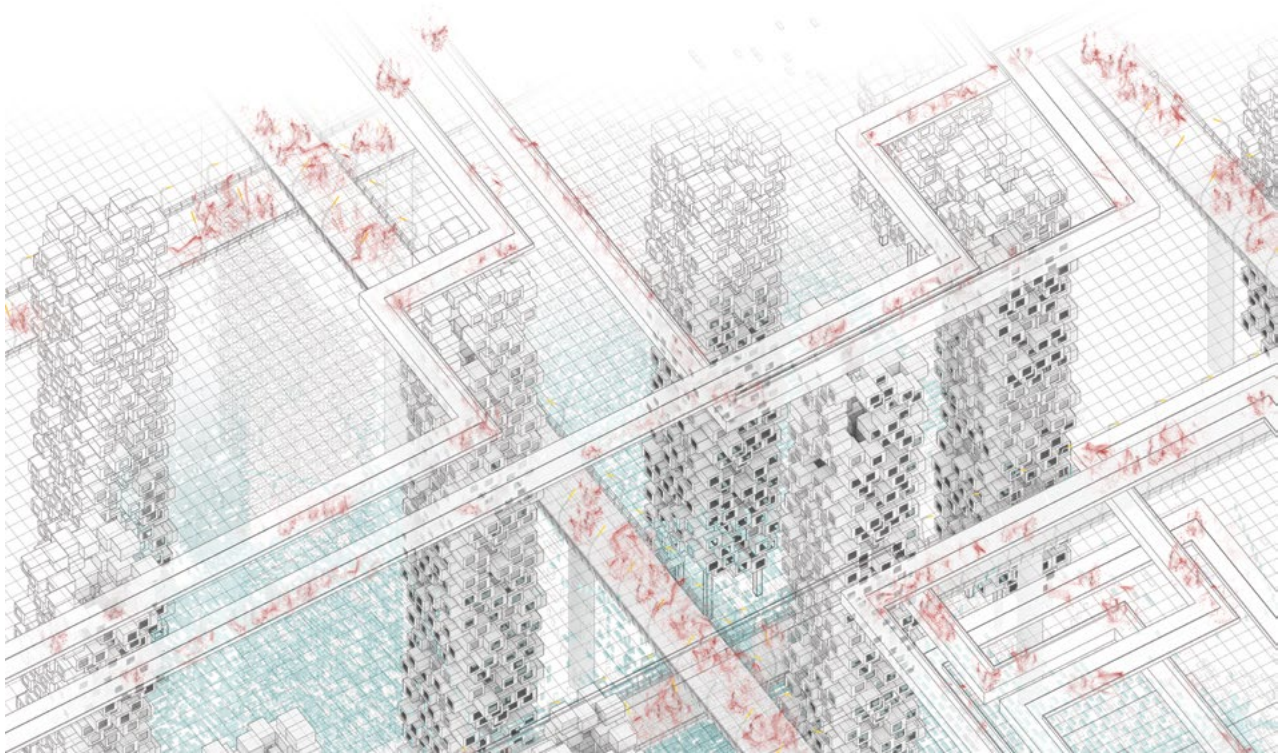
As architecture's agency disappears from the physical domain, but rather manifests itself at the scale of individual environments, the ramifications on the constructed spatial domain are extremely large. When the environmental mediation components which typically form architecture—HVAC, Structure, Program, et cetera—become stripped from the architecture itself, the constructed spatial domain loses the pressurization that drives design, allowing for the presence of an undifferentiated spatial environment. As users find their necessary immediacy from their devices and their idio-environments automatically parse out their interfaces, these factors culminate in an inevitably sterile, banal, and ineffectual architecture. This gap, which architecture today still must bridge, is both the challenge and the productive fodder which fuels the project.

MEDIATION & SPECTRUM

This idio-environment, fueled by future tech, is imagined to begin to have considerable influence on the physical aspects of the environmental sphere as well. With the capacity to change density

and shape, this idio-environment is also imagined to filter physical interactivity between users and their environment, or even other users. Simultaneously, this provokes a yearning for a differentiated type of experience that is sensorial in nature. This dichotomy produces a spectrum ranging from a purely visual and consumptive to a purely sensorial and immersive experience. Immediacy At Extremes looks to engage with this spectrum and produce affective sensorial domains—which provide disparity from constant virtual overstimulation.

In order to adequately frame the effects of this new environmental mediation with respect to inhabitation, the definition of a specific spectrum of experience is necessary. The idio-environment manifests on the "light" end of the spectrum: purely visual-cognitive consumption, distanced from physical context and devoid of interfacing. This type of experience, produced by these idio-environments, renders a clean, visually organized view of the constructed physical domain. However, escaping into the virtual world is equally easy, and the repository of imagery and spectacle is bottomless. The relentlessness of this type of experience frames the desire and
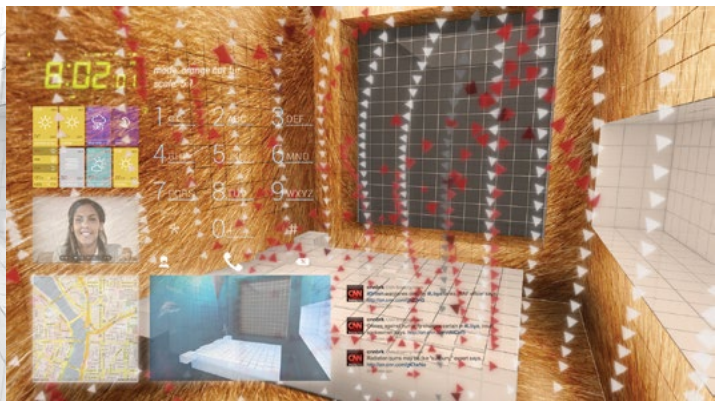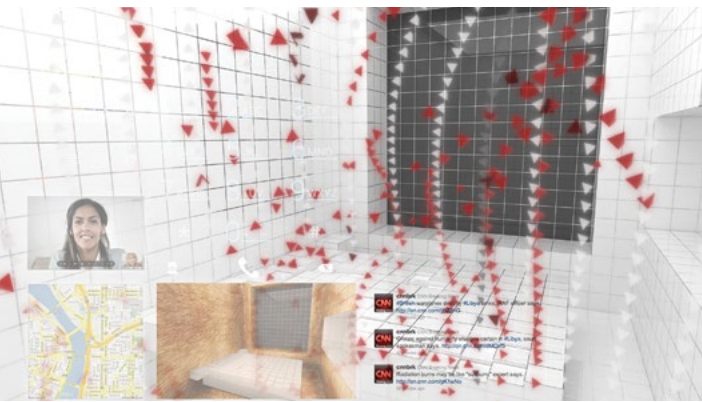
yearning for the opposite, "dark" end of this spectrum: a deeply sensorial experience, one rooted in opposition to the visually driven virtual idio-environment. This experience draws on the specifics and detailing of physical immediacy in order to produce an occupational paradigm highly differentiated with a spectacle-oriented experience. The conceptual experience spectrum, as seen in the large drawing, shows a possible imagery for how this differentiated set of experiences could be bracketed. Instead of competing with devices and virtuality for the top end of the spectrum with reactive/responsive architecture or extreme formalism, the project takes a lateral sidestep in order to address issues much more rooted in the motivations for our interfacing.

Opposite top: City of the future—constantly immersed in our idio-environments, the population of dense urban areas becomes organized around this shifting cultural paradigm.

Opposite bottom: Engaged—idio-environment is active; environmental mediation varies from purely visual to visual and physical. Filtering of experiences is not yet engaged in this state. User is immersed in the immediate domain of occupation, and therefore disengages with the constructed spatial domain.

Above left: Future domestic space—while at first glance the future of interior space looks not dissimilar to a bathroom, the sterility produces the surface for which image projection to the retina can take place.

Above right: Layered with spectacle—with the idio-environments, users can change their immediate settings visually to whatever they desire at the moment.

Right: Spectrum of experience—visualization of the spectrum of experience from visual and spectacular (light) to sensorial and haptic (dark).
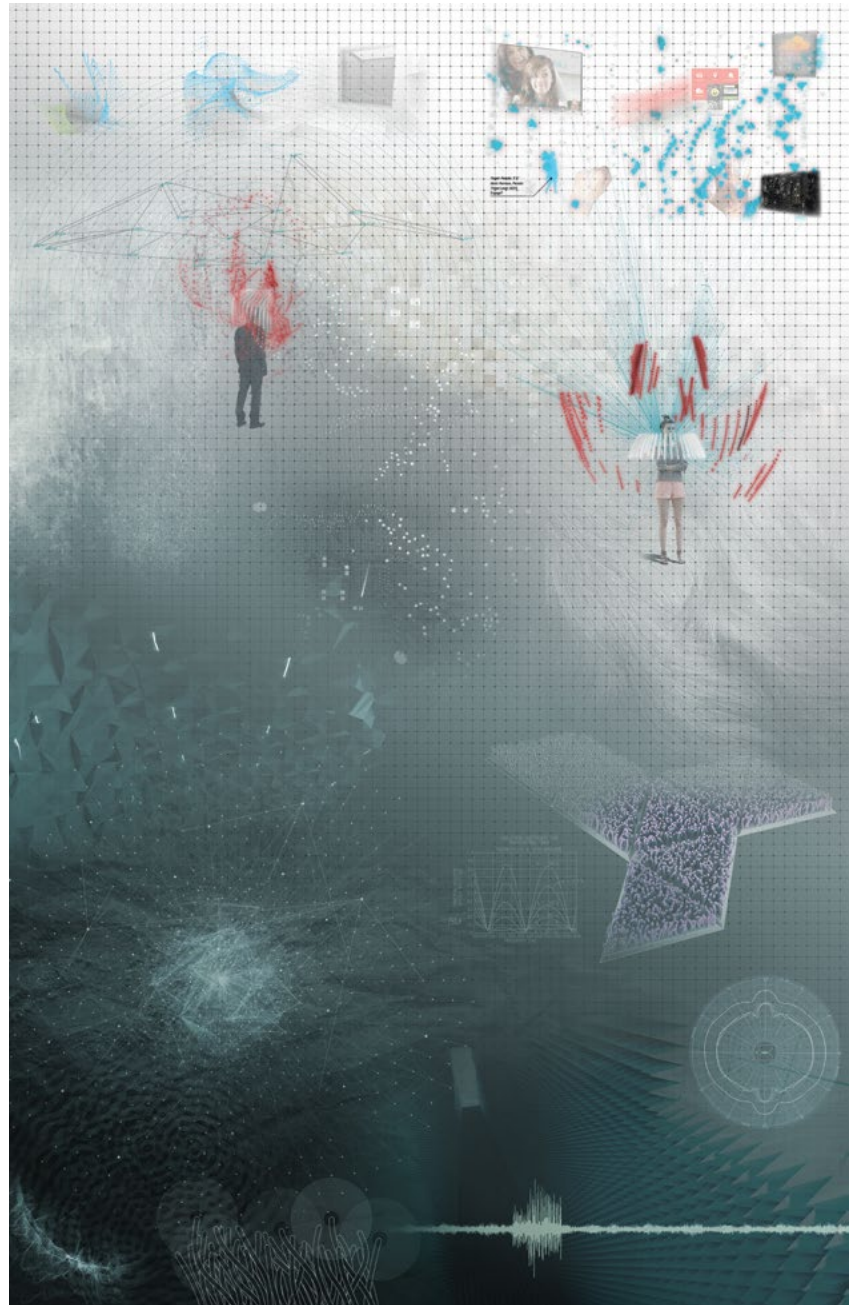
HIDDEN SANCTUARIES

Architecture then, must find a presence in this world where the spectacle exists as the main occupational paradigm in the space between the retina and the tectonic surface. What remains, in an ironic twist, is the tectonic itself; unused spaces of the architectural tectonic, spaces underneath stairs, poché, back of house spaces which were previously viewed as undesirable and unoccupiable spaces. Leveraging these presently unused architectural domains, the sanctuaries from virtuality aim to experiment with architecture's agency within this range of spatial domain, hoping to incite conversation surrounding our shifting occupational paradigm. In removing the constant consumption of the spectacle that our devices provide, these sensorial domains aim to suggest a more pointed and deliberate agency for architecture within the territory of spatial occupation. These differentiated experiential domains produce and invoke specific types of engagement with the physical world, tying its users to particularities of spatial domains produced by architecture.

Seen in a typical residential stack, the sanctuaries provide other forms of occupational sensations—to an extreme. While limiting sight as the dominant form of interaction with the physical constructed domain is a common thread, the different hidden domains have distinct sensorial experiences between themselves, some providing an audibly differentiated chamber, and some maintaining an emphasis on touch or feel. These sanctuaries do not remove the idio-environment or find ways to permit it from functioning, but rather, provide experiences which are not found or sensed within the virtual world. More than simply form, specific characterized geometry plays an important role in both the discovery, intended and actual use, and adaptation of these spaces by users who are seeking refuge from their idio-environments. While represented in color in the opposite drawing to suggest a differentiated identification on a diagrammatic level, these spaces are intended to be lined and formed with tactile and haptic materials. The engagement with the architectural inside is therefore on three distinct scales: global form, immediate texture, and specific materiality.
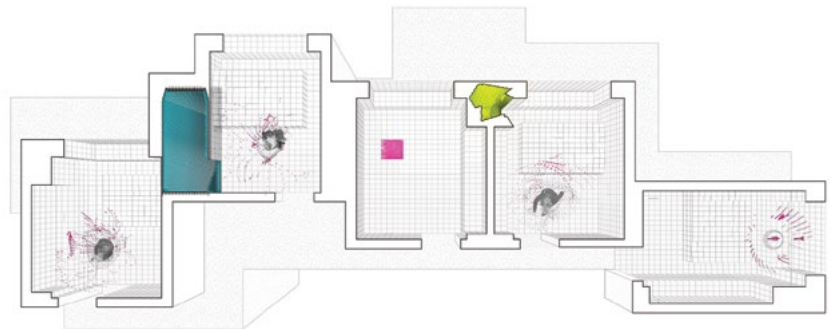
AN ANECHOIC CHAMBER

Virtuality and its constant visual loudness provide both visual and sensational noise that proves hard to escape from. While complicit from the system and its distractions, audible immersion within the idio-environment also constantly feeds into this noise. The Anechoic Unit utilizes material geometry which dissipates wave energy, provides stillness and silence for those who seek it—to an extreme. It provides two standing or seating areas within this environment, both facing forward toward a portal to the exterior; this combination of audible silence and length of the imagery viewing time suggests a return to activities which require a dilated temporal allotment in order to fully appreciate the experience. Entry into the space is made through the lower segment of the room, and the user is to lower themselves into the Anechoic chamber slowly, discovering that the lack and loss of audible sensation persist. These eerily quieted chambers produce a heightened awareness and alertness of the immediate physical surrounding through the suppression of a typically constantly accessible sense.

Opposite above: Sterile domestic towers—in this exacerbated future, the architecture of the domestic interior becomes reduced to white planes due to the inundation of image-projected experiences. When stacked, the resultant towers result in the pictured environments. And yet, the agency of architecture remains within the physical, haptic tectonic, and here these spaces are leveraged to provide physical and sensational sanctums from visual and digital overstimulation.

Opposite below: Sectional plan—these domains, not dissimilar to spaces of retreat and sanctuary, hide within the unused spaces of the architectural tectonic, such as poche. These new, hidden constructed domains await discovery and hope to invoke a sense of piety in aspects of the constructed physical realm which are not present in the digital world. An Anechoic Chamber, Biomimetic Crawlspace, and an Abbreviated Territory are seen in blue, pink, and green respectively.

leveraging run space
while the shaft only runs at the front of the unit to connect to the central system, the room is furred out to create a flat surface for the HUD idio-environment's projections. units hide in these spaces what are left unused.

hidden anechoic unit
750mm x 2600mm x 2850mm
multiple occupancy
echo cancelling foam texture static
portal to exterior

static seat ledge

dynamic furniture array

AN ABBREVIATED TERRITORY

Complicit in a collective spectacle-driven, image-consumptive culture, it is often an arduous task to perceive more than face value. It is easy, as a spectator, to judge an object as a whole when the perception of the object is framed as a whole. By removing the ability for a removed, visual assessment of the space, the Abbreviated Territory provides one seat for an individual to enter, but limits their view range. Experience in this domain is acquired by feeling around, understanding one's relationship to the innate geometry of the space, and appreciate an immediate textural quality that is missing in a primarily virtually interactive world.

pre-fabricated high performance unit
200mm pre-cast 2-way slab
#5 rebar 400mm o.c.
25mm high density rigid insulation
dynamic adaptive domestic array

leaving dormant state

hidden sensorial recliner unit
1050mm x 1800mm x 350mm
single occupancy
ripple texture state

engaged (HUD) state
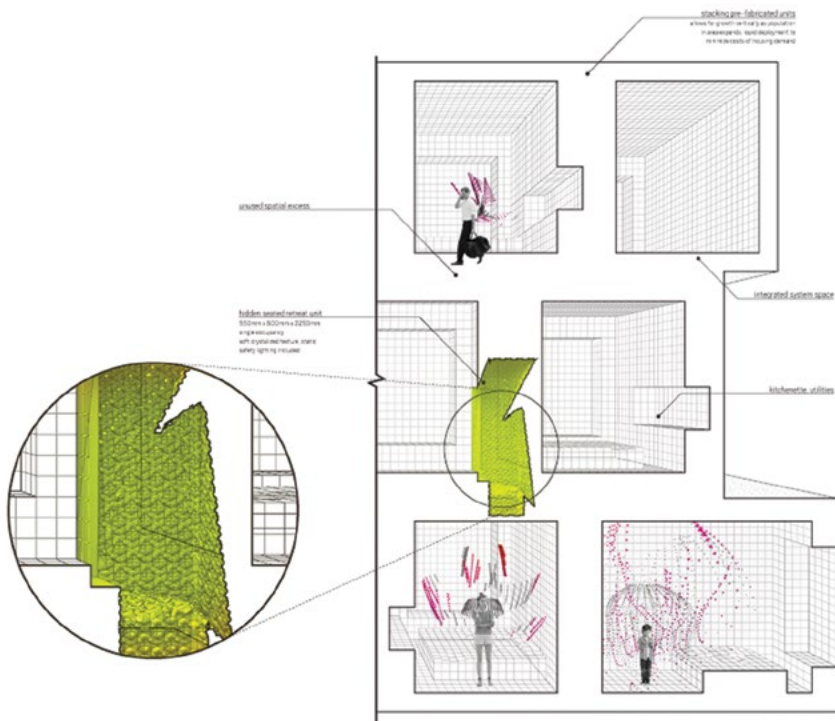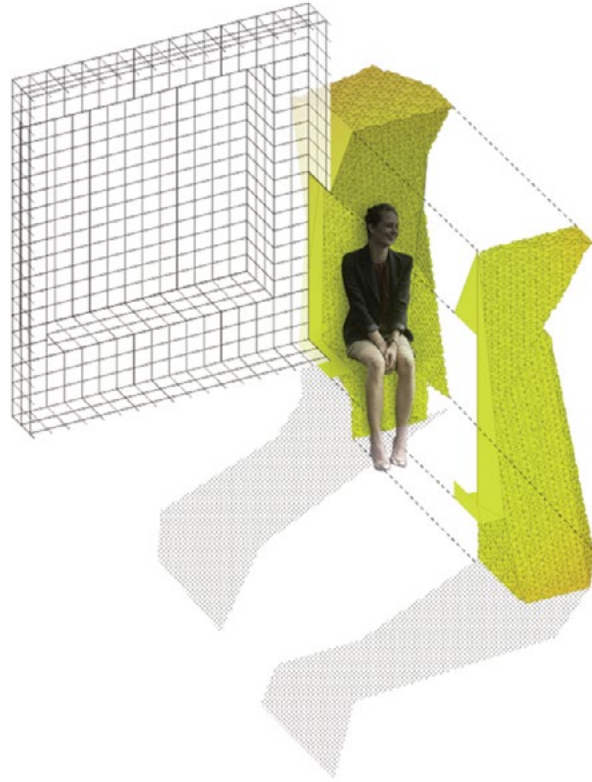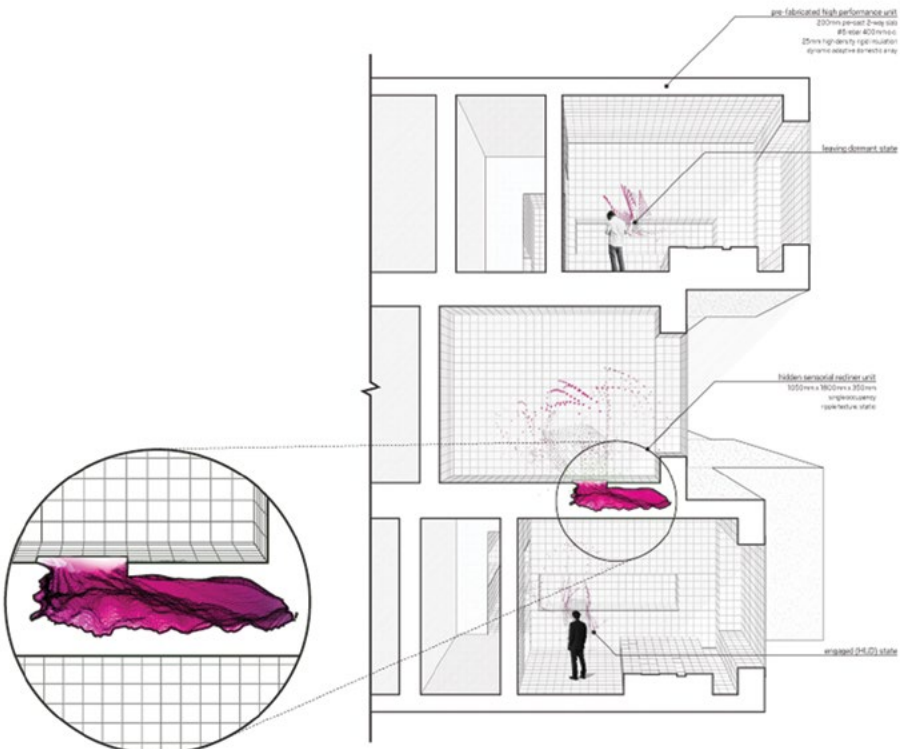
A BIOMIMETIC CRAWLSPACE

Our understandings of technology lie rooted in what is revealed—masking what we want to see, hear, and experience as a curatorial exercise of expressing the *status quo*. We see, we understand; from vision to cognition, the series of experiences which make up our daily activities find no outliers or expression of natural emergence. A Biomimetic Crawlspace provides a counterpoint to this, bringing an immersive experience which is hidden from sight. This subversion of our typical process allows for the less used senses to take over, forming a new type of spatial cognition. Rather than understanding a space through viewing and confirming through touch, the operation of discovery is rather the opposite. As there is no room for one to put their head into the space, the experience acquired is mostly through the sense of touch. Combined with a uniquely soft and gelatinous texture, the Biomimetic Crawlspace is a domain which requires and demands the inversion of our dominant senses without removing them.
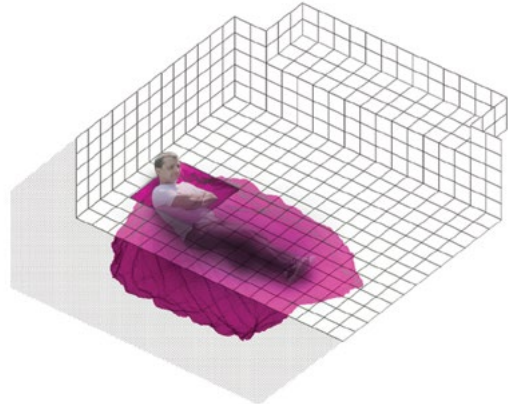
IMMEDIACY AT EXTREMES
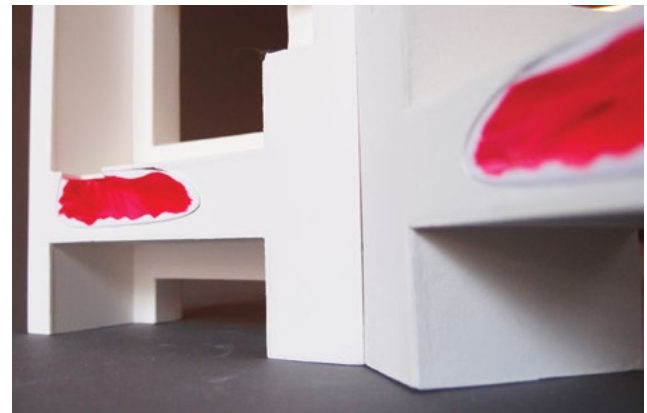
As virtual interactions overtake the physical, users no longer seek or find immediacy from their spatial settings but rather from their devices. As our occupational paradigm radically shifts, destabilized by this gravitation towards virtual/digital activities, architecture's agency in the physical realm dwindles at an alarming rate.

SENSATION AND EXPERIENCE

As well, *Immediacy At Extremes* does not challenge the duality of both a restrictive virtual constructed domain and its limitless possibilities; these aspects of virtuality are assumed to be exhaustive, and not dissimilar to visual overstimulation. This allows for architecture to still be relevant in this imagined future, as opposed to being completely irrelevant and unimportant such as in Ernest Cline's *Ready Player One*. On the other hand, it does suggest that architecture has the potential to capture the blurry distinction between sensation and experience, and define its agency in this domain today. Driving the need for experience through sensation—and not spectacle—allows for the agency of architecture to be preserved in any future world.

Architecture, as a physical tectonic, has the capacity to become indexical in its realization, stirring memories and experiences far more latent in the subconscious that are less accessible, and in being so, connect much more intimately with its users. As opposed to imagery or video—which are forms of media that apply both a temporal and contextual specificity—architecture's capacity to become an index lies tr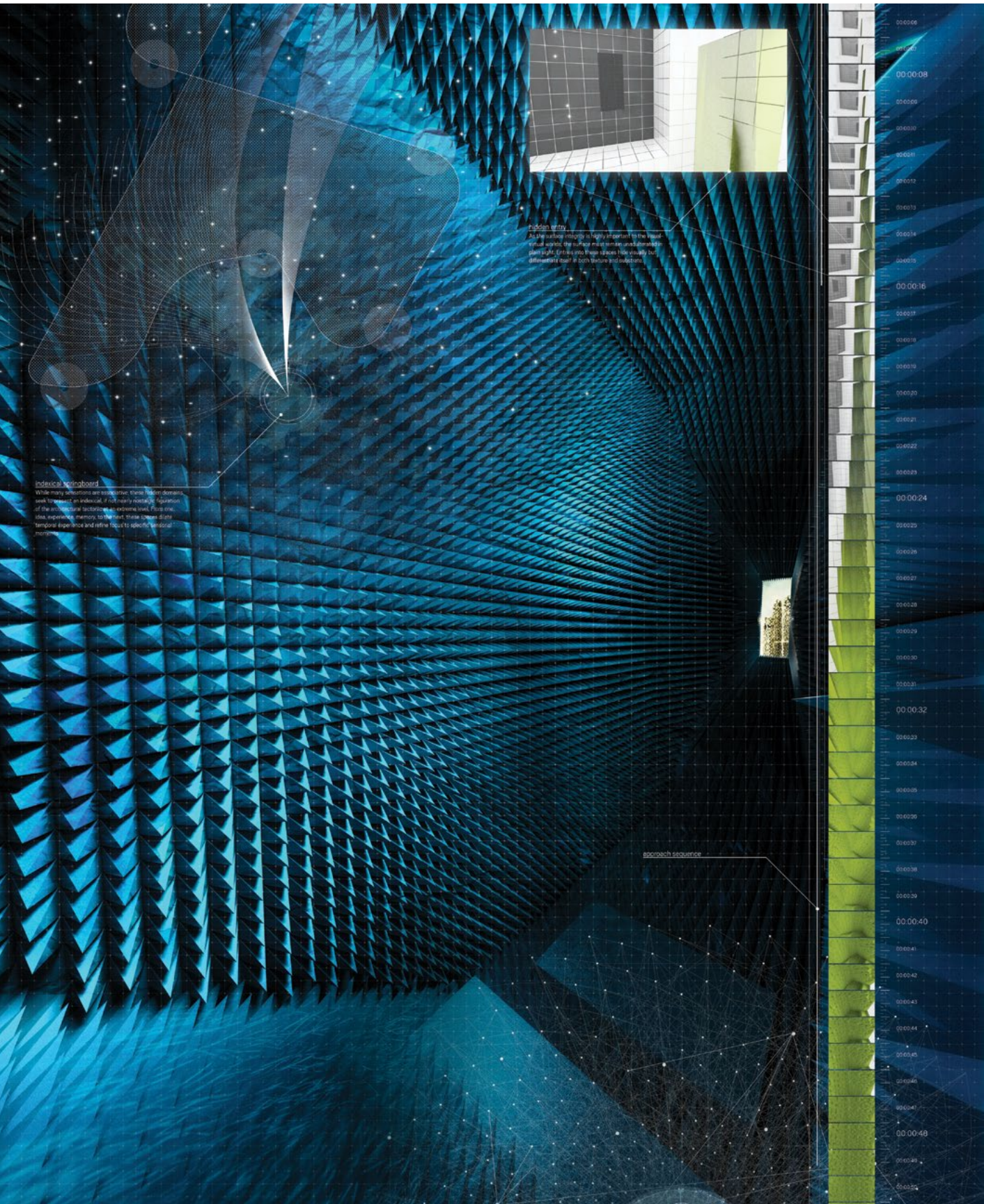uly in its ambiguity. By being suggestive rather than prescriptive, architecture has the capacity to connect to users on a much deeper level with

the same, constructed environment as opposed to the rapid consumption of images to cue memories.

Finally, it suggests a new temporal order in terms of the experience of architecture. As opposed to a rapid inhaling of architectural imagery and form, the sanctuaries produce a dilation in spatial cognition, allowing the user to invest more time in the understanding or partial understanding of a space. In changing the pace and rate of consumption of experiences, architecture can not only provide a counterpoint to virtuality, but collective Internet culture as well, which is not an exclusive paradigm to our devices. This is an important assertion for the project as it is not only suggestive of the challenges contemporary architecture faces, but also a problem which consistent users of such devices must eventually confront. As in the case with the Anechoic Chamber, occupation of this space not only removes any audible ringing which may cue you in to a message being received or a potential news item which is trending, but it also enables the user to view the exterior city—the resultant product of the idio-environments. This prolonged viewing of the city in absolute silence preserves the fidelity of the image itself, and provokes a yearning to experience the city for its physical characteristics, without the overlay of imagery provided by virtuality.

As a result, the project finds itself on the precipice of two very dangerous conclusions: the first of which assumes that architecture in some future could potentially be stripped of its agency, and the second being a nihilistic attitude towards the future of technology with regard to our occupational paradigm. While neither of these are close to becoming a reality, it is also hoped that the intersection of these two distinct problems will incite a discursive attitude with regard to architecture and its relationship with the technology which is so formative to the activities we partake in today. ■

hidden entry
As the surface integrity is highly important to the visual-virtual worlds, the surface must remain unadulterated in plain sight. Entries into these spaces hide visually but differentiate itself in both texture and substrate.

indexical springboard
While many sensations are associative, these hidden domains seek to reject an indexical, if not nearly nostalgic figuration of the architectural tectonics at an extreme level. From one idea, experience, memory, to the next, these spaces dilate temporal experience and refine focus to specific sensorial moments.

approach sequence
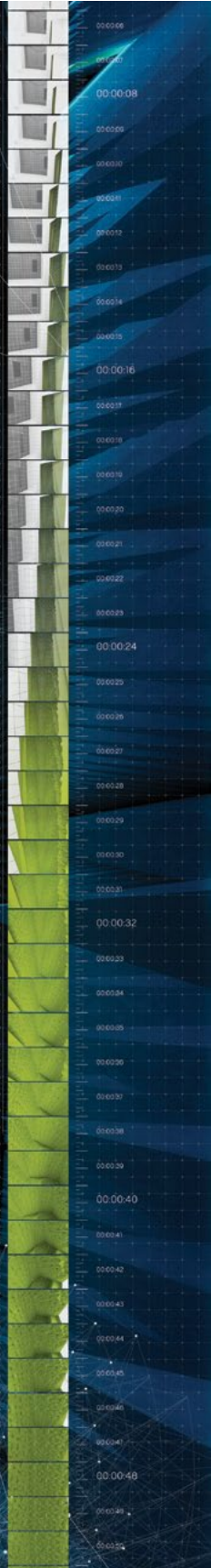
INSIDE OUT

CHRISTOPHER PINE | M.ARCH THESIS
ADVISOR: ANDREW HOLDER
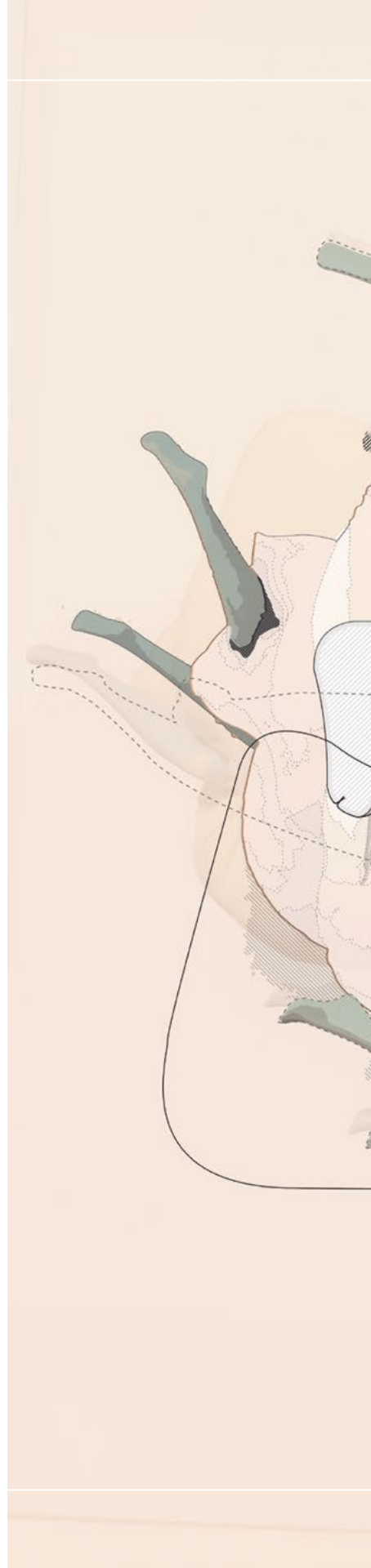
The Assumption of Mary (1735)
Giovanni Battista Piazzetta

Ewer (1688 - 1751)
Paul de Lamerie

Inside Out is an attempt to explore how character moves concepts of type away from program, systematization, and function into processes that hinge on concepts of affect and sensation. The marriage of affect and sensation is inherent to architecture. Encapsulating their union would reveal the difference between feelings which are personal, emotions which are social, and affects which are prepersonal. A feeling is a sensation that has been reviewed by previously categorized experiences. Affect's role helps determine the relationship our body has with the environments, others, and the subjective experiences with think we feel as affect dissipates into experience. It's like listening to a catchy song on your headphones where you suddenly find yourself involuntarily tapping your foot along to the beat. Only after the action of tapping your foot are you able to register this as a delightful feeling or sensation.

This project draws on the ideas and roles that intertwine affect and sensation by perceiving their relationship as character and how that has effected architecture. Character's relationship with architecture played an important part to Anthony Vidler's critique of Jean-Jacques Lequeu and Sylvia Lavin's critique of Quatremère de Quincy.

These authors reveal how character in architecture was achieved when society succeeded in diminishing its subjugation to natural conditions, both morally and physically. For Quatremère, character in the purest sense was parallel to—and only

The marriage of affect and sensation belong to society.
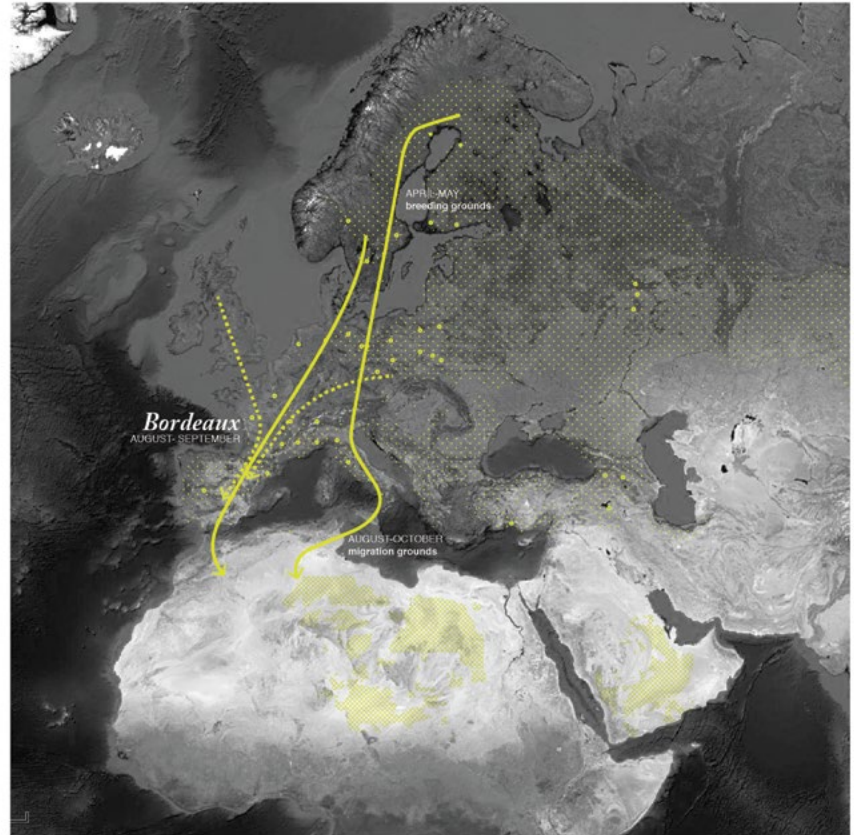
expressible by—an artificial language of architecture.

Establishing a universally accepted idea of architecture that diminished the boundaries between Modern, Classical and Egyptian styles of architecture revealed a common denominator to which each of these was the primitive hut.

Leque's self-portraits revealed his interpretations of anguish, sadness, and disgust from psychologically disturbed patients at a psych-ward. These studies reveal how features of the face can evoke an almost primal knowledge of what is internally happening to the patient being mimicked. Comparing the work of Vidler and Lavin, we can begin to give context

to character and see how it relies on the individual and society's recognition of effect and sensation.

The ortolan is a greenish gray songbird—no larger than your thumb—that migrates through the Bordeaux Region of France, between the months of August and September, making for a small opportunity to trap the bird.

After capture, the ortolan is blinded, stuck in a cage, and kept on a diet of millet and figs until it reaches two to four times its normal size. Then it is drowned in a snifter of armagnac, plucked of its feathers, and in most cases, stripped of its feet. The ortolan lies in a ramekin that is placed in a pre-heated oven for six to eight minutes. The

ortolan is immediately served to the center of dining table where each guest picks and places an ortolan onto their plate.

How can a napkin reconstitute an exterior expression of affect, while creating a sensorium on the interior? This can be described by the eating routine of the ortolan dish.

To fully enjoy the ortolan dish, you must first drape a large, white cloth napkin over your head. Take the ortolan in your fingertips and disappear. The outside world dissipates to a white noise of wet chewing and slurps, as the people around you begin to revel in the chaos that is happening in their mouths.

Underneath the hood your tongue is half-singed. But, even when the back of your mouth is burning, taste buds you never knew you had begin to bloom. The trick is to breathe, creating a convection heat transfer between your mouth and nose. The napkin traps all the aromas and you are left with a mouth that is on high alert. Managing the bouquet flavors exploding in your mouth is almost overwhelming. A weight of guilt accrues as you remind yourself of the innocent songbird that is now singing on the back of your tongue.

Opposite: After capture, the ortolan is blinded, stuck in a cage, and kept on a diet of millet and figs until it reaches two to four times it's normal size. Then it is drowned in a snifter of armagnac, plucked of its feathers and in most cases stripped of its feet.
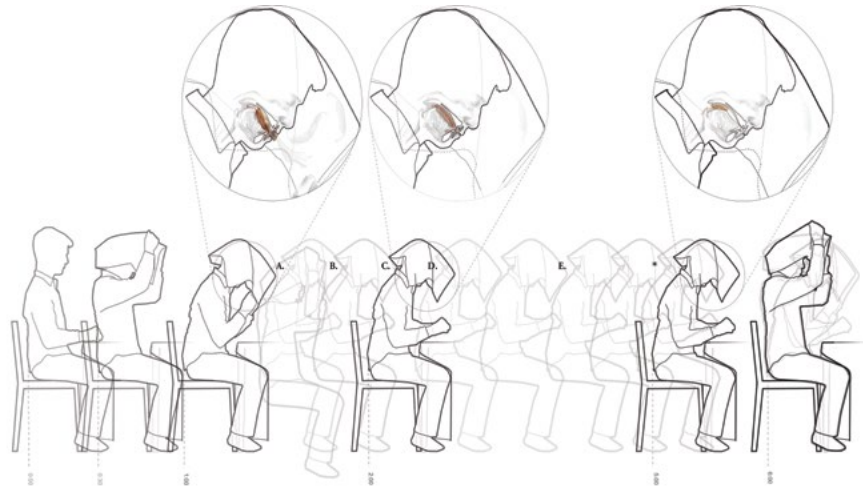
* flavors all blended into tart taste

Ortolan

Le guide culinaire : aide-mémoire de cuisine pratique / A. Escoffier

The Ortolan is sufficient in itself and should be enjoyed as roast:
This is a gastronomic truth long proclaimed. The elements which are given as auxiliaries, such as foie gras and truffles, it is rather harmful, because they remove its subtle aroma and mitigation if it is more sensitive, the aroma of these elements is more pronounced itself. It may be then put a classified among the great dishes.

Game

because its price is high, but it is not a true gourmet delicacy. Nevertheless, we must give some formulas concerning, recommending never reverse.

Ortolan in Banks - Stuff Ortolan with as big as a small amount of foie gras wrapped each in a square of cheesecloth and poach for 5-6 minutes in a very robust funds.

Then draw each in a small box, the bottom will be lined with a fun diced foie gras and truffle; coat with aroma of very small game.

Sylphides of Ortolans - Top half, with a stuffing Mousseline Ortolans the essence of truffle, tiny silver censers or porcelain buttered, casseroles Place these in the kiln inlet to poach stuffing.
Cook in butter for 3 minutes, much Ortolan there has topped casseroles, and time to be ready just when the joke is poached.
Ortolan in each place a casserole, sprinkle with Beurre noisette added a little ice melt meat and pineapple juice.
- Serve immediately.

Timbale Ortolans Rothschild - Prepare, 1 crust cup 2 truffled foie gras, cooked a bit rosy, 3 '24 Ortolan roasted just 2 min over high heat; 12 small truffles cooked in Madeira.

Place the foie gras in the middle of the cup, standing, surround with Ortolan arranged in two superimposed rows, and truffles. Close cup with lid; weld it with a bunch of raw dough, put the cup. well packed, baked medium heat for about fifteen minutes. In the baked, fill of a fund gelatinous bodied calf added cooking truffles.
- Serve this cup after 2 or 3 days.

**Aspic Ortolans** - The roast, let cool and then mold them into a border of aspic, very clear.

How can a napkin reconstitute an exterior expression of affect, while creating a sensorium on the interior?
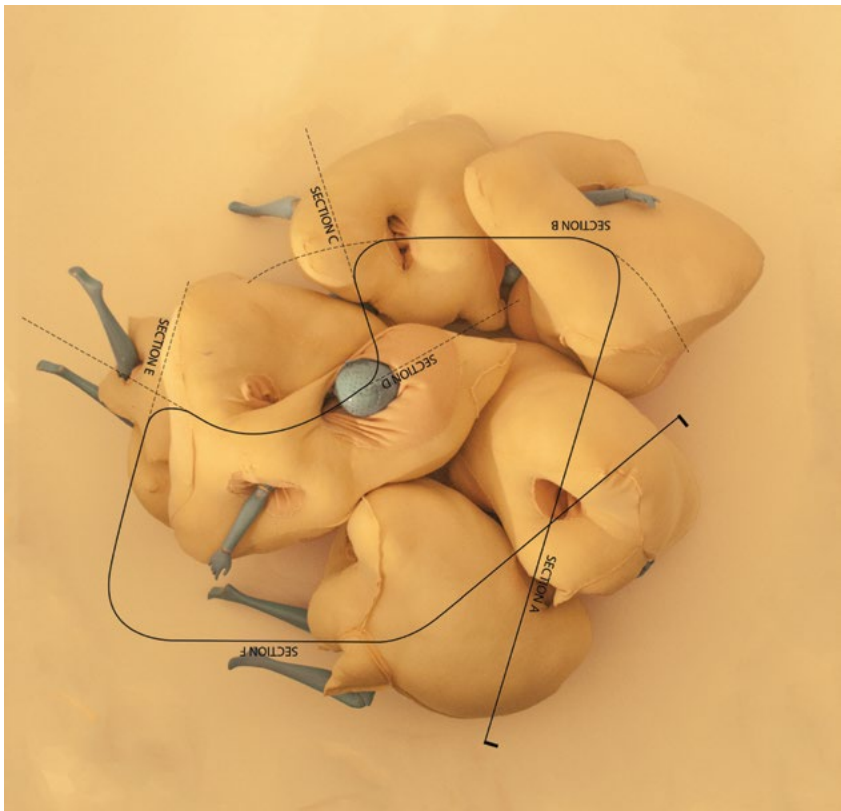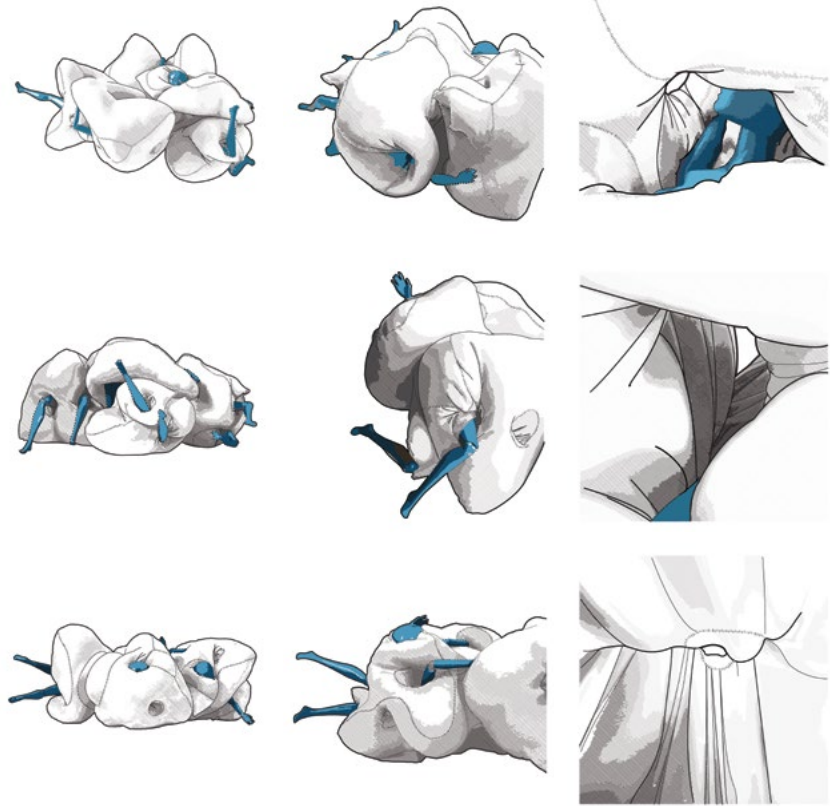
Thankfully, there is a napkin that is shielding you from God's view in this clan-like activity. Once finished, you emerge from beneath the napkin, sit back in your chair, and enjoy the company of your friends and other guests. Some are finished and sitting glazed over staring at the wall behind you, while the rest are disgustingly slurping underneath their napkin that creases on the features of the face. ∎

Above: Each figure starts with the sewing of three panels and a set of rules for each.

Left: 11 inch diameter circle, with one hole at it's center and a second hole orbiting in between the center and the outside edge.

Opposite top: Amorphous "x" shape with three holes. Each hole increases in size by 1/2 inch, then is placed asymmetrically from each other.

Opposite bottom: The Rococo relies on allegory to foreground sensation in it's form. This is addressed by transitions between immaterial and material things. I was interested in how these transitions created edge conditions that confuse the physicality of figures in the object.
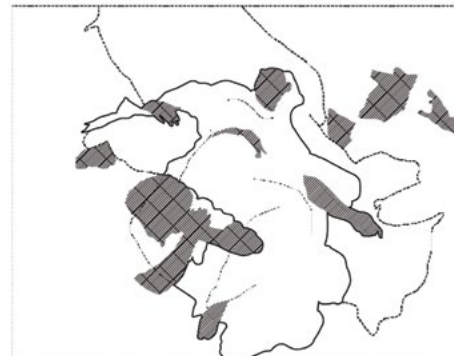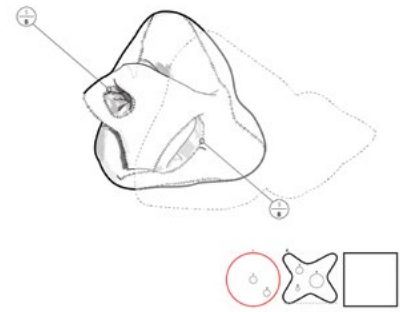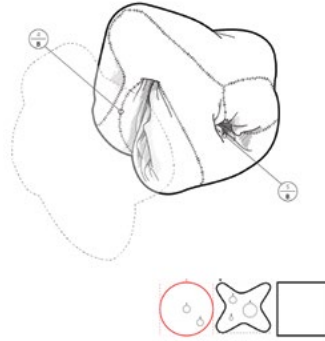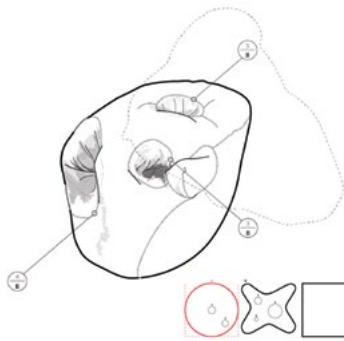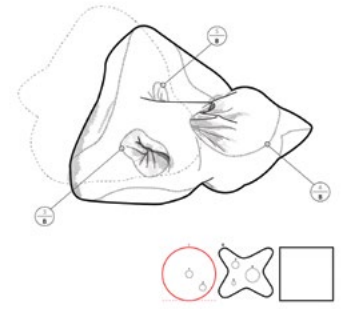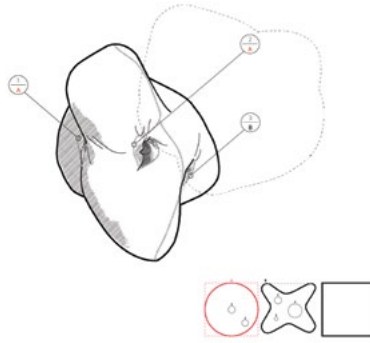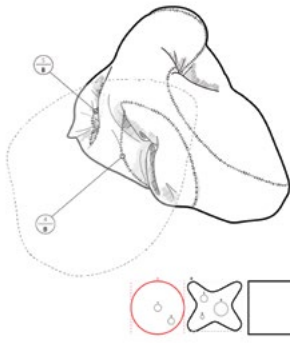
Vulcan Presenting Venus with Arms for Aeneas
François Boucher

NEW HISTORY ENGINEERING

ANDREW WALD | M.ARCH THESIS
ADVISOR: CHRISTIAN STAYNER
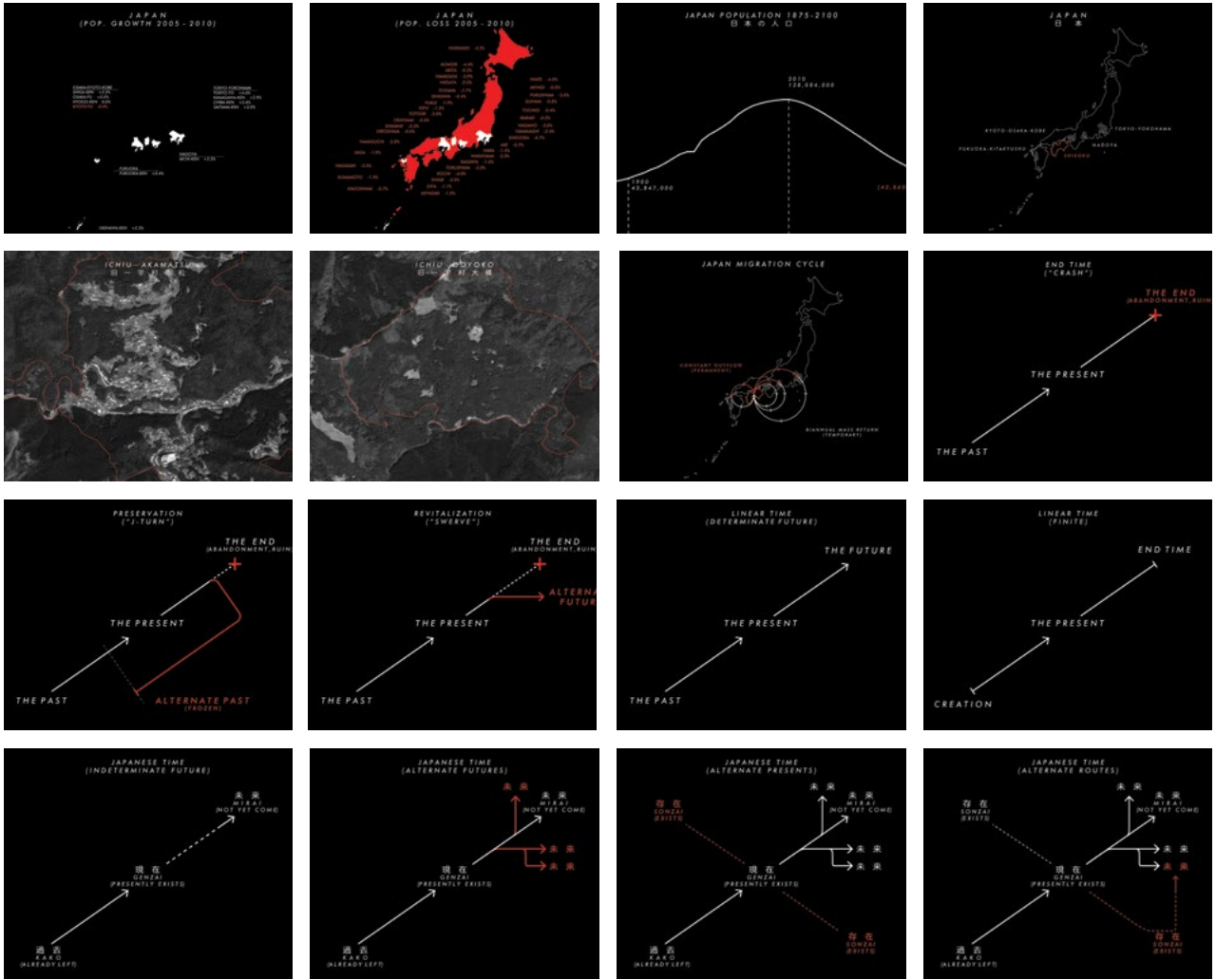
Japan is an archipelago of archipelagos.

Once, these constellations of water and land-bound islands had no future—there was no "will happen," only *mirai*, "that which has not yet come." Japan's future is indeterminate; there are many islands, each with many possible courses of action and many possible futures.

In Ichiu Village, an assemblage of tiny hamlets tossed across a vast sea of mountains, one future looms larger than the rest. It will lose its population. It will disappear.

Since 1975, Ichiu has lost 2,700 people, seventy-five percent of its population; nearly all of its remaining residents are seniors, and as many as one in five are over

Many villages do nothing; failing to look at possibilities outside of the present condition, they assume an inevitable future of ruin and disappearance.

85 years old. Ichiu is an example of a *genkai shuuraku*, a community in rapid terminal decline—and it is not alone. In 2006, the Japanese government counted nearly 8,000 rural *genkai shuuraku* nationwide and predicted that by 2016, over 400 will have vanished.

However, while humans may disappear, human traces—buildings, infrastructures, monuments, artifacts—remain an integral and inseparable part of Japan's rural landscapes. When we design for the present,

Opposite above: Site analysis.

Opposite below: An example of geotechnical engineering as a method of radical preservation.

Top: Map of Ichiu Archipelago.

Right: View of Ichiu Valley, showing "landlocked archipelago."

ICHIU ARCHIPELAGO
一宇列島

INHABITED SETTLEMENT
ABANDONED SETTLEMENT

1 KM
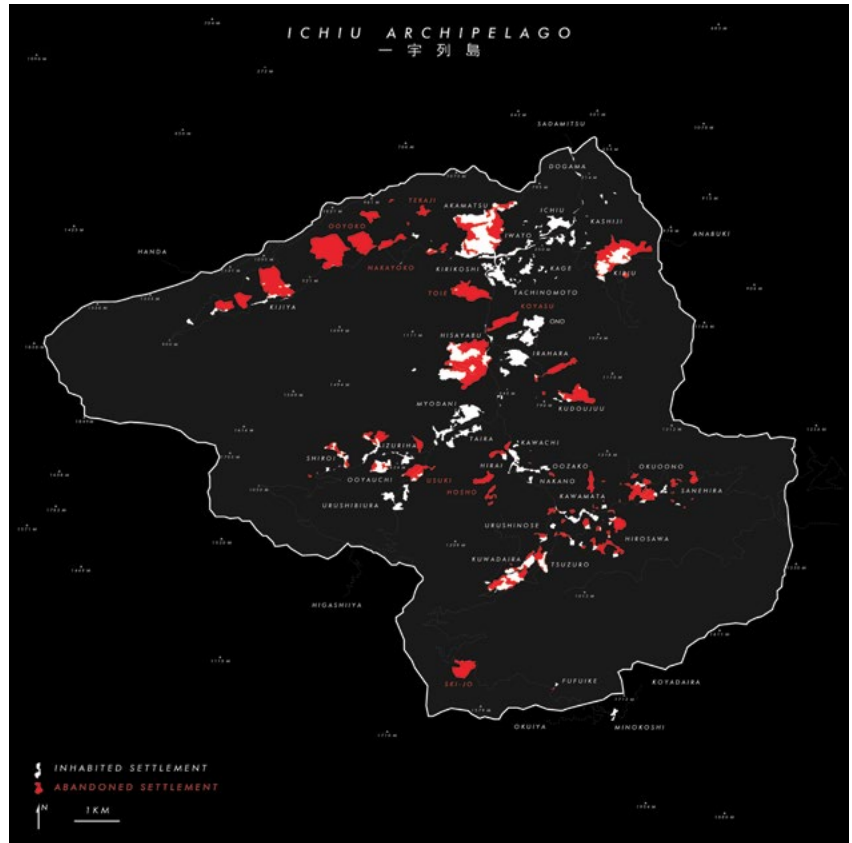
we must also design for the future. Thus, the question: what should be the role of architects and designers in places thought to have no future for humans? How should we design for Ichiu?

Many villages do nothing; failing to look at possibilities outside of the present condition, they assume an inevitable future of ruin and disappearance, and find little use in interventions that go beyond the expiring time limit of human habitation. This, of course, is a self-fulfilling prophecy; but since Ichiu is not gone yet, to create a living ruin through a policy of inaction would be utterly unacceptable.

Other villages look backwards for help; they grasp at preservation, freezing matter, space, time, and meaning in a static, imaginary past. Such preservation risks elevating aesthetic considerations and abstract notions of historic and cultural integrity at the expense of present and future occupants and their real needs and desires. In the case of architecture, stripping away a building's layers of "less valuable" history in the name of historic preservation may, in fact, dispense

Above: Photo of "preserved" (stripped) farmhouse; museum object, nobody lives here.

Left: Photo of "unpreserved" (aggregated) farmhouse; functional object, people still live here.

Below: Last man living in Ichiu-Okuono hamlet.

Opposite: House model grid.

with the very layers that keep the building useful and relevant today. Besides, to what past could Ichiu return?

Some villages with better economic prospects may seek revitalization, rejecting the multiplying crises of the present for some rosy, predetermined future. The arts colony, the startup haven, and the eco-paradise; a new shopping mall, a factory, or a cultural center… Ichiu's neighbors have claimed these "solutions" already. And best of luck to them: such gambles are fraught with risk and often spiral into larger, more perverse problems. Some revitalization efforts succeed, but it would be foolish to expect that Ichiu could ever aspire to much of a renaissance—so what options remain?

Ultimately, the terminal condition confounds conventional future planning: *genkai shuuraku* will become ruins—loss is inevitable. Ichiu's case, therefore, demands a more radical approach to future-oriented intervention, one which restores the indeterminacy of the not-yet-come— *mirai*—and which does not submit to the idea of a singular, unavoidable end-time. Different situations, different actions; different islands, different futures.

THESIS
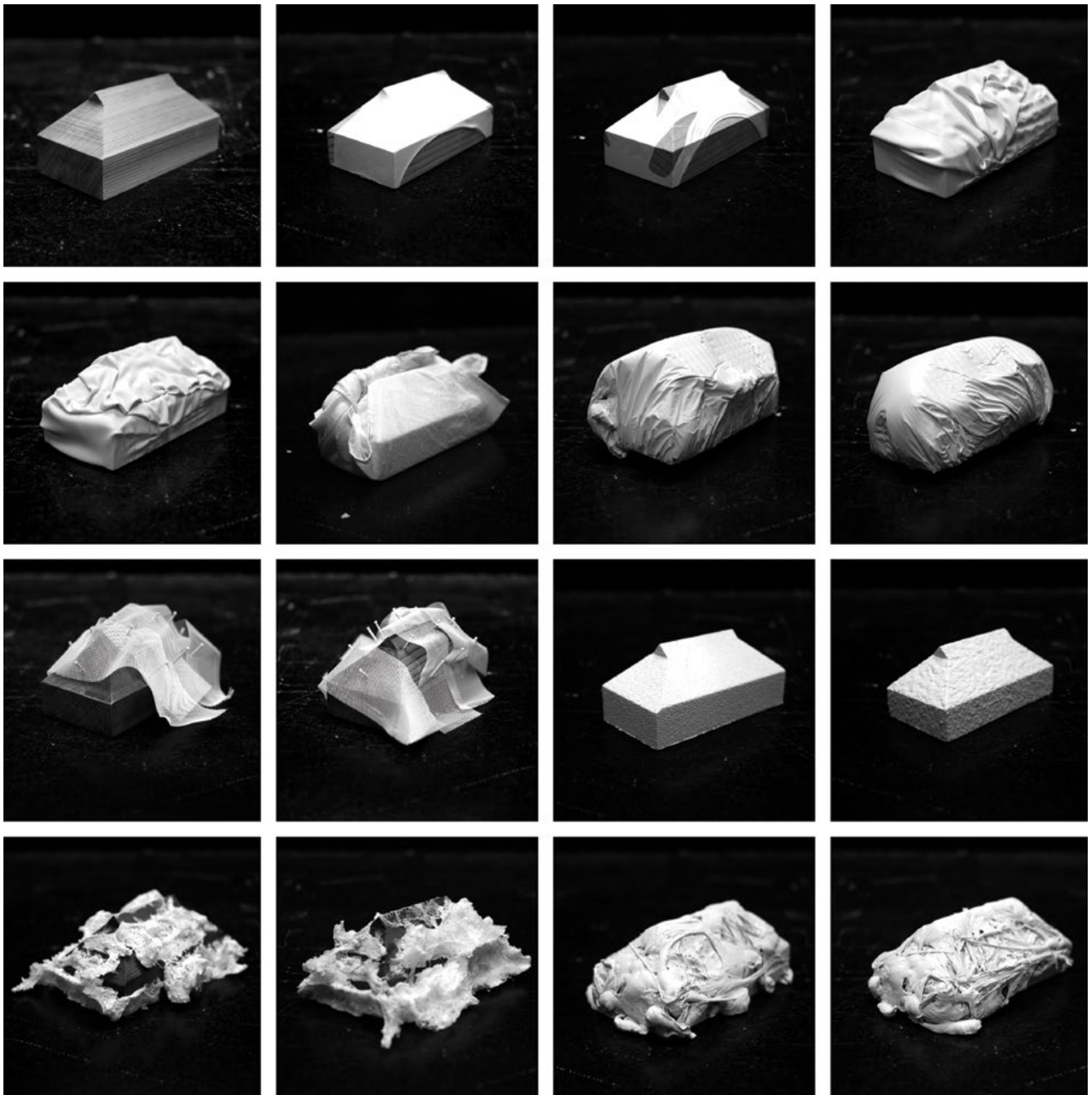
New History Engineering is a set of material and spatial operations oriented not toward Ichiu's future, but its *mirai*. It is allied with contemporary Japan's diverse geotechnical landscapes: the gridwork mountains and shotcrete valleys which constitute an often-ignored but real and very radical alternative to conventional notions of nature, the rural landscape, inhabitability, permanence, geology, history, architecture, the future…
It is not beholden to notions of the innate historical value of architectural objects and programs; it takes history as a process of accretion and metamorphosis, of both matter and meaning. *New History Engineering* preserves without fixing, projects without dictating. Everything has value; nothing is sacred.

Towards *mirai*: an archipelago of futures. ∎

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Thank you to Prof. Kyoko Kurita of Pomona College, Assoc. Prof. Albert Park of Claremont McKenna College, and Assoc. Prof. Anthony Rausch of Hirosaki University for valuable support and insight at many stages of this work.
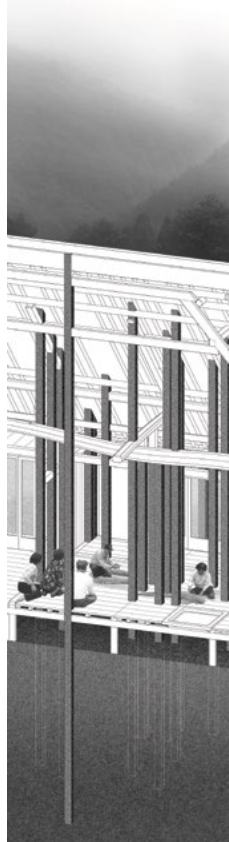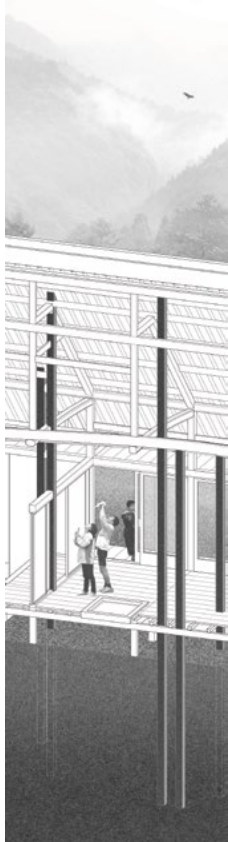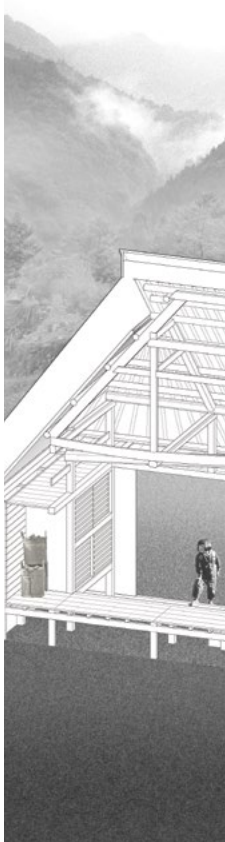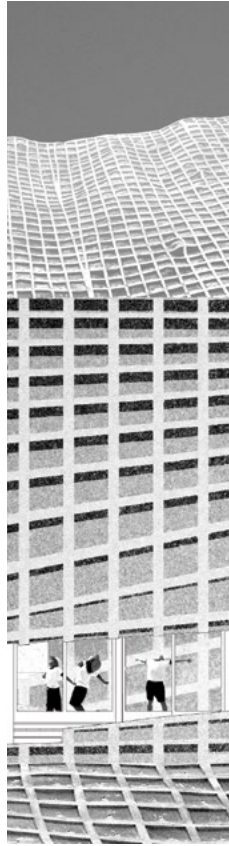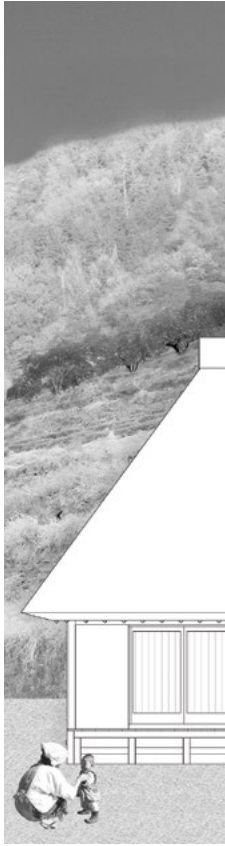
ENIGMATIC ICONICITY

SAMUEL XU | M.ARCH THESIS

ADVISORS: MCLAIN CLUTTER, CLAIRE ZIMMERMAN, FARZIN LOTFI-JAM
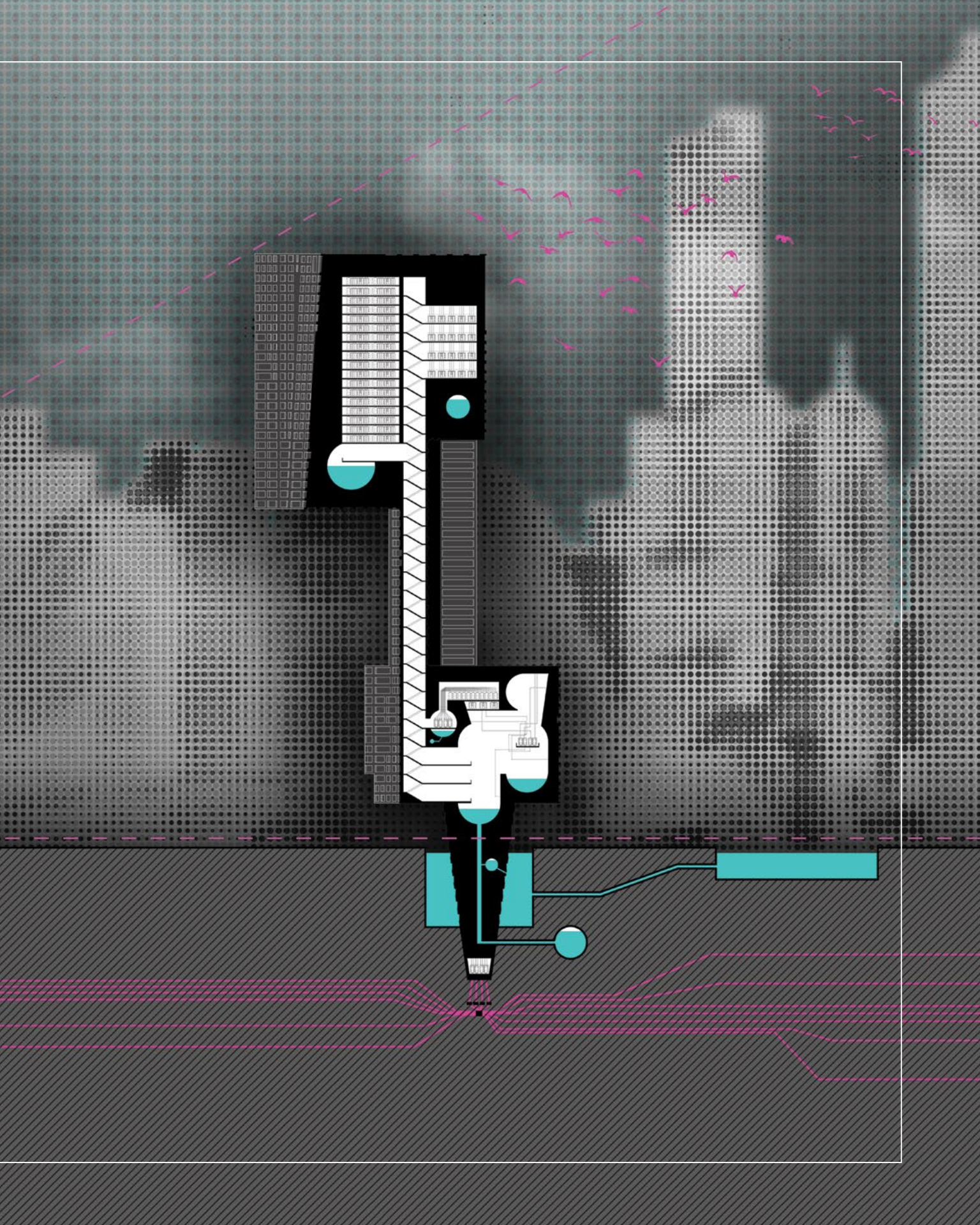
The contemporary iconic building is highly visible, memorable and photogenic; its image is marketed and proliferated across global stages in its endeavor for the achievement of absolute celebrity. It is a grandiose urban symbol and landmark for the culture it represents, an intentionally seductive and highly distinguished object in the city that narcissistically demands worship from the media and other visitors.

1) The iconic building is formally distinctive—it stands out from the architecture around it. Whether through form, scale, verticality, or materiality, the contemporary iconic building intentionally distinguishes itself from its context, allowing it to draw attention to itself and shift focus away from its surroundings.

2) The iconic building is highly visible. It is publicly perceived and admired from various locations in a city as an architectural object that shows off and does not hide.

3) The iconic building is photogenic. It is highly imageable and capable of being imaged in its endeavor to capture public attention. Its imageability allows it to be consumed physically and virtually, while at the same time promoting cultural reception and attraction.

4) The iconic building is memorable. The image of the building makes a deep and lasting impact on the viewer/visitor and lends itself to be recognized by the public and proliferated in the media.

5) The iconic building is a landmark or a symbol of the city. The building is immediately synonymous with its respective city; moreover, the city is recognized via its iconic building and the iconic building is recognized via its associated city. The iconic building achieves city landmark status through its distinctiveness, high visibility, photogeneity, and memorability, escalated by fame generated by image production and proliferation.

For all these reasons, the iconic building can be decontextualized from its surroundings and devoid of scale—collapsed as a figural logo—and still be recognized as the building itself. The irony of the image proliferation of architectural iconicity is that

while it generates iconicity, its abundant image dissemination impairs uniqueness, and hence, simultaneously degenerates and cancels out its own iconicity.

In *The Modern Cult of Monuments: Its Character and Its Origin*, Alois Riegl defines two types of icons: the intentional icon and the unintentional icon. The intentional icon is constructed as an icon, intended to be iconic at its inception. For the intentional icon, its value has been determined by its makers at the time of its making. On the

Below top: Iconic buildings silhouettes.

Below bottom: Iconic buildings collage.
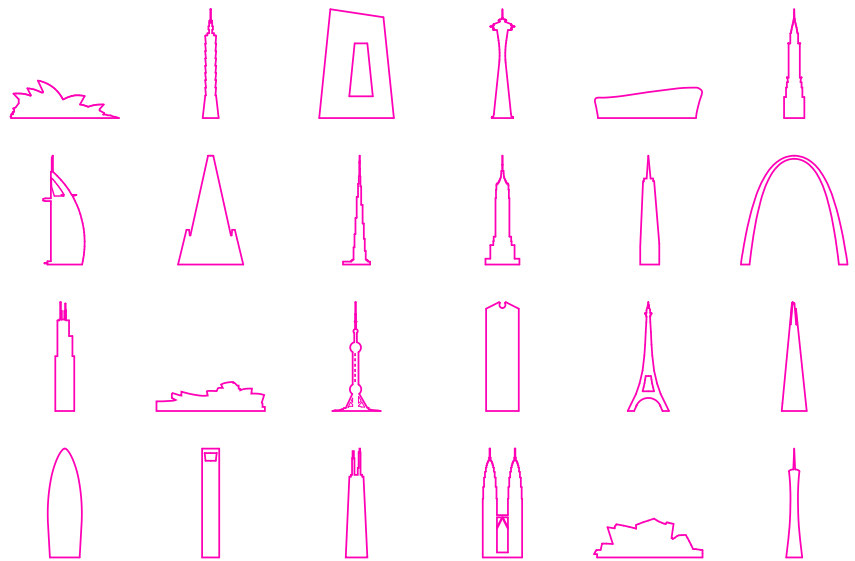
Iconic architecture is the construction of spectacle.

contrary, the unintentional icon is not purposefully constructed as an icon, but its cultural value and iconicity is determined by society as value and fascination is progressively assigned to it. An intentional icon designed and erected in an an-iconic— or non-iconic—city context will stand out as an icon. However, if that same icon was placed in a city skyline that was already prominent with icons, then the originally intentional icon becomes unintentionally an-iconic as it blends in with the rest of the icons. Similarly, a building designed intentionally anti-iconic—one that directly opposes iconic qualities—becomes unintentionally iconic when placed in an iconic city setting, as it unintentionally stands out among the other buildings.

Points of perception and visual comprehension of a building are also important factors in determining the iconicity of a building. The privileged views of the building are its proliferated images, but certain perspectives, such as the unprivileged views, can destabilize the building's iconicity by making it appear typical and anti-iconic. Most importantly, iconicity is somewhat dictated by cultural perception. A banal anti-iconic building may unintentionally become iconic as the contemporary society around it embraces it and proliferates its image. Consider the

abandoned Packard Plant in Detroit. It was designed as a normal industrial building, not as an icon. However, in its current state, the Packard Plant is an architectural ruin, slowly decaying as the culture around it is strangely embracing the ruin-ness of the site. For urban explorers, photographers, artists, and adventurous citizens alike, the Packard Plant has become an unintentional icon in the city, an urban apparatus that collects cultural value and fascination. The image of the Packard Plant is rampantly proliferated in books, magazines, videos, ruin porn photography, TV shows, and social media. The Packard Plant is assigned iconic value through image production, proliferation, dissemination, and consumption.

The architectural icon, therefore, oscillates between the iconic and the anti-iconic. If the icon is distinctive—highly visible, photogenic, memorable, and regarded as a landmark for a city—then the anti-icon is something that blatantly refutes those characteristics and directly opposes those. This proposal thus internalizes the dialectics of iconicity, and reconsiders the iconic building as both an icon and an anti-icon which is mutable according to circumambient situations and continuously self-generating. The building becomes an architecture that is both iconic and anti-iconic at the same time—both visible and

obstructed, both seductive and repulsive, both attention-grabbing and attention-resisting, both distinctive and hidden.

The site of the project is the abandoned Spire in Chicago by Santiago Calatrava, the alleged "next architectural world icon." At its planned height of 2,000 feet with 150 floors, it would have become the second tallest building in the world and the tallest freestanding structure in the Western Hemisphere. At the heart of the city and right adjacent to Navy Pier, the site is visible from various vantages and is widely included in the proliferated images of Chicago's skyline. The initial site analysis is a mapping of urban attractor points throughout the city and their view towards the site. These specific views have been the proliferated images generated of the city skyline dispersed through media—the privileged views. The second image analysis is a mapping of the renderings of the Spire by its architects from the vantage points where they believe generate the most iconic image of the Spire. The last image analysis is a mapping of the images being produced and proliferated of the site in its current sublimely notorious state—a 76 foot deep hole in the ground that was intended to be the Spire's foundation, dormant and

Below: Packard Plant image mapping.
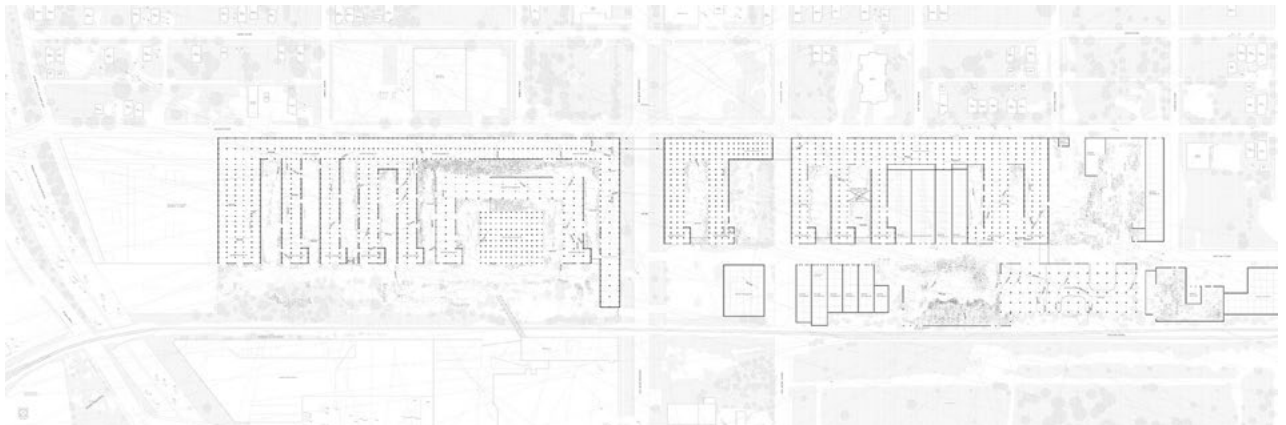
abandoned since the project ran out of funding in 2008.

There is an interesting moment of view near the site when one is driving north on Lake Shore Drive. From the vantage point, Harbor Point Condominiums can be seen in the foreground juxtaposed with Lake Point Tower in the background. The twinning of Lake Point Tower's architectural features—form and façade—onto Harbor Point discounts the iconicity of both the buildings. This idea of generating or deflating a building's iconicity based on context and specific views was the project's conceptual starting point: how can a building look iconic from one perspective and non-iconic from other perspectives, generating flicker moments of iconicity as it is viewed from various urban vantage points?

Initial studies involved research into the possibility of a "chameleon icon"—a building that demonstrates a camouflaged iconicity that hides in its context yet appears when it wants to. Early site explorations inquired into how a building on the site might be concurrently blatantly iconic and blatantly anti-iconic. Or, how can a building be simultaneously visible and invisible at the same time?

The form of the resultant building is directly influenced by its surroundings. Treating the contextual buildings as figures themselves, the proposed building is an architectural conglomeration of carved out and appended adjacent building figures, forming a new figure in the city that is both distinctive and contextual. Moreover, as a
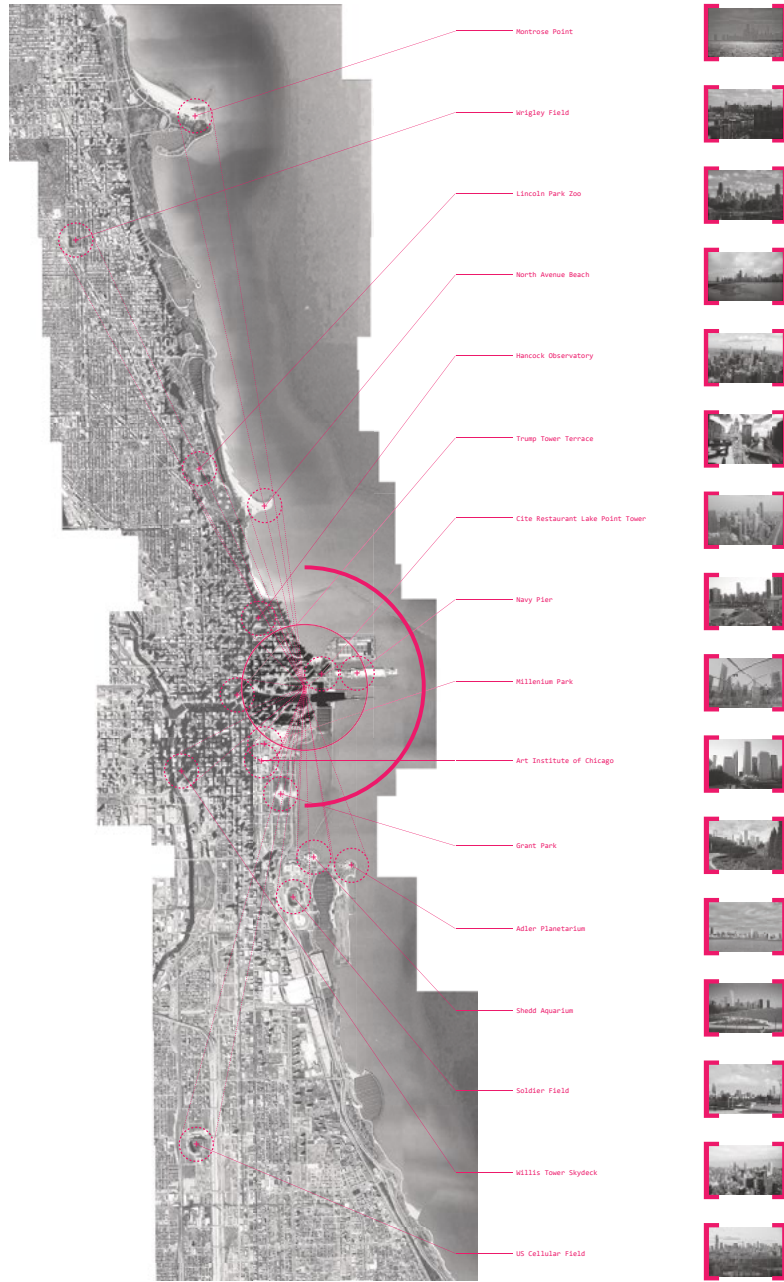
Right: Site analysis—spire hole images.

Below left: Site analysis—city skyline vantages.

Below right: Site analysis—spire iconic views.

Montrose Point

Wrigley Field

Lincoln Park Zoo

North Avenue Beach

Hancock Observatory

Trump Tower Terrace

Cite Restaurant Lake Point Tower

Navy Pier

Millenium Park

Art Institute of Chicago

Grant Park

Adler Planetarium

Shedd Aquarium

Soldier Field

Willis Tower Skydeck

US Cellular Field
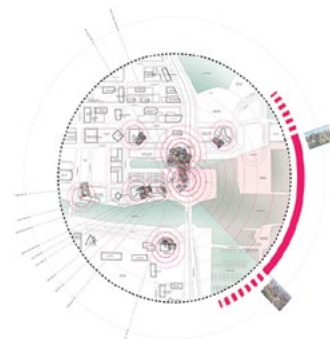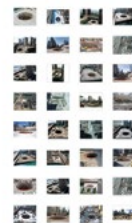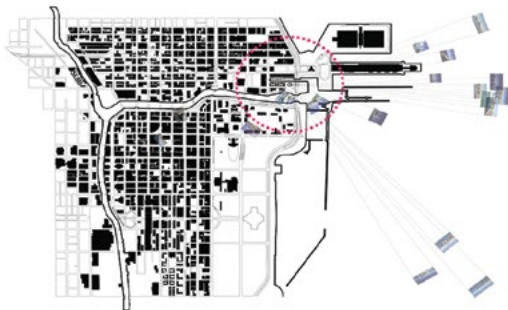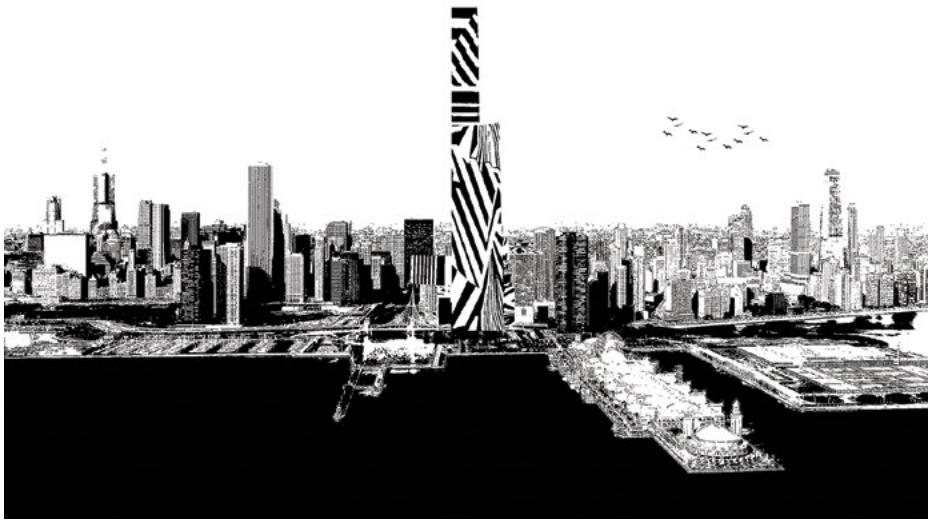
figure unbound by static shape, the building has multiple identities and personalities, as the building looks different from various perspectives in the city. The figure is chameleonic, adopting architectural details and textures of other iconic buildings in Chicago. The patterning of the building's exterior is directly derived from its neighboring buildings' façade patterns, hybridizing the textures as a superficial camouflage envelope over the building shape. From certain vistas, the patterning and form bleeds from one building onto another, allowing the building to humbly hide and subtly blend in with its surroundings, rendering the building contextual and non-iconic. From other views, the building stands out as an iconic figure as the misalignment of form and patterning with its neighboring buildings allows it to be distinctive. The building, aesthetically refined and enigmatically slippery, is highly visible, and, at the same time, highly hidden. This enigmatic icon is challenged to act as an apparatus that draws focus toward itself while bringing its context into focus.

The building is an all-black mass, further playing with visual perception and image comprehension. The black is a contextual cue borrowed from the proliferated black skyscrapers of Mies van der Rohe in Chicago and references the architectural image of the two most iconic buildings in Chicago—the Willis Tower and the John Hancock Center. Furthermore, black has

the ability to act as foreground (iconic) or background (non-iconic). When one looks at the black figure with other buildings in the city acting as the background, the black is able to disappear amidst the patterns and geometries of the city behind it. Conversely, when one looks at the black figure toward the lake or toward the sky, the black is immediately distinctive and aggressively provocative. Moreover, the black conceals light and shadows, reducing and flattening the building's figure into a silhouette in the city. At certain moments and from certain vantages, the mere blackness of the building reduced to a silhouette performs as an "architectural photobomb" in an image taken of the city; its blackness suggests that the building is, in a sense, non-imageable—or it does not appear well in images. In turn, this might provoke an additional unintentional iconicity, as the building's non-imageability invites a deeper public fascination with its image. The program of the building—a data center—is also influenced by the dialectics of iconicity. In our current digital age, data centers are, conceptually, iconic buildings, monuments of our mediatized society that serve as the cloud for all of our data storage. Data centers are symbols of digital power, emphasizing technology and virtual infrastructures. However, due

Above: Chameleonic icon rendering.

Right, top to bottom: Dialectics of iconicity illustration.

Chamelonic icon study models.
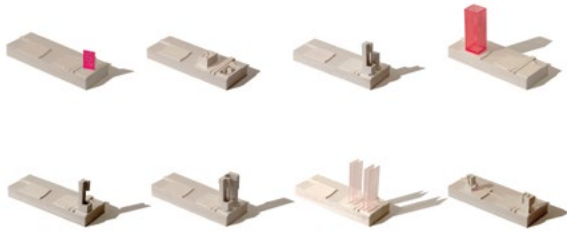
to security reasons and the protection of sensitive information, data centers are meant to look anti-iconic to resist attention. A data center in the heart of a city, therefore, must hide and resist attention despite its inherent iconic value.

Incorporating these conceptual logics, the data center stands freely in the city, completely private and uninviting, sometimes looking iconic, sometimes not. From typically iconic views of the Chicago skyline, the building may appear as a shadow or may stand out as a completely unique building. Vantage points around the city locate the building and determine its iconicity by its appearance in juxtaposition with its context. As the building's image is proliferated, either intentionally as an icon or unintentionally as background, it starts to organize the events around it. The building, through its images, starts to assume new meanings around the city.
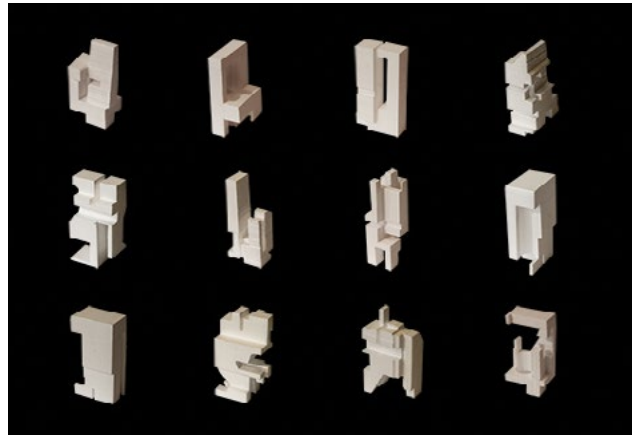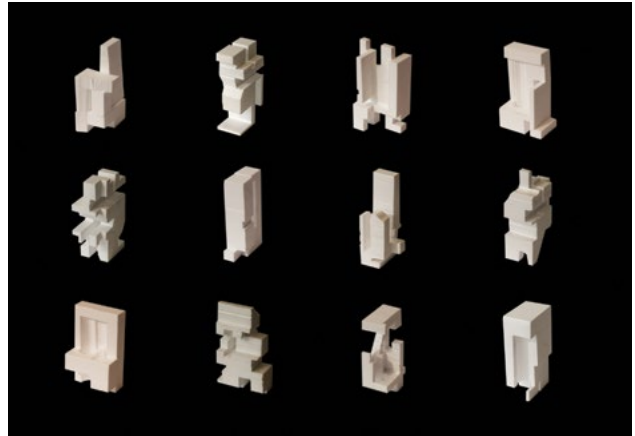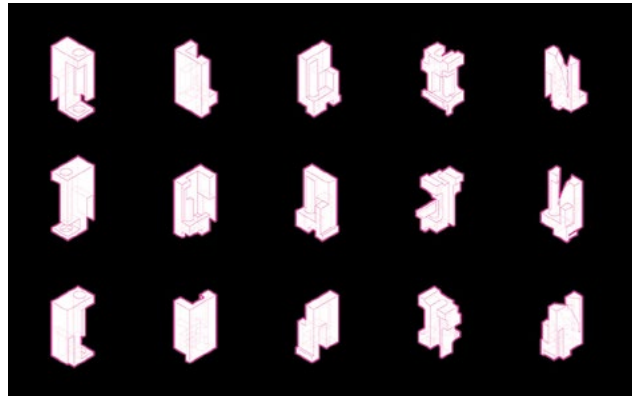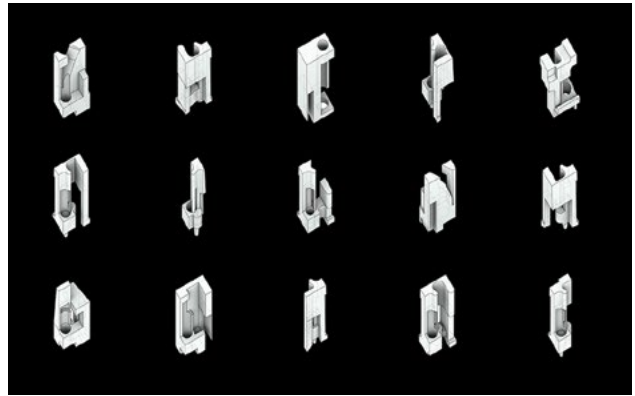
A sanctuary is erected across the water that becomes a place for worship and meditation of architectural icons in Chicago. The sanctuary specifically frames a view of the data center that produces an ambiguous aesthetic reading—the data center appears both iconic, a building that stands out, and non-iconic, a building that blends in. The sanctuary serves as a viewing portal that allows one to realize and understand the dialectics of iconicity generated by the building's relationship to the city around it.

The enigmatic icon stands tall over Chicago, narcissistically demanding its recognition, while hiding in plain sight. ■

Bottom: City textures.

Opposite: Urban massing process.

interview with
JULIE V. IOVINE

D28: *What book do you think every budding architect should read?*

JI: *The Diamond Age* by Neal Stephenson. I think it's a sci-fi from the 1970s, but it has 3-D printing and iPads in it. It has mass customization. It describes a world that is weirdly beginning to take shape. It impressed me.

D28: *What is your favorite pen?*

JI: I use this [*gestures to pencil*]. This is my psycho pencil. It's a mechanical pencil. Steel body with an eraser and a clicker. With Pentel .5 lead.

D28: *What buzzword describes current trends in architecture?*

JI: There are multiple strands. I mean I could do many, but "infrastructure" is one that comes to mind. "Maker renaissance," and "systems"...

D28: *What do you think is the most exciting phase of a project?*

JI: Well, what's interesting is that the most exciting is one that never really gets covered, which is six months to a year after it's been inhabited. It's one of the really serious lapses in architecture journalism that no one does that story. Everyone's always saying, "It should be done." But given the nature of publicity and timeliness and deadlines, the race is always to get in there the moment it's completed. However, it's really a year later that it really matters.

D28: *What is your favorite recent piece of architecture that you have seen that has really blown you away?*

JI: You know, I really try to avoid the whole "favorite building" thing. I really avoid it. I interviewed Bill Clinton once and I asked him that question and of course that's the question you ask. And he said the Taj Mahal, which was such a Freudian slip that I backed off right away from ever myself saying what my favorite building is. But I love Louis Kahn, like everyone else. I tend to like David Chipperfield. I was at David Chipperfield's Neues Museum in Berlin this summer, and that was really spectacular. Again, it's kind of modern and simple and almost archaic-modern, but it includes an older museum as part of its rebuilding.

D28: *What discipline, combined with architecture, could produce the most innovative work?*

JI: Political science, in terms of how urban policies are actually formulated. These policies are so often not an ongoing factor until the architect comes up against protests from the community, as they become aware of what's already been planned. If a greater sensitivity to policy was incorporated at the educational level, I think it could be more instrumental. Also, public health. I think more and more, there is the realization that buildings should maybe have stairs as well as elevators, because stairs are healthier, et cetera.

D28: *Can you tell us about your background, in terms of both your education and your career?*

JI: I am from Washington, D.C. I went to Yale, where I studied Ancient Greek and lived in Athens for a year. So I guess that would tangentially be where my interest in architecture began. Back then, it was possible to enter the Parthenon when the moon was full, which I think you can't go in anymore. Anyway, it instilled a romantic sense of architecture. I stayed in New

Haven after I graduated, and wanting to be a writer, I was casting about and got a job with César Pelli, who was then Dean of the Yale School of Architecture. I worked, however, in his private office where the projects at that time included the expansion of the Museum of Modern Art and Battery Park City. The firm was expanding exponentially, but was still small enough for close contact at every level, so it was an ideal situation to learn and write about architecture. The students and professors from Yale were always coming through, so that added to the sense of excitement. I had been writing on arts generally, but that's when I really began to focus on architecture. Then I went to New York and worked for some magazines and wound up a couple years later at *The New York Times*, where I was in the Home Section. It was a particularly expansive moment at the paper, unlike now. I really started writing about architecture as a design issue; it wasn't just architecture, but rather design and related issues. I was there for 13 years.

D28: You are described as an architecture critic and reporter, but you have said in the past that you are interested in a much wider range of topics. You previously mentioned the many self-defined personal interests on your bookshelf, including monographs sent by publicists, college era masterpieces, paperbacks, intriguing theory, urban history, fabulous women in wars. How does this factor into how you engage with the world around you as a critic and otherwise?

JI: I think it's a matter of being curious in a healthy way. You should never close down the things you're interested in, but rather continually expand on them. I was just reading an interview with Tom Stoppard who was saying that when he writes plays, he starts drawing from random things, things he may have just encountered looking into a shop window. I was very heartened to hear how he researches information to use in his writing, which is somewhat, if not entirely, like learning. He said he sees two options. You can either study the subject like a graduate student in order to know it literally, or—as he does—simply have the subject in mind and allow anything that catches his attention to come to bear. I can appreciate that approach, where if you keep your mind open, you'll draw from the atmosphere, the things that are going to fertilize your thinking from anywhere.

D28: In some of these topics mentioned earlier, you demonstrate that you have a foot in each camp, so to speak, in topics that may complement or contradict each other. Have there been particular coverage topics where this has been useful?

JI: Well, I don't think anything contradicts or competes.

D28: In architecture terms, for example, if you're looking at theory versus the pragmatics of the project.

JI: Theory is very hard for the general public to follow, and I have tried to follow it vaguely enough so I know what's going on. But I really don't know what's going on. Actually, I don't think the architects do either! If I thought it was really driving them in ways other than explaining things that they were going to do anyway, then I would concern myself more with it. But I don't tend to follow theory and I don't think it would pay me back in any rich way. I would rather read about Madame de Staël.

D28: Do you have any particular interest or topics that you most enjoy investigating?

JI: No, no. I mean—the journalist instinct is to find something interesting about anything and everything.

D28: What makes a project provocative for you, or for your intended readers? Like a "wow factor."

JI: "Wow factor" is the least of my concerns. In fact, increasingly I find myself steering away from that, in order to better understand how and why something came to be what it is, both within its limitations, and its success expressing something new and unusual. "Wow factor" is not something I am primarily concerned with. I mean, that's the subject of the photograph and not the written response to the whole thing.

D28: How do you find a balance between writing for your audience as architects versus non-architects?

JI: You know, that's an interesting thing. I was editor of *Architect's Newspaper* for six years and it was a great luxury to be able to talk straight into the ear of the subject matter. There was, and is, a very immediate relationship between the paper and the profession, both as it is practiced and as it is taught. But for most of my profession, I was at *The New York Times* for a decade, and now

The journalist instinct is to find something interesting about anything and everything.

Sometimes it's best, with certain buildings, to not know what the architect intended—the building itself should communicate what they were thinking about.

I write for *The Wall Street Journal*. There's a big interest gap and a lot of competition from other news. The burden has been on me to say, "Hey, this is important because XYZ." In addition, the writing cannot use lingo. I would have editors at *The Times* who would say, "'Structure'? That's insider talk. That's insider baseball." So you had to write very generally, "The building has three floors." It is a very healthy exercise in stepping back and not assuming that everybody knows everything or anything, for that matter. I think architects would do well to try to remember this.

D28: How do you approach this coverage of architectural projects and how do you begin your research?

JI: You just read every possible thing. For me, it's essential that I look and read about it before I talk to the architect. Because the architect is going to take me down a rabbit hole of a very specific kind, which I might not want to follow. I often try to read up on the situation, pressures, and background before I go down that path so I can reach some of my own understanding before they get a hold of me.

D28: Yeah, that's fair.

JI: Sometimes I avoid them altogether! Because sometimes it's best, with certain buildings, to not know what the architect intended—the building itself should communicate what they were thinking about. You shouldn't need to talk to them at all. It's important to me that the building itself communicates what's important to me just as a user. But, of course, the architect can tell me about the constraints that were significant in shaping the project, whether it has to do with budget or political issues,

zoning issues. People see these things and they say, "Oh, that looks horrible," but they don't know about original conditions and priorities or the stakes and the community's feedback. Knowing the whole background on something before I have any opinion at all is really important to me.

D28: Between working for The New York Times, The New York Times Magazine, The Architect's Newspaper, and The Wall Street Journal, you've worked in environments with colleagues of diverse disciplines and backgrounds. Can you talk about this experience?

JI: Well, pretty much as a journalist, I am on my own. Whether it's at *The Times* or *The Journal* or *The Architect's Newspaper*, as a journalist, you have to be a self-starter, and go after the issue or building with the greatest urgency of the moment. In covering issue-oriented subjects when I was at *Architect's Newspaper*, you would try to get both the academics who might have thought some on the subject, as well as the practitioners. Surprisingly often, they are at odds with each other. The academic thinking might be more historically grounded, and the practitioner will be very pragmatic or influenced by a developer or something very here and now—those kinds of pressures. So when I'm writing an article, it's always good to know whether I want a more theoretical, historical background that an academic might provide versus, "the budget was this and that and we had to get it passed by zoning laws," and so forth. So that's a question for an architect.

D28: How does this choice of coverage by critics, in turn, shape the architecture discipline and its perception by non-architects?

JI: I think architects waste a lot of time worrying about that, about what critics might say. I think there is a danger of criticism being a beauty contest judgment, where the role of the critic should really be to explain to the broader audience what's going on and why things can't be just anything. I don't think it's taken seriously enough—explaining the realities that drove a project into being rather than just judging it for how it looks. The whole ridiculous "starchitect" discussion seems so self-defeating, because every building is hard to build. Besides, I think the whole starchitecture thing has been blown up by developers who just want to sell projects by drawing publicity in whatever way they can. So these very talented architects are being dismissed out of hand as marketing tools when all projects need to be thought through to an extreme level of complexity.

D28: With the recession being something that we looked at a few years ago from 2008-12, affecting architecture so heavily, how did this affect you as an architecture critic and how did you manage to keep Architect's Newspaper afloat?

JI: Free interns. Luckily, *Architect's Newspaper* was really embedded in the community. It was really hard and called for an insane amount of ingenuity from the publishers and owners of the paper, William Menking and Diana Darling. And we struggled. There were free interns and none of us earned anything. But it was really great as well because we would just try anything that might work. I don't know how we survived, but we did on a very small skeleton staff and by just carrying on.

In a fantastic way, architects are really accustomed to this boom-bust thing. They fire almost everybody, then move in with

each other and rent out desks in this time-honored tradition that seems to happen with each generation. It was horrible but also really eye-opening to see architects search their souls and come up with incredibly creative ways to survive, and even flourish in new ways. As a journalist, I watched with amazement as they found ways to redefine themselves—redefine what they were doing, and what architecture might mean. It was very impressive. I did a series of interviews with architects of many generations: Henry Cobb who did the John Hancock building in the '70s, and David Adjaye who went into debt, and Rogers Marvel who went into security architecture and SHoP, who tried retail and focused on fabrication. It was just fascinating seeing how ingenious they were at thinking themselves out of this corner, for as long as nothing was being built. It wasn't just the traditional, "Go back and teach at schools." But they all, particularly some of the guys from the '70s and the '80s, talked about shrinking their offices and combining offices with entirely different kinds of workers and professions and how fantastic that had ultimately been. It was very impressive to see how agile the architect mind is. I remember Calvin Tsao saying he enjoyed it because things slowed down and they could actually focus on the buildings they were doing rather than having to pop them out at this insane rate. We did a lot of that as well.

It was a fascinating time to learn just how resilient and dynamically inventive architects are. They just figure out what they need to do to get through. And that's what we did at *Architect's Newspaper*.

Actually, to look back, it was very scary, but it great being so very alert as well.

D28: So how has this changed in the last couple of years? Has it changed that much?

JI: Well, with some relief, I think things have picked up, because you can only be ingenious for so long. But I think architects across the board really learned a lot. In adjusting to a new reality, they were realizing how sustainability issues have an impact on things like social equity, like when Hurricane Sandy hit the East Coast. Because of course, all of the poor neighborhoods and the cheap construction were wiped out. The economy coming back has made people focus on more realistic issues that really matter, and it's been impressive to see the architect broadening his or her interests. I see architecture really spreading its tentacles much farther than it had before.

D28: You also helped oversee a large digital expansion for the Architect's Newspaper during your time there. How does architecture translate over a digital platform as opposed to seeing things in person?

JI: Fantastic. Getting all those pictures. It's a good thing and a bad thing because it drives even further architecture's tendency to be a beauty contest. I think it's called "archi-porn" or something like that, because you can just splash these spectacular photographs onto the Internet and that's what people think it's all about. I think there's now been a reaction against that. But it feeds itself very smoothly into the whole Internet visualization world.

That's why I live in New York. I don't want to live in a suburb where I don't see horrible things. I want to see the good, the bad, and the ugly/beautiful, and architecture's like that.

D28: Do you have any advice for students or young professionals who have a passion for architecture in related fields, but don't necessarily feel the need to work in the field in a traditional sense?

JI: Think again! No, no, no, you have to be absolutely devoted, and you have to be ready to join the cult. Make sure you're ready to join the cult before you take that leap. It can be very rewarding, but it is a cult.

It sounds like such a cliché, but the whole architecture thinking thing is really true, that architects do think in a way that is very much a problem solving, multi-dimensional way of looking at things. That special way of thinking can be applied in developing anything: buildings, communities, societies. I think that an architect at school learning that way of thinking is prepared for anything in the same way that law school is for people who want to make money. Architecture is for people who want to learn how to contribute to the world in constructive ways, whether literally or with more socially and politically aware construct. I think it's a good time for that.

D28: What do you see as the future of art, and specifically architecture journalism?

JI: Well, it will thrive. But I worry that it will thrive only for those on an inside track. I worry that it'll close in on itself, that the gap will grow between how the general public understands architecture and how architects design it. It doesn't help that newspapers are dropping their architecture critics—the ones who can address that gap—left and right. There are only a handful of them. I know all of them really well; there are only about six out there now. It shouldn't be that way. More newspapers and magazines should think it's important that there be someone on hand to describe the physical world, the physical environment, and how it's being shaped. I am not at all worried about architecture and architecture journalism talking to itself, because they like to talk and show images. That's going to be fine. But it is a growing problem that the larger public doesn't think it's essential to understand the field. For example, the way Lewis Mumford used to write in *The New Yorker*. *The New Yorker* no longer has an architecture critic. But Mumford used to say what was going on in the world, so a civilized person could understand these things. No one is really around to tell them about it in a way that they can grasp, and that worries me.

D28: But they still seem to think it's very interesting and a beautiful form of art.

JI: Yeah, it's fun. The other thing that drew me to it, while I was doing general cultural reporting, is that it's so in the real world. I mean, we can't escape it. For it to exist, it is in the real world. That's why I live in New York. I don't want to live in a suburb where I don't see horrible things. I want to see the good, the bad, and the ugly/beautiful, and architecture's like that. It has to face the real stuff, and any architecture that doesn't, is really missing the point. ∎

interview with
GRAHAM PULLIN

Graham Pullin is a designer and author of *Design Meets Disability* (The MIT Press, 2009). He is Course Director of Digital Interaction Design at the University of Dundee, where his research is exploring more expressive communication aids for people who cannot speak—an obsession that may stem from having seen *My Fair Lady* at too formative an age. Previously, Graham was a Studio Head at the design consultancy IDEO, leading multidisciplinary teams on projects from (the very commercial) Vodafone Simply mobile phones for people in their 40s and 50s to concept hearing-enabling furniture for the V&A Museum. Twenty years ago, he was exploring bespoke prosthetic hands at the Royal College of Art. Prior to that, he worked at the Bath Institute of Medical Engineering. Experiencing different cultures within different design fields led to *Design Meets Disability*, a book that argues for more art school–trained designers to be invited into disability-related design, in order to contribute not only their skills but also their sensibilities (and obsessions). This would be a healthily disruptive influence within assistive technology, but would influence design in return.

Pullin was invited to Taubman College to give a lecture as part of the Master of Science in Architecture Distinguished Lecture in Design series on October 30, 2014, titled "The Materials of Hands and Voices." After the lecture, *Dimensions* was able to sit down with Pullin and ask him about his educational background, his design process, his cross-disciplinary collaborations, and most importantly, his role in shaping the normalization of disability design. The interview, held at Zingerman's Deli for an hour, provided a glimpse into the motivation behind Pullin's work, as well as insight into the possibilities of disability design in architecture.

Photo provided by Taubman College.

D28: *What book do you think every designer should read?*

GP: *The Victorian Internet* by Thomas Standage.

D28: *What is your favorite app at the moment?*

GP: Color CC. It's by Adobe. It derives color palettes from the camera, so you can export those and bring them into your design book. I think it's rather beautiful.

D28: *What buzzword describes current trends in interactive design?*

GP: "Flat." It's the opposite of those so-called skeuomorphic interfaces that mimic physical objects—although this is itself often more stylistic than that definition suggests. "This is very flat now. The graphics style is very flat."

D28: *What do you think is the most exciting phase of a project?*

GP: Oh, good question. I really like the phase where you're moving from your initial ideas into some details. It's still not firmed up, and you haven't got to the realizing part in the way that I'd use the word yet. But some of your high level ideas are then starting to be manifested in detail. I think that's a good test for whether the ideas work that way—whether they can be realized in detail or whether they can inform the small parts, as well as the big ideas, and give the whole project some coherence. I don't even know what I'd call that stage, but, when you are starting to get into detail but that things are still able to be changed, and are still quite fluid.

Also because my design is more research based, and it's mostly practice-based research, there's a lot of flexibility as to what

the relationship is. I don't always start off with a firm, traditional brief and then move from that. That detailed phase could happen really early, and it might actually be what helps me define the brief, if that makes sense.

In the project *The Six Speaking Chairs*, the moment when you decide that they're going to be chairs is an interesting stage in that project. Because there's still so much that's undefined, but then you have a constraint and you've got something.

D28: *What is the most underutilized tool or technique that you rely on?*

GP: Writing. I think one thing I try to instill in my design students is that writing is a really useful skill to have, and not just in terms of communicating your ideas to the client, but also articulating it to themselves.

D28: *Previously, you've referred to the interaction between people. Is there a way in which design can facilitate the communication between people and the work?*

GP: Yes. Not only in my own research into augmentative communication, but it's seen in almost all communication between people mediated by technology. So it's not human-computer interaction—not in both senses. You're not in the same disciplinary culture; and it's about technology as an intermediary. Certainly it augments their communication, by increasing the interactions, like social networks and lots of apps are about putting people in touch with each other.

I think interaction design is closer to architecture than you think, and it has become increasingly so. In Dundee, we have a program that offers two degrees: one in interaction design, and one in product

design. They are combined so that a lot of the teaching is shared between these two programs. When you finish a degree in one or the other, the name we give to the combination of the two is social digital. It's all about people really, and the technology is there to connect the people. Then we're back to interior—interior and environmental design are about to join that group, because spaces are becoming more digitally enabled, and people are doing digital things in public spaces, so I think I am looking forward to a glorious blurring of those boundaries.

D28: Speaking of blurring boundaries, there's talk that space shouldn't be defined by the physical space anymore, and instead by defined by a virtual or Internet presence.

GP: I think there are lots of other examples. I often think that something like landscape architecture has a lot to do with interaction design because there is the same process of navigating, and you can experience the senses within an interface as well as when you are interacting with something physical. The possibilities of something new will come out, and I think there's a spatial feeling to that.

D28: What are some obstacles that you faced in advocating for disability design? We imagine there is still some resistance in the design world for this interest.

GP: It's a really good question and one that I find difficult to answer. I mean it's something I discuss a lot in my book, but without saying, "Go and read the book," it feels like there are inhibitions, and that's why there are barriers. There are a lot of emotions involved. I think the field of design for disability is quite specialized, and understandably so, because a lot of the issues are very specific. I think there is a little bit of—I don't know whether it's just mutual unawareness, ignorance, or mutual suspicion between design and rehabilitation engineering, if you want to call it that. Certainly some people in medical design come to terms with rehabilitation design.

There exists a certain suspicion of mainstream design as being something that's somewhat frivolous and fashion-led, which I don't actually agree with. I think within design in general, there is sometimes a reticence to contribute to an area that people feel ignorant about, and they are concerned

that they know enough to actually make a contribution. But my own sentiment is that design inspires design. I am optimistic that if there were more examples, I think you could see a revolution because those examples would speak more eloquently about the natural fit for design sensibilities and issues around disability.

Another obstacle is that it still feels like two rather separate cultures. As an advocate, you end up talking to these two audiences as if to arrange a blind date, in a way. Two people who are unaware of each other and that you think would be a good fit. There is a certain sense of matchmaking. I guess that's a barrier to advocating, if it's so reliant on an intermediary, and there's less of that relationship between the two parties already.

D28: In your book, you bring up the question of fashion and branding in eyewear design. Can an existing brand extend into design for disabilities, or do you imagine a new brand identity for this?

GP: I don't see why it should be one or the other.

The example of eyewear I think is fascinating because in a way, that's a revolution that's been so successful, that we don't even use the word "disability" anymore in that context. I think fashion brands have a role to play. I don't think it's about everything in disability and design becoming fashion conscious, and having brands and labels gratuitously and superficially slapped onto it. But I think some of the core values of fashion could actually be really provocative and inspiring in that context.

There's a very interesting woman, Liz. She also goes by the online name of "Purple Cane Girl," and she's conducting a very interesting and good-natured campaign in New York to get J.Crew to sell walking canes. I think that's very fascinating because if you look at their catalogs, I can completely imagine that happening. They're a strong brand, so I think those canes would change; they wouldn't just be any canes. They would be J.Crew.

I think that's a very interesting collision of those two things, collision in a positive sense—a creative sense. But there could be other brands that could move in the opposite direction, and as you know, I am a very strong believer that radical design within disability could have amazing implications for mainstream design. It would be lovely to see some brands go in the other direction, brands that start off by developing a specialized product and expand out.

D28: In your research, you mentioned there also is a wish for mainstream design to be influenced by and inspired by disability. Do you think it could be counterproductive at times?

GP: I don't mean inspired by the concept of disability. (As Harilyn Rousso says in her great book of the same name *Don't Call Me Inspirational!*) I think "disrupted" is almost the better phrase, because I guess there are two issues, aren't there? That disabled people continue to be excluded by mainstream design, architecture, the environment, politics, and all kinds of other things. So there's an issue of serving their needs and just being more inclusive and more open to diversity than we are—that all sounds like a vision of universal or inclusive design. But I think I just like the element of difference and diversity, and coming in as a stimulus to new ways of thinking about all kinds of things. I'm not sure about the term "universal design," which I think can be counter-productive, because it's not about adopting a universal approach to design, so much as just provoking new approaches to anything.

I hope this doesn't sound glib, but I am very interested in disability by looking at disability from mainstream design and the influence it can have. I just think it could be very catalytic. The reason I am not concerned about the counterproductivity is that I am not espousing universal design. I am interested in non-universal disability rated design, if that makes sense. But I am actually designing for very particular groups and cultures within disabled

My own sentiment is that design inspires design.

If you go to a tailor for a suit, the tailor does not say, "Choose some fabric and tell me what you want me to make."
It's a curated process.

populations, and not even treating disabled people, but the same condition is being a uniform group. Which I guess that can be a problem of coming at disability rated design from a clinical perspective. You start defining people in terms of their ability, or disability, or the conditions that have led to that. I don't think you'd ever conceive of a mainstream product with a brief that said, "Design this for all able-bodied people." If you were handed that brief as a designer, you would immediately say, "Who are you talking about? Which able bodied or non-disabled people?" You would want to know whom you were designing for. So I don't see why that shouldn't also be the case for people with disabilities. But maybe it's easier for me to say these things now because in a research role, I actually think that it's my responsibility to be an agent provocateur in some ways, and to open up new possibilities.

D28: With the growing presence of intelligence systems and printing tools such as portable 3-D printing, or the role of mass customization—is that changing the application of disability design?

GP: It's opening up the different possibilities for the sort of economics of making things. There's the opportunity to make things in smaller quantities, but I think there's still a growing role for designers in that process. There is this kind of myth at the moment, that if everyone had a 3-D printer sitting on their desk at home, everyone would be a designer. Having a printer on your desk doesn't make you a graphic designer.

So I think we need to get over the hype. It's still a very profound development, a disruptive production technique, but it doesn't actually define what you do with it. There's a very challenging but important

role for designers in connecting flexible manufacturing with individuals as part of co-design.

If you go to a tailor for a suit, the tailor does not say, "Choose some fabric and tell me what you want me to make." It's a curated process. As a customer, you are given important freedoms, but within constraints, because there are deep cultural traditions there. Actually, working out what those constraints are in the area of prosthetics or any other aspect of design would be really fascinating.

D28: What criteria should the designer consider the most important in the future of disability design?

GP: My simple answer to that is I think it's really important that designers who are not used to addressing disability in their work, when confronted with a project that does, don't leave all their other sensibilities at the door. For example, a graphic design consultant doing a signage project for a museum: if the issue of disability, accessibility, and signage is added to that brief, or becomes an important part of that brief, I think then they should stop thinking about it in the way that they would have been thinking about it otherwise. I think that's part of the trouble that I have found out in architecture that in lots of projects, those two things are separated out. Architecture, graphic design, and product design, there should be very poetic aspects to these works, as well as practical.

D28: How do you think architecture can become more involved in the development of this type of inclusive design?

GP: I think it already is, and in a way, you could say that it pioneered a lot of universal

design. I think because of that notion of "access for all" plays out more literally in the architectural and built environment than it does in the realm of other forms of design. I think it's been pioneering. Again, the more that examples of great inclusive architecture can be seen as good architecture on any ground, the better. It's not just about fixing problems; it's about turning those issues around and so they become the inspiration for a radical new approach to architecture. The cliché in this area is wheelchair ramp access, and how can you turn that from something that's kind of hidden behind the building, if we embrace the fact that it's necessary. How can it define the front of a building in a very positive way? Rather than it being a sort of fix, and has to be applied and more compromised the original vision of a building. How can it become just right there at the heart of the vision of the building, but not in a prescriptive way? It shouldn't prescribe what a building can be.

D28: What is the next big product that we should pay attention to?

GP: I guess in a way, I am more interested in alternative presence than futures.

Having said that, it's really, really interesting in speech technology at the moment. There is something happening where at a very deep level of technology and processing, synthetic speech is suddenly becoming very flexible, more "plastic"—more nuanced. Specifically, different tones of voice and other qualities can be introduced. But no one's quite sure what to do with that flexibility, or how we as non-speech technologists might actually experience that or interact with it. That's this chicken and egg situation, because as I said when I was describing The Six Speaking Chairs, it's very difficult to talk about and to imagine what that means and what that could mean. I think exemplars are going to be what drives that, just as they will with disability related design. I think having examples, that they'll be the thing that seeds the imagination of the design community. That could be a really interesting disruption to the idea that everything has a screen in it. But I'm not sure what I'm paying attention to because I don't know where it's going to go. I've got no predictions, but I just think something is rumbling there and something is going to happen. ∎

GRAHAM PULLIN

RESEARCH
THROUGH
MAKING

Historically, research and creative practice have been constructed as "opposites." This is not an unusual struggle in architecture schools, particularly in the context of a research university. This perceived tension between design and research is indicative of age-old anxieties within the architecture field to understand its nature as an "applied art." Design can be a purely creative activity not unlike creative practices in music and art. In other cases, design can be a purely problem solving activity, not unlike research in engineering and industrial production.

Since its inception in 2009, Research Through Making (RTM) has enabled faculty to engage in architectural research or creative projects that are predicated on making. Seed funding is competitively awarded annually for up to five projects.

Faculty collaborates with students to produce projects that ultimately lead to a public exhibition in the Liberty Annex Gallery. Through the years as the projects have evolved, the research has broadened and many have gone on to win national awards (P/A Awards, R+D Awards, ACSA Awards, AIA awards, etc.) and be published, presented and exhibited through out the world. Research Through Making is one of the most innovative architecture research programs in the country, and provides important funding that allows students to work with faculty on innovative research projects and bring that knowledge back to the classroom and into their futures as designers.

2014 Research Through Making opened on March 12th, 2014 at the Liberty Research Annex, 305 W. Liberty St., Ann Arbor.

CH
GH

Projects featured:

City of Nights: Detroit Illuminated
Karl Daubmann, Osman Kahn (UM Art and Design), Catie Newell, and Ammar Kalo

Displace: In Reflection
Wes McGee, Catie Newell, and Brandon Weiner (UM Library)

PneuSystems
Kathy Velikov, Geoffrey Thün, and Santinder Singh Baveja (UM College of Engineering)

c-Lith: Carbon Fiber Architectural Units
Glenn Wilcox and Anca Trandafirescu

Grant submissions were anonymously evaluated by a distinguished jury from outside the college:

Paul Amenta, Artist; SiTE:LAB curator; Adjunct Professor, Kendall College of Art and Design

Merrill Elam, Principal, Mack Scogin Merrill Elam Architects

Casey Jones, M.Arch '92

RTM allows students to work with faculty on innovative research projects and bring that knowledge back to the classroom.

CITY OF NIGHTS
DETROIT ILLUMINATED

KARL DAUBMANN, OSMAN KHAN, CATIE NEWELL, AND AMMAR KALO
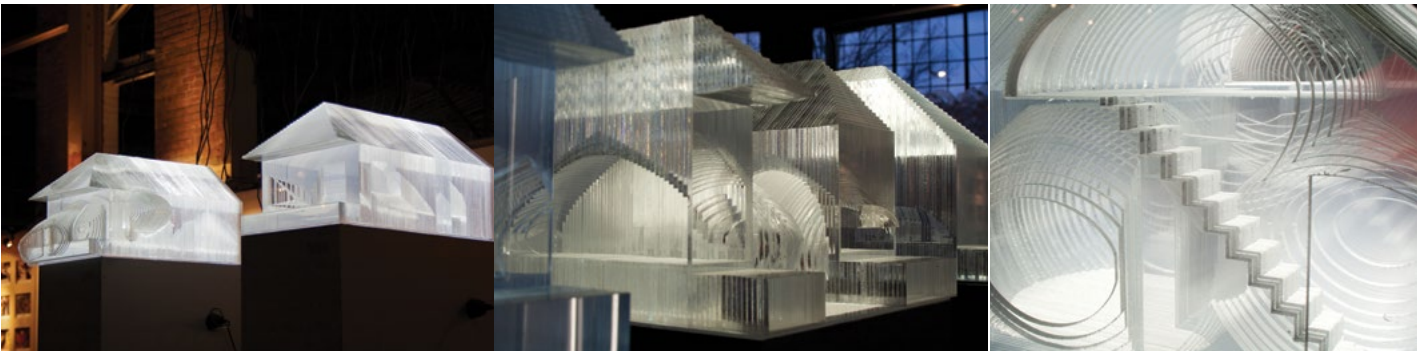
2014 RESEARCH THROUGH MAKING
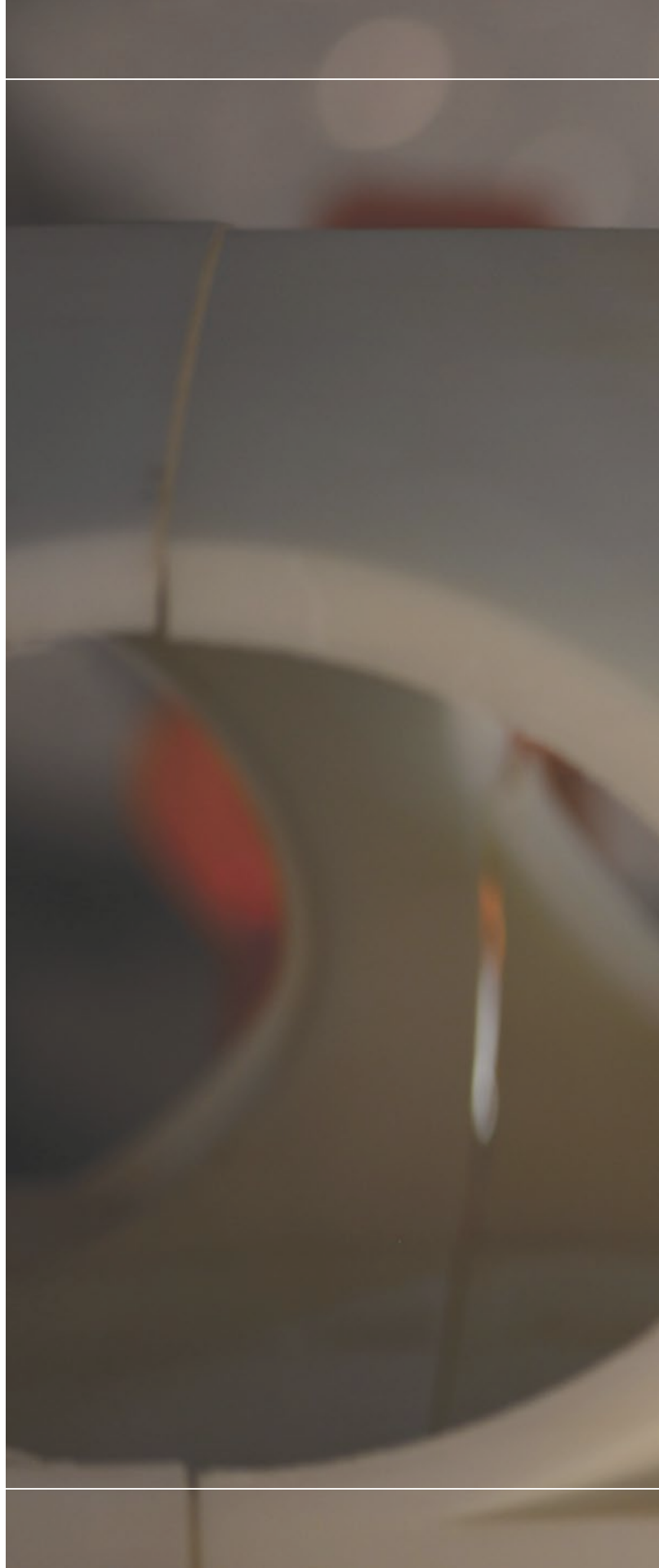
"Light thinks it travels faster than anything but it is wrong. No matter how fast light travels, it finds the darkness always got there first, and is waiting for it."
**—Terry Pratchett, Reaper Man**

The adjustment to the human perception of space, found within the presence of darkness, demonstrates that space is not solely defined by its physical parameters. By looking at a city—not through the usual material infrastructures—but rather with the immateriality of light and darkness, alternate readings in the volumes and occupation emerge.

Existing for a greater part of the day, the condition of night drastically alters the human understanding of a city from its day-lit counterpart. One extreme example of a physical urban context unintentionally paired with limited lighting sources is Detroit, where illumination is compromised and diminished. As a means to cope with reductions in density, the city is considering the removal of public streetlights, among other more extreme measures, where the public infrastructure cannot be supported in such a distributed context. The strained electrical infrastructure of the city registers the differences between public and private light sources.

One hope is that this collecting of infrastructure will corral the inhabitants, but it also means that if people chose to live outside these zones, they might be living in darkness. This lack of public night-light is in contrast to our understanding of first world economic cities, where there are people but no light. This situation sets up the research for *City of Nights*.

This condition is not viewed in a negative way but instead as an opportunity. Operating after nightfall in Detroit intentionally exposes the alterations of space that occur with darkness and its missing illumination.

Instigated by observations of the darkness in Detroit, *City of Nights* is an investigation in the development of tools and representations for exposing alternative spaces formulated with light. The research began with analysis of neighborhoods, spaces, and houses in Detroit at night.
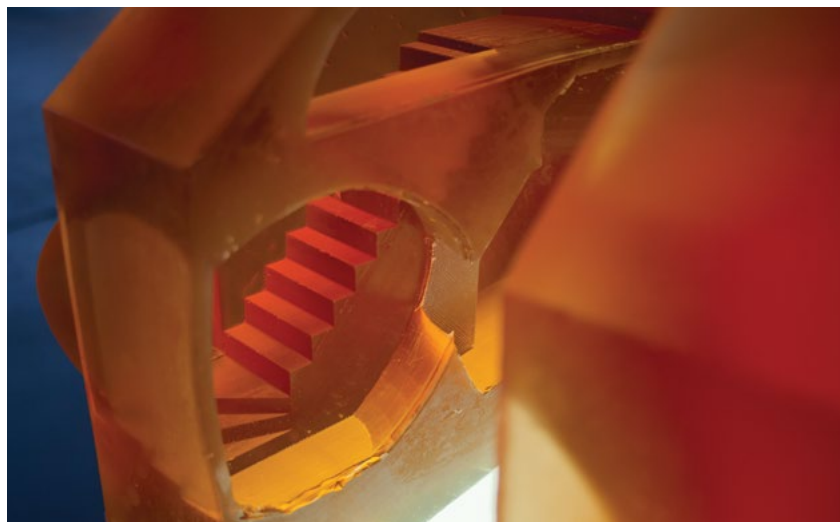
What does publicly provided artificial lighting actually light? Who is it for? Does it provide unspecified, uninspired and wasted light?

What if private individuals supplied urban night lighting? Consider the Nolli Plan of Rome— publically accessible space—as a lighting plan. This switch results in occupied buildings supplying light to the public space.

What if we were able to consider the spatial and volumetric possibilities of light or, to be more extreme, we only perceive space if light bounces off surfaces?

To start with darkness, there is a blank canvas or volume of space to carve occupiable space from. Then the project spatialize the illuminated existing spaces. As volumes of space overlap, sequences are revealed and architectures emerge. The project proposed new urban houses whose job was to light both its internal and external spaces. Some houses were introverts and some shared their excess light. Some houses collaborated and pooled their collective light.

This research seeks to identify, amplify, and agitate such conditions through alternate propositions for illumination. The propositions visualize and spatialize light as a critical quality of space within neighborhood blocks. Concentrating on the domestic setting, the work provokes the realm of the private to provide light for the public. ∎

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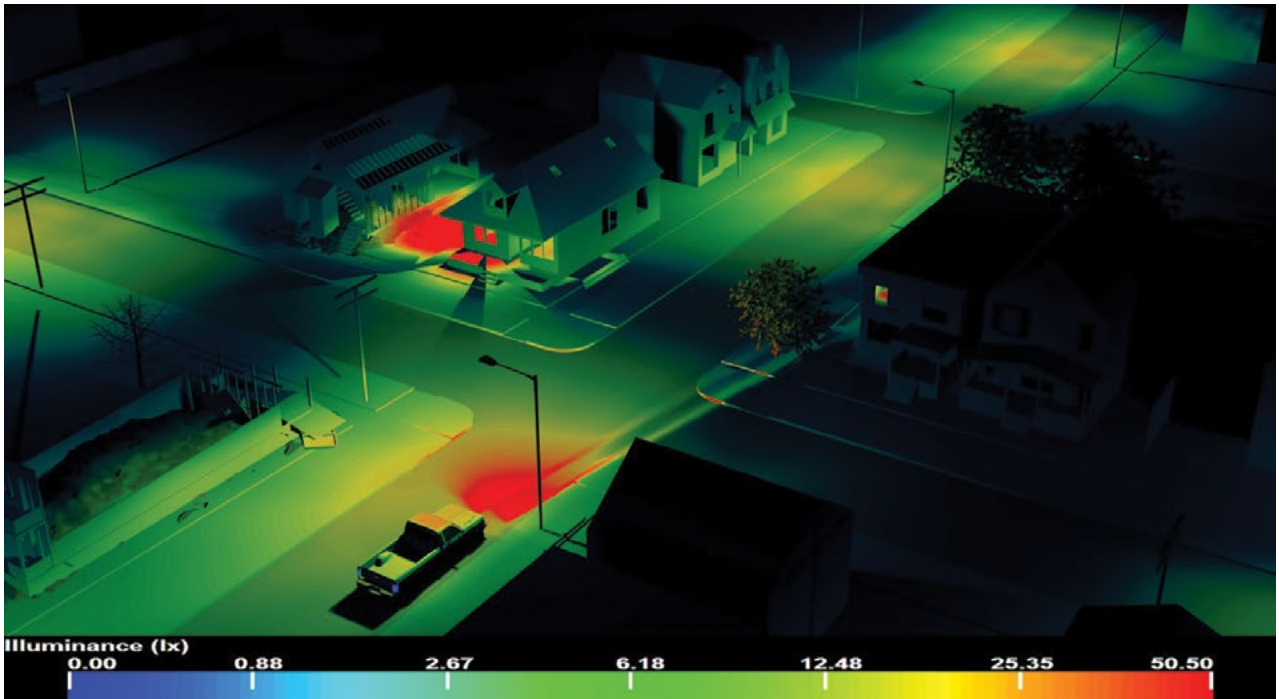
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IN REFLECTION

WES MCGEE, CATIE NEWELL, AND BRANDON WEINER
2014 RESEARCH THROUGH MAKING

Displace: In Reflection focuses on optically and spatially instrumentalilzing the uncanny material attribute of reflectivity as a way to drive physical material manipulations and visual distortions. The research focuses on the collapsing of material and immaterial effects of mirrored glass to investigate alternate and contrasting readings of objects and occupation while also presenting, in reflection, mediations of the space through distortion, multiplicity, scale and displacement.

A reflection is an odd optical displacement compounded on matter. Mirrors optically create spaces that do not exist, glass reflects light in a way that makes it appear to hover, glare throws immaterial conditions across a space, and a polished

RESEARCH THROUGH MAKING
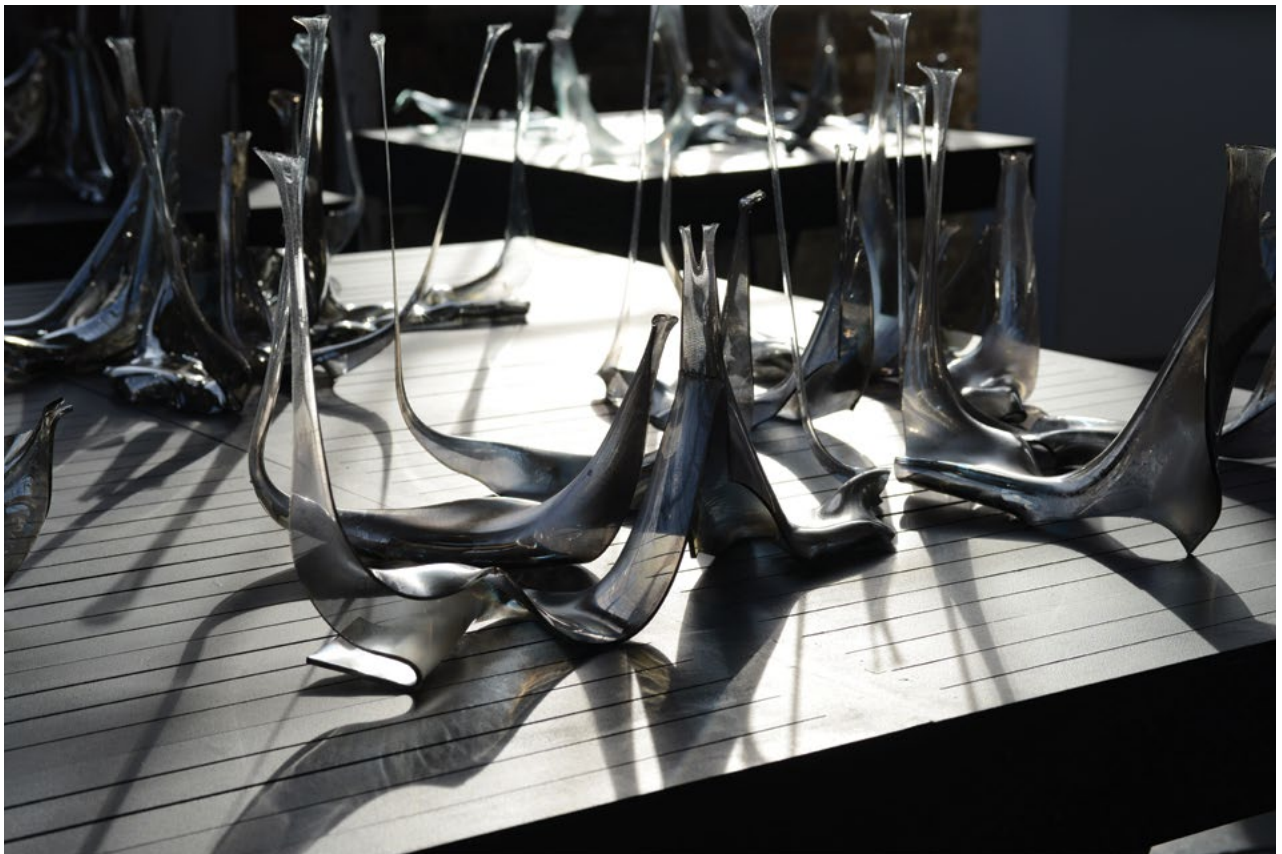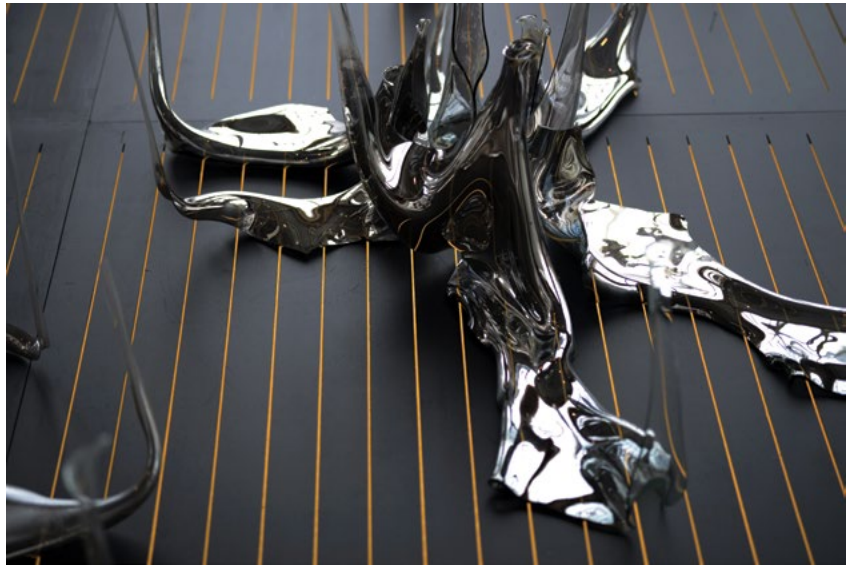
surface can disrupt the perception of an object. These conditions of reflective, glossy, lustrous, and the like, can be used to exude some sort of sense of strange material being. The mind's focus bounces back and forth between understanding an object with reflective material attributes to seeing the optical effects, which, when taken seriously as spatial constructs, have the ability to alter the space—doubling, multiplying, mutating, or rearranging the surroundings in the transposition. The material effects of glossy, matte, haze, reflective, and transparent become instruments in the mutation, and new environments are created.

With a collapsing of the immaterial and the material, this work seeks to unpack

A reflection is an odd optical displacement compounded on matter.
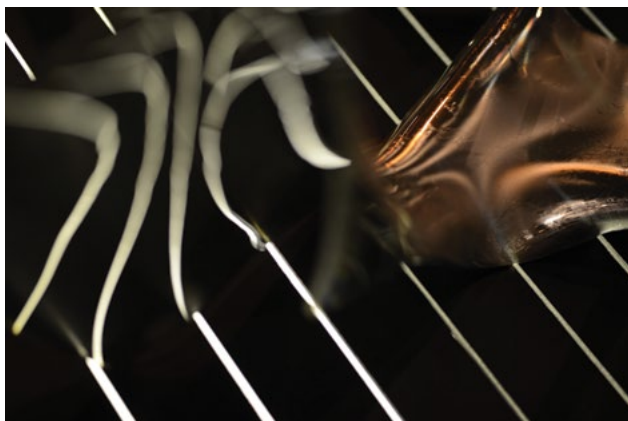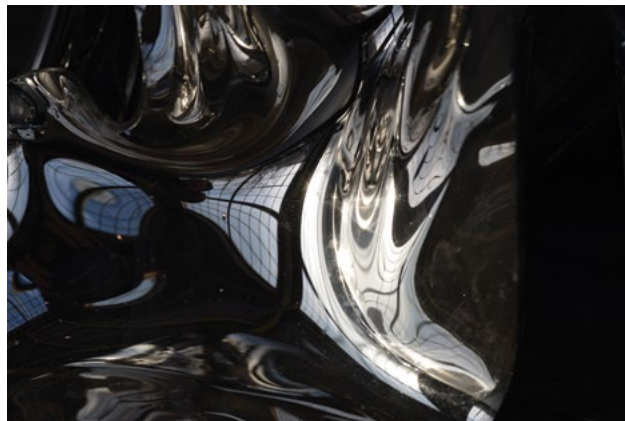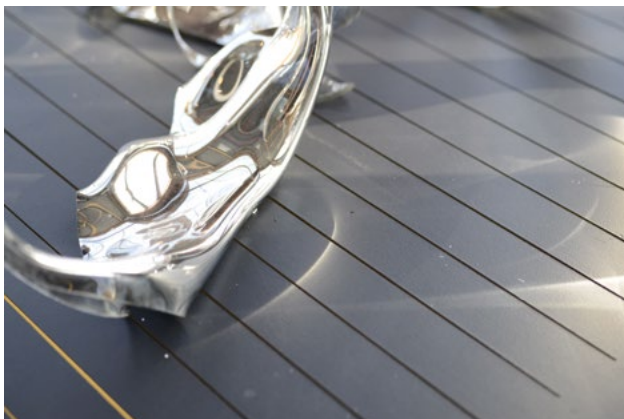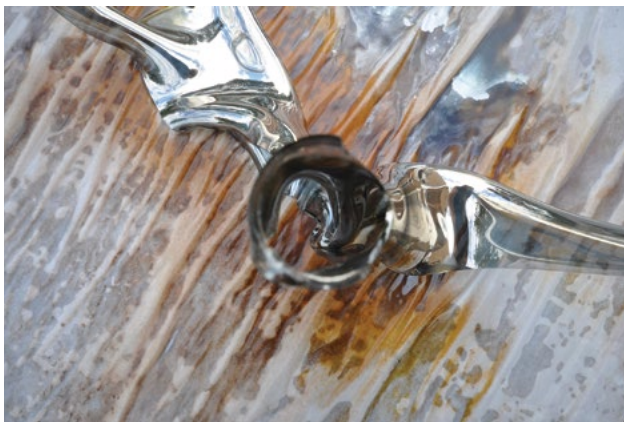
the opportunities present in two distinct, though highly interconnected distortions; that of the object that has these attributes and the context in which it is placed. The collapsing of these two elements produces an intangible condition. Deploying variant techniques of glass slumping, and curated applications of silver nitrate ranging from opaque to transparent, the consequent symmetries, patterns, and realities are disrupted. For the object, there exists a confusion of its boundaries attributed to its peculiar physical shape and applied mirroring, allowing its other material attributes to fall away. It acquires the visual attributes of its surroundings, such as color or luminosity, but filtered through the smooth and shiny material attributes and then disturbed across its form. Simultaneously, the outcomes of the reflection optically mutate the geometry, scale, and multiplicity of that which surrounds it. In doing so there is a double displacement—the context in proximity to the object, and the extent of the object itself. The material attributes are strangely unable to be self-referential or fixed to any particular site. Collapsed together, the exploration persists through the investigation of real and reflected sites and the geometries of the devised material.

In addition to the physical objects created for *Displace: In Reflection*, the film Semblance was created as a means to capture and explore the spaces that are created within the reflections. Still further, a series of light captures on photographic paper, Projected Realities, was created through the timed exposure of images projected and thrown from the physical objects. Intensities that are paired with the light as it is reflected add contrast, variation, and depth. Both of these works produce very uncanny spatial captures and volumes. ∎

PNEUSYSTEMS
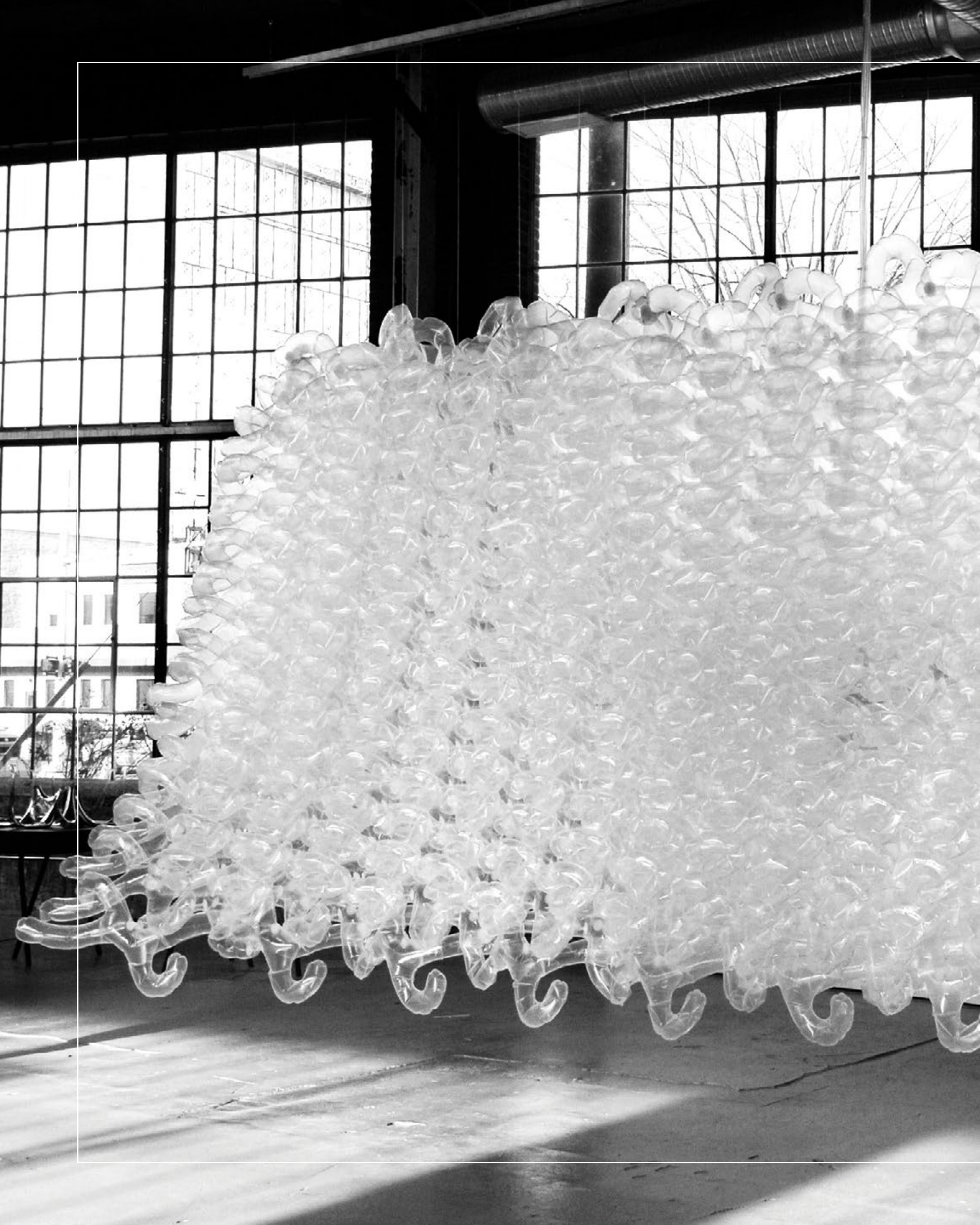
KATHY VELIKOV, GEOFFREY THÜN, AND SATINDER SINGH BAVEJA

2014 RESEARCH THROUGH MAKING

PneuSystems forms part of a body of work by Taubman College faculty Kathy Velikov and Geoffrey Thün that aims to develop material and cognitive dialogue between built form, humans and the environment via experimentation with prototypes for responsive envelopes that engage the soft systems of architecture, such as light, thermal gradients, air quality and acoustics. Our interests turn explicitly toward air as a material for its sensitivity to energies, environments, fluctuations, periodicities, and with its capacity to contribute to new material systems.

PneuSystems explores the performative, formal and aesthetic potentials for cellular pneumatic membrane-based assemblies toward deep, lightweight and adaptive architectural skins. Air is mobilized as a substance that is actively mediated, controlled, contained, energized, manipulated and registered by other materials, forms and technologies. It is instrumentalized toward the production of multifunctional building skins that can adapt to locally changing environmental conditions in order to optimize variable thermal performance and comfort, while minimizing related energy usage. *PneuSystems* is ontologically situated within what Walter Benjamin referred to as the "language of things"; it experiments with performative architectures of soft aggregate bodies and our aesthetic relationship to their possible formal compositions.

This research is pursued through a methodology that entails the study of specific principles from biological examples of multi-cellular, nested and

Previous: Exhibition of *PneuSystems* for *Research Through Making* consisted of a full-scale operational prototype of the X-Weave array, and an illuminated case presenting the research methods, historical and disciplinary precedents, test models and drawings, operational prototypes of several kinetic cells, and three films documenting the research and design process of the project.

Above: Assembly of the X-Weave array prototype. The X-Weave was considered to be one of the most successful weave topologies as it achieves a nested three-layer array through the simple weaving action of a single cell type.

Right: The development of multi-cellular pneu skins began with the exploration of surface topologies—stacking, braiding, weaving, and knitting—that were translated into compositions of individual cell assemblies of primitive pneu forms.

Opposite bottom: 3-D printed models were made of the various pneu arrays in order to assess their surface and volumetric properties. From left to right, X-Stack array, X-Weave array and λ-Weave array.
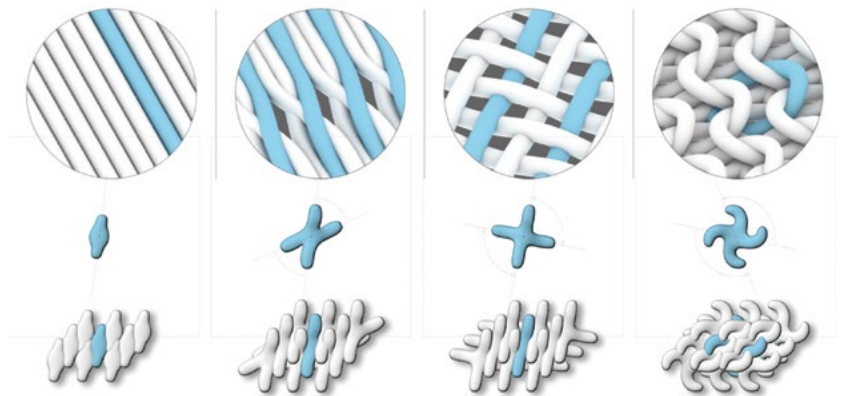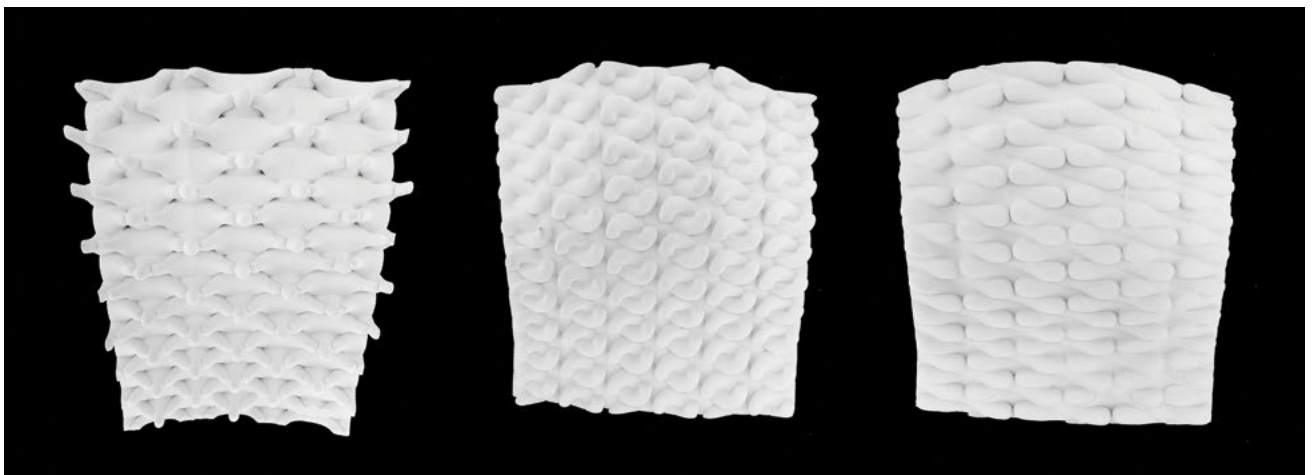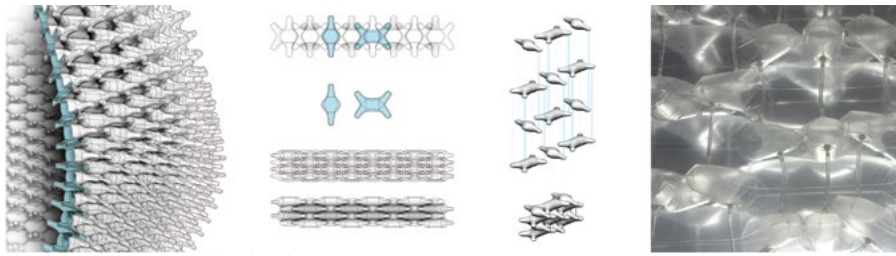
X-Stack Prototype: Aggregation through Stacking
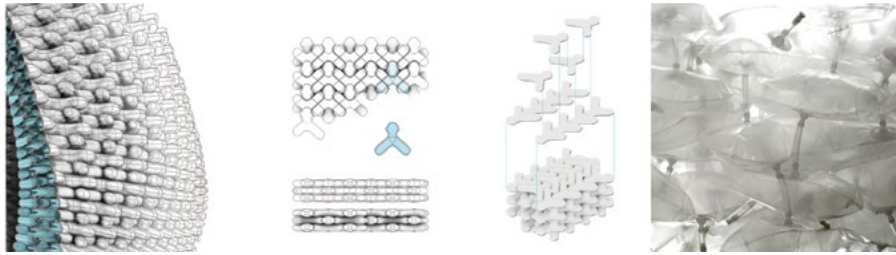
Y-Stack Prototype: Aggregation through Stacking
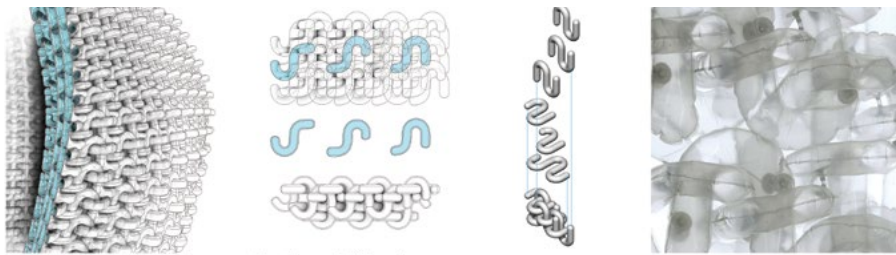
S-Weave Prototype: Aggregation through Weaving
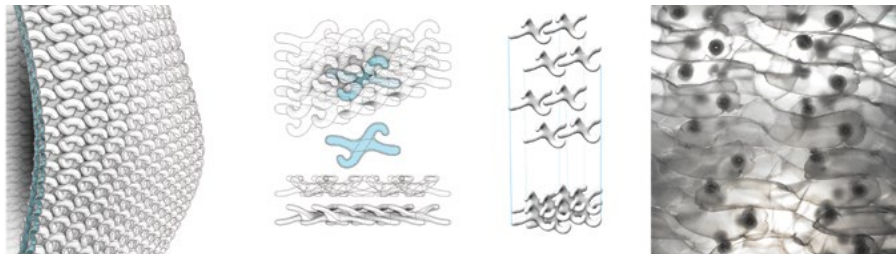
X-Weave Prototype: Aggregation through Braiding / Knitting
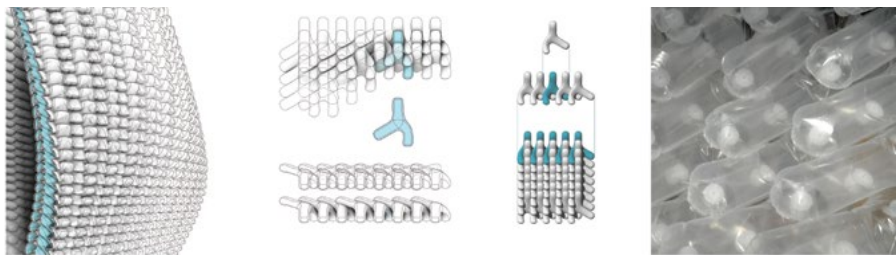
λ-Weave Prototype: Aggregation through Weaving

Above: Two genera of cellular aggregation were advanced—stacks and weaves. Stack arrays are comprised of geometries that are able to nest in either two dimensions, as in the X-Stack array, or three dimensions, such as the Y-Stack array. The interconnected network of valves and tubing binds stack arrays together in space and is conceived of as part of the stack tectonics. Weave arrays, such as the S-Weave, X-Weave and λ-Weave, capitalize on the specific formal material capacity of pneus to deform during inflation, and to make use of the "grasping" action of interlocking arms as part an integrated self-support system. When inflated, the interlaced weave topology, combined with the pseudostructural

air tubing network, is able to bind together to achieve a tightly nested system.

Opposite top: The computational workflow developed for this project involves modeling pneu meshes in SMARTform, and simulating inflation with a customized Kangaroo definition. In order to verify the computational models, single cells are also physically prototyped, inflated, and 3-D scanned. The scanned prototype is compared to the digital model, and feedback from resulting variations is utilized to refine the definition parameters, so that it may more closely simulate the final form of the inflated cells.

Opposite middle: Detail of the full-scale X-Weave prototype installed at the exhibition.

Opposite bottom: Computational fluid dynamic modeling was used to simulate the thermal performance of the layered pneu arrays, and initial simulations demonstrated that internal convection within cell chambers contributed to the production of an effective thermal buffer.
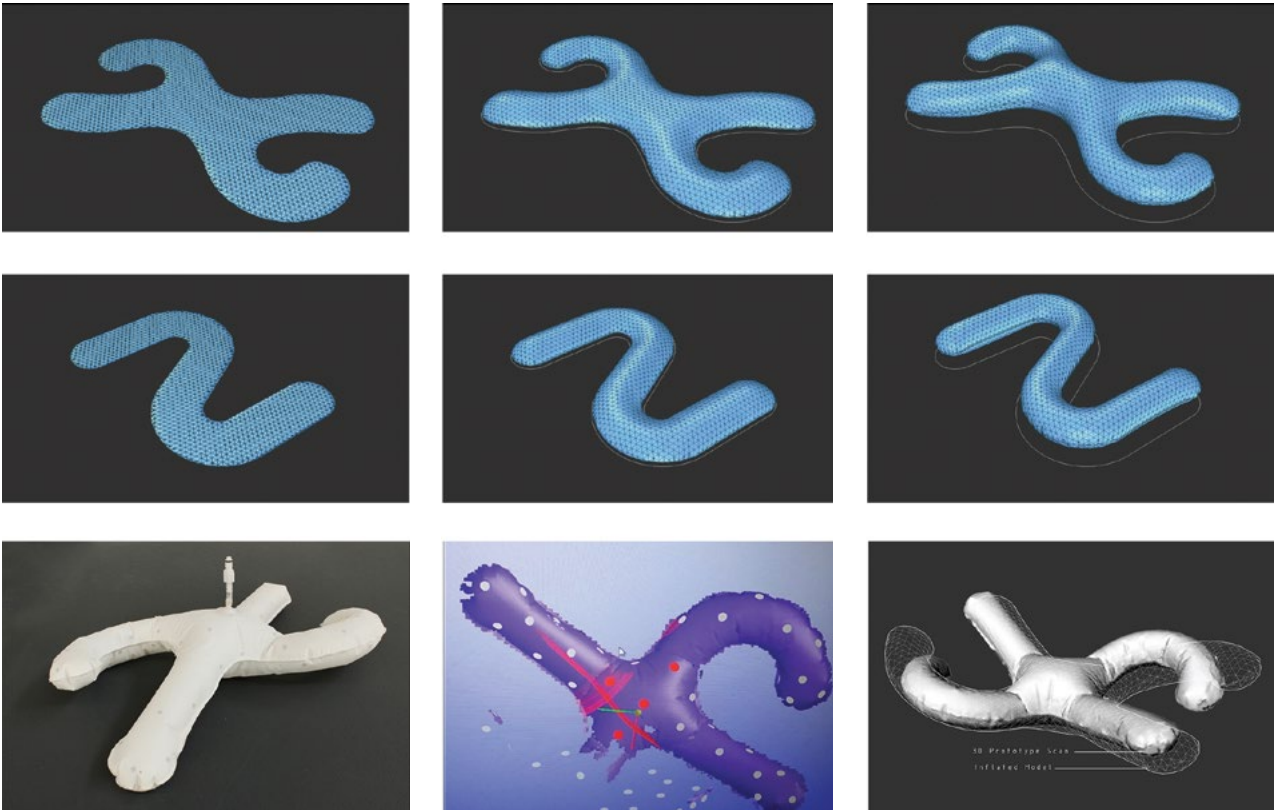
convertible pneus, to inform the prototype-based development of physical analog models at an architectural scale, whose performative geometries promote the register and exchange of matter, energy and information. ∎

HDF lid mounted on piano hinge

Hold Down Toggle Clamp

Adhesive Backed Rubber

Plastic sheets to be welded

On/Off switch assebmly

Fiber Glass Teflon Tape

Nichrome Wire

HDF press surface with milled shape

Transformer, 300VA 24/48V

HDF base for clamp attachment

PneuSystems explores the performative, formal and aesthetic potentials for cellular pneumatic membrane-based assemblies toward deep, lightweight and adaptive architectural skins.

Opposite top: Pneus also occupy an aesthetic category of forms that Frei Otto and his colleagues identified as residing in the realm of "taboo." The simultaneous attraction and revulsion, the uncanny familiarity, that characterizes the reception of the formless, of the part-object, is an affect of the work. Architecture enters the realm of relational aesthetics, decentering the human, and inviting us to encounter another skin, a non-human one, but one that also breathes, that is pliant to its environment, and that might look strangely recognizable.

Opposite bottom: To achieve reliable seals between the LDPE polymer films, a custom clamshell heat press was designed, to operate much like an impulse sealer. This device enabled the production of identical cells once a desired cell geometry and aggregation system had been refined through digital prototyping and testing.

Above: For the prototype, connections between the cells were achieved with off-the-shelf medical valves and clear PVC tubing. We are now experimenting with custom 3-D printed components for further prototypes.

Below: Air supply and control are integral components of pneumatic architectures. The control strategy for the installation entailed dividing the array into eight pneumatically isolated banks. The pressure in each bank was monitored separately, and when pressure dropped below a given set point, the associated valve opened and topped off the air in that bank of the array. This kept the array inflated while using the pressurized air as efficiently as possible.
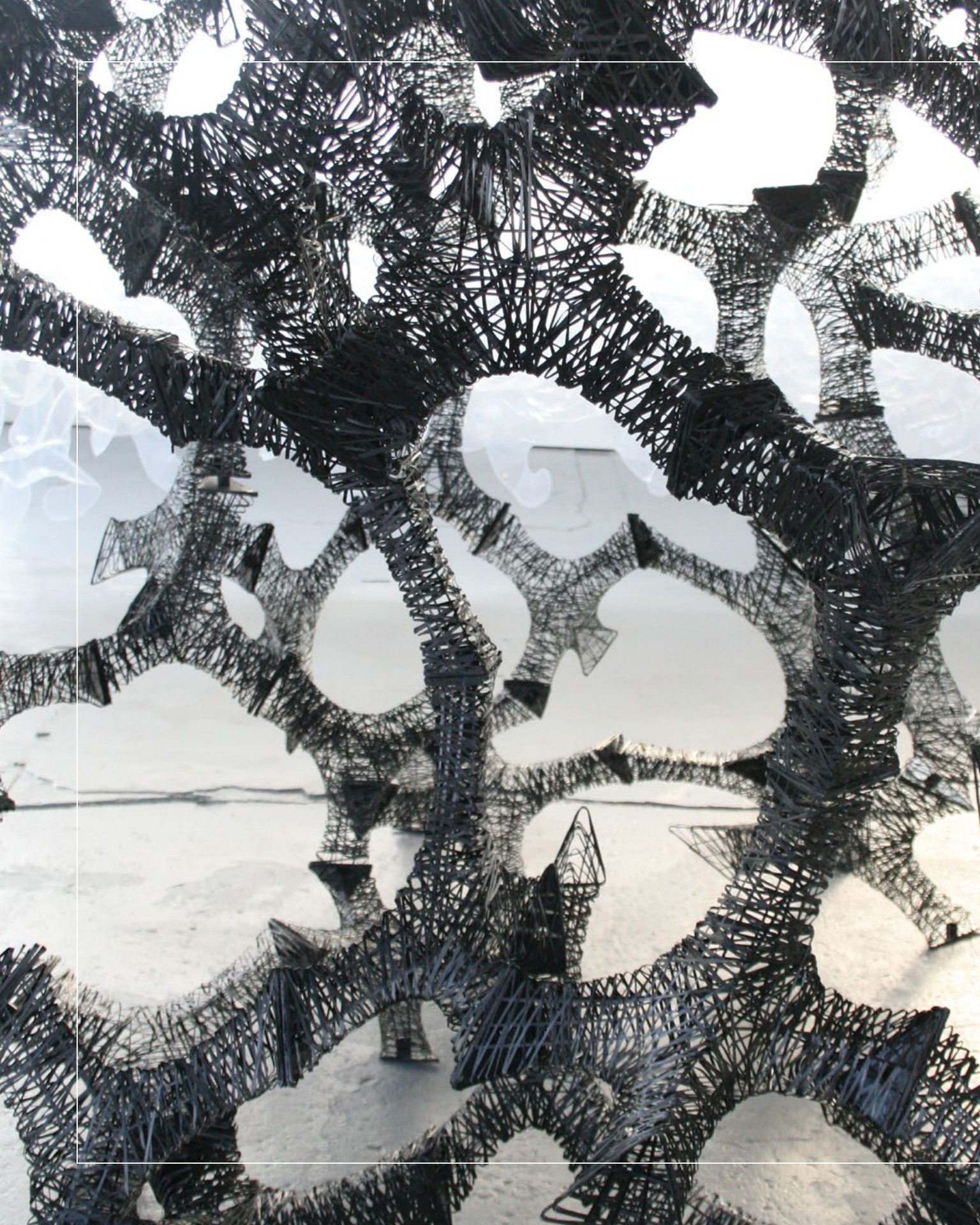
C-LITH
CARBON FIBER ARCHITECTURAL UNITS

GLENN WILCOX AND ANCA TRANDAFIRESCU
2014 RESEARCH THROUGH MAKING

C-LITH is the reconsideration of the architectural building unit through the exploration of new composite techniques and materials. The research develops individual components that exploit the strength, lightness, and variable nature of carbon fiber filaments when paired with computation, digital fabrication, and hand assembly.

Traditionally, building units are made of brick or concrete. They are small and multiple, heavy, difficult to vary, and are much better in compression than in tension. Using carbon fiber filaments to create variable units allows for larger, lighter individual units that can vary in both shape and structural performance as needed. Most importantly, however, the *c-LITH* units address the use of composites at the scale of standard architectural production. Until now, composite filaments have largely been used to produce monolithic shells, as in the hulls of boats and airplanes. The methods to produce shells, however, continue to be impractical for extensive application in building construction. Instead, *c-LITH* is designed as a unit-based system to exploit the advantages offered by the new material and to apply its part-to-whole logic to an existing industry.

Top: Process—Hot! Hot! Hot! Actually, not THAT hot. Pre-preg cures at temperatures as low as 260 degrees—this is what got us thinking we could use cardboard molds.

Middle: Process—representation in an effort to find productive ways to represent that many models we built, we built these shadow boxes. Though unintended, the cut paper itself began suggesting skinning options.
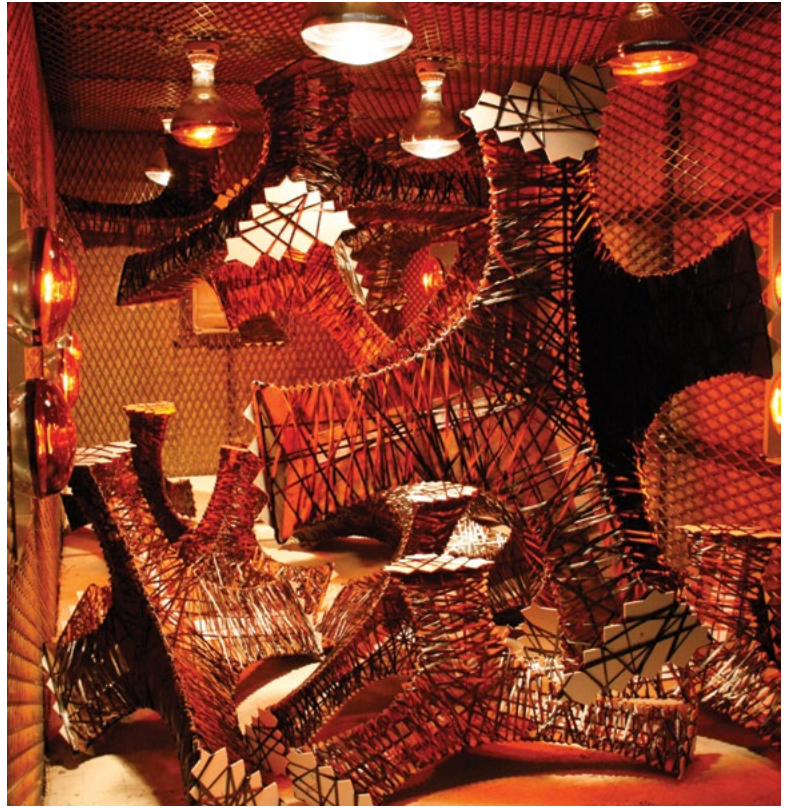
There is the marked indication that striving for lightness strongly needs development of knowledge on building things out of lighter materials. These happen to be the polymers and composites.

Cardboard molds: The cardboard molds and jig "dummy" parts were cut on a digital knife cutter. The parts were quickly assembled using a paper tab system and various glues.

Winding and winding patterns: In moving toward structural optimization for our specific shapes and assembly, a system for construction techniques was important. The specific winding rules, as developed through trial and error, were codified, recorded, and passed on to winding assistants.

Bake: An oven was constructed, utilizing 18 infrared heat lamps and a PID unit as its control module. There are lamps on two separate 120 volt circuits, able to run off of normal house power.

Finishing components: After cutting off the ends, components are finished by soaking them in water for two to three minutes. Cardboard molds are softened and removed. The components are tagged for identification and all ends are cleaned and prepared to accept node plates.

Pliable filament: Pre-preg carbon fiber filament comes pre-impregnated with resin and is soft, sticky and malleable until it's baked—a process through which the material both becomes stiff and bonds to itself. One large benefit of using it material is its low exposure risk to epoxy resin—which is relatively inert in this form compared to "wet" lay-up up methods.
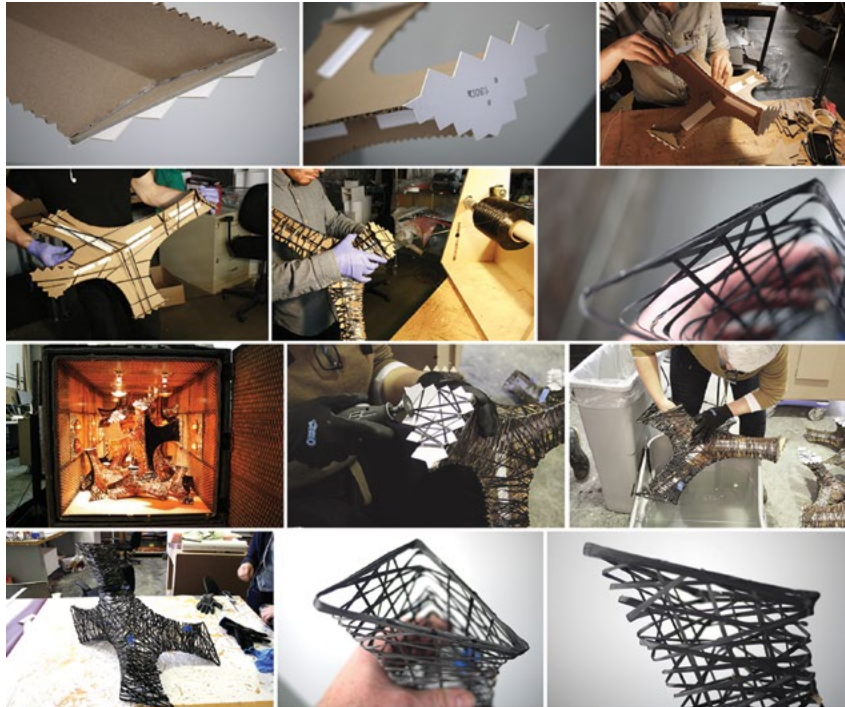
Node plates: Primary to the project is the design and construction of a connection node system that allows for a stable, custom-fitted connection between components. Each node is designed to contain one male and one female (sleeved) carbon fiber post embedded in a custom-formed carbon fiber foam core flange.

The "dummy" jig system: A three-dimensional jig was developed to be able to position the node plates in space precisely. A second set of cardboard component parts (the "dummies") receive node plates. Then, the entire installation can be assembled using the "dummy" cardboard components.

Substitution: One by one the node plates are released from the jig, cleaned, and glued into the corresponding carbon fiber component part to. Piecemeal, each cardboard "dummy" is replaced with the finished component part.

Jigging—to "see" the whole: A typical problem faced in digital fabrication projects, particularly those of complex (variable) unit assembly, is the difficulty of joining the parts accurately. This problem is exacerbated in situations where a continuous assembly must re-join itself—as with our cylindrical form. When a carpenter or mason lays out a wall, they don't simply start by nailing studs or laying bricks. They will set regulating lines, use templates or jigs—something that allows them to visualize, in space, the overall structure they are building. In this case the "dummy" jig allowed us to anticipate the whole with a high level of precision.
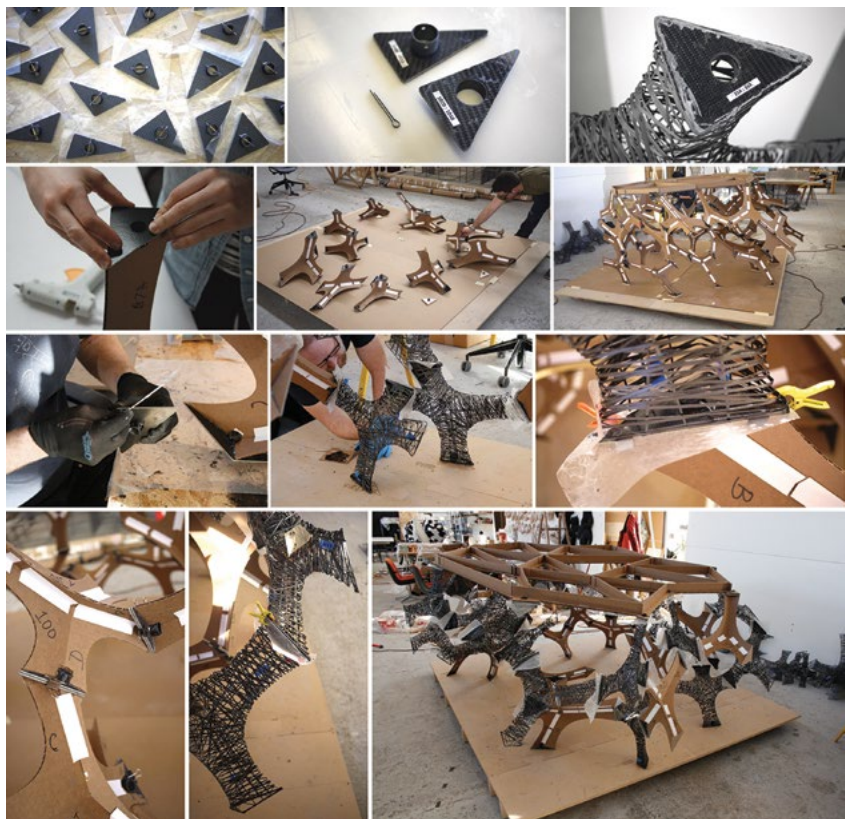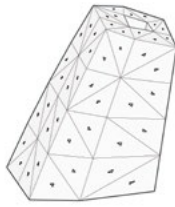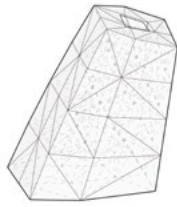
Tetrahedron Base Geometry
Once the design for a large monolith was established, its base form was constructed using irregular tetrahedrons. Irregular tetrahedrons pack perfectly (without holes) making it possible to make a solid figure.

Establishing Center Points
Adjoining similar faces share center points and can therefore be used to produce corresponding connection positions from which a branching form can grow.
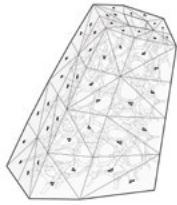
Making the Bones
A script is designed and run on the base figures. It creates the branching components that are connected to each other at each adjoining face center point.

The Bones
The branching components are inspected for structural and construction capacities.

Cardboard Jigs and Molds
Once the bones are created, they are converted into a three-pronged skeletal frame. The frames are used both as the dummy jig and the molds around which the carbon fiber tow will be wrapped.

Cut Sheets
Cut sheets are generated to produce the jigs and molds from corrugated cardboard.
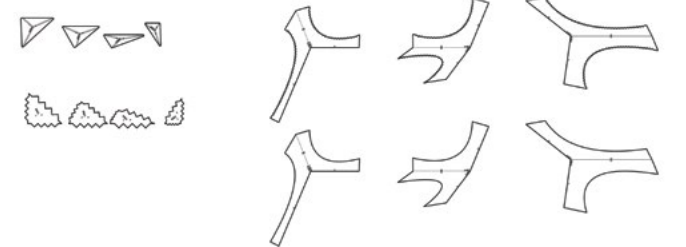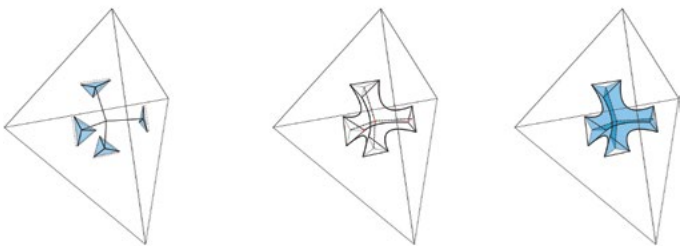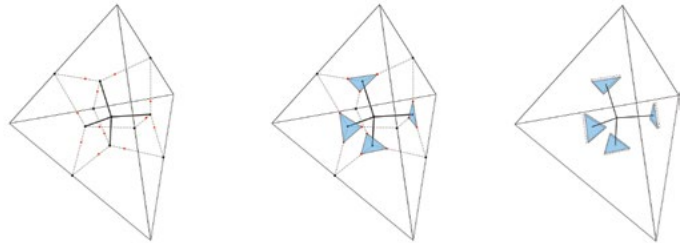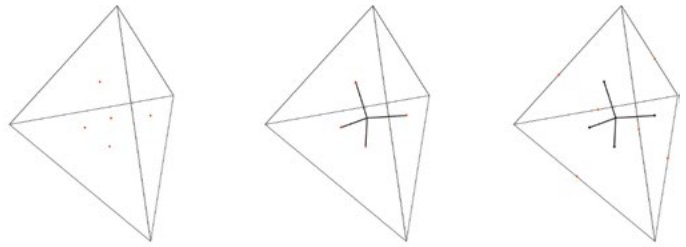
The design of the *c-LITH* installation shown in this iteration represents the first testing of the prototypical units assembled at full scale. The overall design in both footprint and figure are imagined as aggregations that could continue growing in all directions and could be scaled accordingly. The test installation was designed utilizing a computer script that also generated all of the associated cutting files for the winding molds and jigging system. The direct connection between design generation and CNC manufacturing afforded us the opportunity to explore variation in the design. Hence, each component of *c-LITH* is typologically similar, yet completely unique in form with all elements fitting precisely together in a single unified structure.

The *c-LITH* installation is comprised of 143 component parts. It is designed utilizing a code that translates a packed tetrahedral base geometry into the individual parts. This system is used as a means of producing related but variable component geometries. While regular (self-similar) components can also be generated, the project focuses on testing the limits of the feasible (re: construct-able) variations.

The code utilized to derive the final form of the *c-LITH* installation was also written to produce the winding mold parts, the node plates—including pairing information, the dummy jig parts and all associated labeling. Expression and rhetoric of lightness using carbon fiber produces very light "bricks" indeed. For the research, this was not solely a tangible question, however. In a similar vein to the Gothic period's attention to the rhetoric of lightness as manifest in gravity-bound piled constructions, *c-LITH*, investigates the dematerialization that could result from the thin, straight, overlapping lines of the black carbon fiber.

The effect of lightness is further enhanced by the piling method itself. The design of the *c-LITH* installation is not a thick wrapped surface, but a stacked, gravity-bound stereotomic system, with selected component parts removed to make openings. The lightness of the material and the effects of the dematerializing winding patterns frustrate the expectation of mass, especially at the bottom. ∎

interview with
TERESA GALI-IZARD

Teresa Galí-Izard is principal of ARQUITECTURA AGRONOMIA, a landscape architecture firm located in Barcelona. She trained as an Agronomist at Polytechnic University of Catalonia and is currently Associate Professor and Chair of Landscape Architecture at University of Virginia School of Architecture.

In the last 20 years Galí-Izard has been involved in some of the most important contemporary landscape architecture projects in Europe including TMB Park, Coastal Park, the new urbanization of Passeig de Sant Joan in Barcelona and the Sant Joan Landfill restoration, which won the European Urban Public Space award in 2004. Through her work, Gali-Izard explores new languages and forms while working with living materials such as earth, water and vegetation and using a contemporary approach involving dynamics and management.

Galí-Izard was invited to Taubman College to give a lecture as part of the fall series on November 14, 2014. The day after the lecture, *Dimensions* was able to sit down with Galí-Izard and ask her about her educational background, how she approaches a project, about working with architects, about the terminology she employs, and how she manages designing for a changing landscape. The interview was held in the lobby of the Dahlmann Campus Inn and lasted for a total of 37 minutes.

Photo of the Sant Joan Landfill restoration, which won the European Urban Public Space award in 2004, provided by Teresa Galí-Izard.

D28: *What book do you think every designer should read?*

TGI: *A Giacometti Portrait* by James Lord. It is wonderful. It's about Lord, who is having his portrait done by Giacometti, and they talk about how it's impossible to achieve perfection, but you have to try.

D28: *What is your favorite app at the moment?*

TGI: The Merlin Bird ID from the Cornell Lab. It's about bird identification. You can identify the species of birds anywhere in this country.

D28: *What buzzword describes current trends in architecture, or in design?*

TGI: I would say 'definition.' I was chatting with a friend at the Venice Biennale last June and I thought, "I don't understand what's going on in architecture." We are in a great moment; I think that it's great to be lost. I believe that architecture is missing a bit of true intellectual interchange. Because you have to sell ideas, it's very difficult to be generous and to share in a really generous way. I think it's a lack of generosity.

D28: *What do you think is the most exciting phase of a project?*

TGI: When you discover the potential of the place. In my case, I am a landscape architect. So, when you find the response from the place. For me, this is the most exciting moment. Sometimes it takes a long time to arrive at that moment and sometimes it's very quick.

D28: *What is the most underutilized tool or technique that you rely on?*

TGI: The pen. Without that, design would be impossible.

D28: *What discipline, combined with landscape architecture, produces the most innovative work?*

TGI: Engineering.

D28: *Can you tell us a little bit about your design approach, or how you start a project?*

TGI: It's always changing. Five years ago it was different than it is right now. When I arrive at a place, I always have an intuition. I try to explore the site and discover something new in each place. I ask the site what is best—which means that I work without objective for a period of time. I make drawings and section and try to translate. Through this, I am forcing myself to find a language for the place. That is the moment that the project appears, but I cannot control when it happens. Right now, I am starting in a very systematic way. On each case, I do sections, I draw the contour lines, I find the history of the mountain, and then I overlap what's going on. There is always something. Sometimes it's topography, sometimes it's water, sometimes it's the birds, sometimes it's a specific composition, or the vegetation that tells you what is the potential, and what's going on there, and what is the path to follow.

D28: *You use the term "living systems" to describe your vision of nature. What does that mean?*

TGI: It could be the biophysical world. I don't like to talk about nature. It's very difficult not to say "nature" because it's the first word that you think. But what is nature, if everything is? Before, I used to say "living structures." I want to avoid "ecology;" I want to avoid "sustainability." I don't want to restrain my work or my field. I think that it's great to have terms,

but we work with systems, and systems are alive. It's because of this, that I say "living systems." And it's quite broad, which means that I can specify in each project, what the living system is that I am working with. A mountain could be a living system because I am working with geology. It's trying to figure out the right word in order to explain how we can develop our profession. It's exciting, and we have a lot of fields to explore, but I don't want to talk about "ecology," which is a totally different field than landscape architecture and always in constant evolution and I cannot say "nature" because it's too vague.

D28: You had a somewhat unique education in that you didn't study landscape architecture, but technical agricultural engineering. What did you gain from your exposure, which you don't get in just the landscape architecture vein?

TGI: In Spain, I am not a landscape architect. I wanted to be a landscape architect, but at that moment when I had to select my studies in Spain, it was not a career option. It wasn't possible to go to a school of landscape architecture, so I asked my father for his recommendation. I wanted to take architecture, but he told me "No, you have to learn something," which meant that I needed to learn the tools or the techniques in order to apply them into the process of the landscape. So I studied agriculture. Because of this I have this mentality of an engineer, and I like to design machines. It is my dream to design a machine that does everything.

In agriculture, we have tractors, and you have different devices that allow the farmer to manage the land. A tractor or an irrigation systems because an irrigation system can change the performance of a site. I always say that I would like to design a machine, which makes the landscape work differently than its surroundings.

In school I learned about pruning, trees, and about soils. This is the composition of a landscape. Because I am an engineer, I learned how to manage these things and how to change them. I also studied forestry. In forestry, I learned about agrology, the logic of the rivers; as ecosystems. It is through the study of forestry that I realized that the timeframe of forestry is longer than an agricultural logic. Forestry is long-term; you have to think 50 years from now. I think this viewpoint is important to bring into landscape architecture.

We are in a great moment; I think that it's great to be lost.

I also learned how to be a designer by working with architects. Without architects, I could never improve these works. I was lucky to have the two sides. For one, it's about learning about the material that I am working with, and another it's how to use it and how to design it.

D28: What does it mean to you to be a "translator"?

TGI: It's like being an explorer; you have to figure out something different from the place, but still work with what you have there. You know that you can change everything, and you can build this machine or this infrastructure that changes the place, but still know that natural processes are going on there. It's an exciting moment. I have to figure out how to add to a place when there is a conversation already happening, and how to start a new conversation that works with the existing conditions. Because it's about conversation, I have to learn the language of a place. And all places are different; the work in a desert, the work in Michigan, the work near a lake, or the work in the Mediterranean, they all have a different language you must learn. This takes a lot of effort.

For example, my firm from Barcelona, ARQUITECTURA AGRONOMIA is doing a project in Caracas in a totally different country, in a totally different climate—it's a tropical area. We, my partner Jordi Nebot and I, have been working locally, in the Mediterranean, for many years. It takes time, it takes a lot of effort to understand a new situation, and you have to research a lot about it. Francis Halle, a French biologist who studied tropical forests has helped us a lot to understand the potential of the tropical site. For example, the weathering of the rocks, it's very fast, which means that you have to protect them because of the climate. All of the processes are very dynamic, and everything happens very fast and biodiversity is one of the parameters to work with. I am learning how to work with these new options. We have a goal: we have to be only a filter, we'll be translators and through this role, we have

to learn to read and identify the portential of the place. After that, we have choices. It's exciting, but it takes a lot of energy and time. We are working in London, in Caracas, I am living in Virginia, and our office is in Barcelona. It's really great, this global interchange.

D28: Would you say it's both culturally and environmentally based?

TGI: Of course, because culture, it's attached to the climate, and because we work for people. I try to spend time thinking about the country's work and its meaning. For example, in Caracas, you can find hundreds of different species of trees. All the trees have a very similar kind of cover, so it's quite open. But how to work with that, and how to design an urban forest with this quantity of trees, and figure out what's the point there. In London, I have less species, or I have a lot of varieties inside the same species because they love horticulture in England. It's totally different. It's a learning process. But that's why I am in this profession, because I am always learning and always changing. It's a journey.

D28: In landscape architecture, time is extremely important as your projects play out over the years. What modes of representation do you employ to show this change over time, especially with the onset of parametric design, and all that it has to offer?

TGI: It's very difficult. I am still trying to figure out the best way. I am interested in the process, and not always knowing exactly what the result is going to be. I am more interested in explaining the rules that are going to take over the place. Sometimes you have surprises, and this is what is good for our profession. But, the surprises have to be more or less under control. Which means finally, it's explaining the rules and why.

It's explaining how you would work— when you describe a forest, you can say, "Okay, this forest is in that part of the succession." But I cannot explain what's going to happen. More or less yes, but I always have this contradiction about explaining the rules. I would like to make abstract drawings overlapping time, but I don't have the explicit language yet, because this is only part of the process. At the end, we design architecture. But our architecture is embedded with all of these other layers of intelligence.

D28: How much of the original site do you try and retain through that layered process, and what role of authorship does the designer have in that abstraction?

TGI: You cannot abstract everything, so this is an important moment when you make decisions right away. In fact, the project starts when you decide to draw something specific. Sometimes, as a tool I apply a grid or a very geometric network on top of a map of vegetation or geology and this helps me to start the process of translating. Sometimes I am looking at different scales and applying this new logic system on top of the geometry. We learn a lot by this contradiction. I used to do workshops in my country house, just tracing a physical line with a string in a real site, drawing the section in real

I have to figure out how to add to a place when there is a conversation already happening, and how to start a new conversation that works with the existing conditions.

dimensions. Once, it was one kilometer long, and we were just looking at what was happening only through this line, and then drawing everything. A student drew the branches that were crossing the line. By describing the branches, he was able to describe the density of the forest and the density of the branching of the forest and tell something about the situation of the forest. So sometimes it's just playful, but the idea is to start without a clear objective, just by intuition or with the attitude of an explorer. So I always think that it's better start in a very abstract way because you are discovering. No stress, no anxiety, just fun.

D28: How does the combination of strict geometric shapes blend with living plants?

TGI: For me it's the worst moment. I think this is where we need architecture, which means we need forms and we need to build something that allows the process to happen and make the process visible. If not, if you don't have this relationship with the living systems, you cannot see what's going on. It's a difference between being able to read a forest or not. And the majority of people, they don't imagine they can read the forest or see the forest in a different way. They see trees, but they don't know what's going on there. In our firm, we seek to transmit what we see in a forest, for example, with vertical structure regeneration, succession, diversity of species, competition, hierarchy... everything that is going to happen because it is a dynamic process. Because the majority of people are missing this richness, we are responsible to help them understand the process by building infrastructure and architecture. This infrastructure and architecture is going to allow the process to happen and maybe help people understand what is going on.

D28: With issues of maintenance, how much of that could be designed and controlled, considering that your role or influence in the project could diminish over time?

TGI: Through infrastructure you can control it quite well. Sometimes though, you have to really build. I did a project where I wanted to see the path of the mower. The way to do it was by planting turf combined with tall grasses and the machine had to mow the turf in between the tall grasses. Two different vegetations were used for designing the path, but it looks like it's the machine that's doing it.

I think that we need people that bend the rules, break the rules, take risks, and don't be afraid to fail. Failure is just a way of improving, of growing.

Sometimes you need architecture. In a Roberto Burle Marx project in Caracas, Parque del Este, he is making a landscape with two different typologies of grass and he ends up making a texture like a carpet. But the way that he's building it, he's building concrete circles where he knows that the grass is going to stay there. You need this. It's hidden and you think, "Okay, this is the mower that's doing that." No, it's not true. He had to build the concrete container in order to keep the grasses inside. He wanted to show the dynamic process and that it's totally artificial. Sometimes you apply these hidden tools.

D28: How do you see the roles of architects and the landscape architects bleeding into one another? To what extent can these disciplines interact and learn from one another?

TGI: I love architects. I think that the future is to work with everybody together, but on the same level. For example, in this project in Caracas, we are working with engineers, architects, landscape architects all together, but sharing our knowledge. The behavior of the network—it is amazing. You have to be generous, and have to have an open mind. It's great if everybody has the same attitude, then it's working very well. If there is somebody that wants to take the leadership and wants to impose, that is just not working—sometimes it happens. If everybody is learning from the other, I think this is the future.

D28: In your lecture, you spoke about taking intelligence from other fields, even outside of design related fields. Can you talk about the process of curation, where you search out applicable information, and then start to apply it to your project?

TGI: I think that landscape architecture is a translational profession. I never read about landscape architecture. Never. I always go to the sources: it's biology or geology, and I learned a lot from a geologist. Biologists, geologists, people that work in hydraulic dynamics on rivers, architects of course, artists. Since I've been in Virginia, I always visit museums, because of course artists, they break the rules. They break the way that they look. They look at things through a different lens. I am very interested in contemporary artists who work as translators. I think that dialogue is very important, and it's very important to have this curiosity. For architects, for landscape architects, and for people that just want to improve the quality of life—that will run the world.

D28: What would you consider to be the most important recent project for architects and landscape architects to look at as a case study?

TGI: For me, it's not recent, but I think that in this country, the Civilian Conservation Corps (CCC) when Roosevelt was the President. For me, those are the most interesting landscape architectural projects here. I also really like Lawrence Halprin. I think that Halprin was an amazing translator. If you look at the drawings that he was doing, he was always in the woods near the rivers drawing stones and the flowing water. He did these amazing plazas and squares where he was building cascades and falls. For me, I always say is that Halprin is the best translator. He was really inspired, but he was really designing these natural falls that happens in many places in this country.

D28: What advice would you give to students and young designers?

TGI: Break the rules. Don't be afraid of failure—in this country I would say that. In Europe I would say another thing, just the opposite, maybe. I think that we need people that bend the rules, break the rules, take risks, and don't be afraid to fail. Failure is just a way of improving, of growing. Rigor, risk, freedom, and creativity. ■

TERESA GALI-IZARD

interview with
FARSHID MOUSSAVI

Farshid Moussavi is an architect, principal of Farshid Moussavi Architecture (FMA), and Professor in Practice of Architecture at Harvard University Graduate School of Design. She was previously co-founder of the London-based Foreign Office Architects (FOA), recognized as one of the world's most creative design firms, integrating architecture, urban design, and landscape architecture in a wide range of projects internationally. Moussavi was head of the Institute of Architecture at the Academy of Fine Arts in Vienna and has held teaching posts at the Architectural Association in London, the Berlage Institute in Rotterdam, the Hoger Architectuur Instituut Sint-Lucas in Gent, and in the United States at Harvard, UCLA, Princeton and Columbia University.

She has also published three books, *The Function of Ornament* (2006), *The Function of Form* (2009), and *The Function of Style* (2015), based on her research and teaching at Harvard. Since September 2011, Moussavi has been writing as a columnist for the *Architectural Review* magazine.

Following her lecture that was part of the fall series at Taubman College on November 18, 2014, *Dimensions* had a conversation with her in Taubman College's office. The interview was 38 minutes long and allowed for a conversation on architectural style, form, and maintaining a cross-disciplinary practice.

Rendering of an FMA project for a residential complex at Jardins de la Lironde in Montpellier, France. Image provided by Taubman College.

D28: Looking back to your work from FOA (Foreign Office Architects) to FMA (Farshid Moussavi Architecture), how have you evolved or changed your way of thinking as an architect?

FM: Well, you are constantly learning and you are constantly developing. My approach has remained the same. I don't purge and start over because I have started a new practice. It starts from where I have left off at FOA, and everything that I have learned from there, and it continues. Since FOA, no two projects have been consciously the same but I've learned that they cannot be just about producing results either, but allowing a constant feedback between decisions you take during the process and the potential results they would render or even decisions you take the results they produce and how that is informed by another project you may have done. In other words, the process cannot be the object itself; that is not enough. We cannot just be making things, fabricating things, scripting things, etc. I think, "This is good," but it's ultimately a tool to get somewhere.

D28: So the process should be viewed as a design tool but not the end in itself?

FM: You become more and more informed as time passes. I think if you make all the decisions at the beginning, it means nothing is learned. So a true process is to remain open to what time presents you, what the process teaches you, and the fact that you become more intelligent about the project over time. When I talk about MOCA (Museum of Contemporary Art) in Cleveland, I spend a lot of time talking about how it changed and evolved during the process. Traditionally, architects have tended to say, "This was my idea and this was the result." Most have regarded that a good project is where the concept and the result are the same, and hence there

have often been hand sketches to show how the architect magically anticipated the end result at the very start! But actually, to me, that weakens the process. It means that you spend six to ten years working on a project and you don't learn anything. Letting yourself be open to what the process exposes you to is not the most comfortable position to be in, because the feeling of being lost or exposed is constant and ultimately an architect needs to produce a coherent project. However, I think when you remain open to the process, you are forced to make new decisions time and time again and this makes the project more complex and rich.

D28: Isn't that a luxury when you're working with clients and deadlines?

FM: Yes, but you make presentations, and there is time in between them. Maybe everything is faster, but that doesn't mean you don't have a process. You submit projects for a planning application, and you have to wait. Sometimes you have to take advantage of time between meetings. Even when you are preparing for a lecture, this is time to think about the project. Yes, there is usually a time frame for a commission, but as you know, when we have deadlines, we think faster—it's good to have deadlines. Things come out.

D28: So then how do you start a project at your practice? What is on your mind when you are starting?

FM: We have intuitions and preferences. Sometimes there are random and incomplete ideas but because you have to go to a meeting and propose an idea, you run with it. But whatever it is, it's only the starting point. You will become more informed over time and the subsequent decisions that you make will be more interesting.

So it's not so much about whether a decision is the best, but how the decision you make is going to affect the architecture you ultimately produce. How is that decision going to make a difference to its users? I think that's what ultimately matters, although you may not know it immediately.

With the museum in Cleveland, the decision to use the color blue came much later in the project. Initially, we were more focused on how the building related to the neighboring streets, how it left room for a plaza, etc. The programming of the internal spaces, the mirror finishes, and stainless steel cladding came later. But these later decisions became instrumental in the way the museum performs as a building and how it is experienced by visitors.

Sometimes I think to myself, "What if the decisions didn't happen?" "What if we didn't come up with the proposal to expose the structure on the interior and paint it blue?" "What if the client didn't agree to it?" It could have been a very different project. That's why I believe every project is a consequence of a set of circumstances. A part of it is the architect, part of it is the people who work with you, part of it is your client, part of it is the budget, and part of it is the length of time you have. That's what makes ultimately one project different to another. Thank goodness! We don't want them to be the same, do we?

D28: What are your thoughts on housing typology and how do you innovate in the coming years?

FM: It depends on where the housing is for. If you do housing here, it has a different climate to say California or the Middle East. If you are working on housing for students, it would be different to housing for the elderly or just speculative housing. Aside from these kind of differences, we need to ask what is housing—what do people do in a residential complex? They occupy it when they're not working or being in the public domain. So they require a certain amount of privacy as well as flexibility so they can adapt it to their changing lifestyle. A residential building ideally needs good views; good air circulation, and good light. These may sound like basic needs but there are many ways of producing this. We can't so frequently reinvent human needs, but we can create different ways of providing for those needs. I think that's what architecture does. We can make it more private, or we

can give it more or less light or different kinds of light, different kinds of outdoor spaces, different types of atmosphere through different ways of circulating air or light in a single residence, frame different views for it, different levels of privacy, etc. I think this is what we can do to take architecture beyond necessity.

D28: What do you see as one of the most interesting developments happening, or that will happen, in the coming decade?

FM: I'd prefer to talk about the present rather than the future. I think the unpredictability of the future is what makes us dream. I'm not interested in speculating about the future; I am interested in making it. The future is made by us. But it's made by us through what we do now. So, it's interesting to look at the potentials that exist at any given moment and turn them into some trajectories for the future. The future is made out of so many different such trajectories and layers. You can only focus on some of them at any given time. This is why I am skeptical of proposals for packaging the future through holistic ideas such as architectural "-isms."

D28: Even when you are looking at so many projects coming up that are produced every day, you don't know which way to categorize it because there's so many influences—

FM: But that's precisely where the opportunity lies for architecture today. We have arrived at a point where there is such a multiplicity of possibilities that we don't have to think in that reductive way. Architecture overlaps with so many different fields, and each one of these is changing all the time. The incredible opportunity is precisely to be part of this process of

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The future is made by us.

Ultimately, architecture performs through its sheer physical presence—I would be completely uninterested in talking about the process forever.

interpreting or identifying the potentials for architecture in this overlapping field. And I think that's what makes architectural practice today really dynamic and rich; it's a kind of a world that doesn't ever stop. It doesn't stop and then start again in ten years.

D28: What do you think is the most exciting phase of a project?

FM: I think they are all great, but maybe the middle stage. Because at the beginning, it's this process of the unknown, and it's slow. Towards the end, it becomes a little bit more about managing information because at some point, you have to close it so that it gets built. This last stage is different in different countries because of the different ways construction is procured. I think towards the middle is where the main direction of the project is most defined. But then come thousands of new elements that you have to integrate and see how they fit in or how they can add to the project. It's when the structure comes in—the structure could come in earlier—but there's just zillions of scales of elements that come in. You can just treat them as things that have to follow the bigger earlier decisions, or you can use them as a way to add a new angle to the project or amplify certain decisions. It's just unbelievable how many things go into a building. So creative thinking can go on and on.

D28: So if we take deadline out of the equation, do you think the process will keep going on?

FM: If you take the deadline away — that would be terrible. Without a deadline, that means you would never have a project. I think what is really exciting about projects is that you are creating ultimately a kind of

a physical artifact where the ideas become real. Then you can also see—learn from how buildings, not as ideas, but as real things—function. So I have been back to Yokohama every other year since it finished, and I am learning from the way it's being used. Yesterday I was at MOCA in Cleveland. It was interesting to have the post-building experience where I could learn from the museum director what things have worked very well and what challenges they face with the new building as their visitor numbers have for example been larger than expected. I saw the main gallery being used now in another way. I was amazed that the retractable shop we introduced is being used so regularly! I wasn't really sure how often they were going to use it. You would never know whether people ultimately use buildings the way you intend them. You learn from the decisions you make each time and start the next project more informed in those ways. Ultimately, architecture performs through its sheer physical presence—I would be completely uninterested in talking about the process forever.

D28: What discipline combined with architecture could produce the most innovative work?

FM: It depends on what the project is. So in a museum, the relationship between the architect and the lighting designer can be very important, or the relationship between the architect and the museum director because they know how the museum is to be used over time. If you are working on an office building, the structural engineer can be important colleague to interrogate the type of workspace you design. The people who specialize in elevators and those elements that are housed in the core

can be very important in an office building as they determine the size and experience of vertical circulation in such a building. The façade consultant can be important colleague in an office building to as the collaboration can totally transform the way the presence of an office building is articulated in the city.

D28: In your office do you use any techniques extensively? Perhaps a tool, diagramming…

FM: Yes, we do a lot of analysis, a diagrammatic way of working. But many of the diagrams are also done either for a final presentation or for a lecture. I consider any drawing that is strategic at what it selects to investigate a diagram. So a section can be a diagram. A plan can be a diagram, an axonometric can be a diagram, and a rendering can be a diagram. Diagrams are ultimately reduced information to focus and prioritize on a certain kind of subject matter and its organization and their priority is less about the metrical dimensions but the relationships between things. They are therefore a more elastic stage of architectural drawings.

D28: Is there a book you think every designer should read?

FM: There are so many interesting books. I particularly like those that you can read in so many ways depending on the spatial position you adopt within them. I then get more from books when I am reading them in relationship to a particular research or interest I have at the time. Thinking of books in this way, means treating them all as reference books. When you read a book, you can think of the narrative it's telling you, and then look at the book for its structure. You can look at the book and situate it in a certain time frame and try to see it from that point rather than from the point of view of the present. This way of reading inspired my book *The Function of Form*, whose chapters are related through a theme but can be read independently of one another; similarly the pages can be read as double spreads or as a series of left-hand pages or right-hand pages. *The Function of Style* also has a complex structure and multiple ways of being read. It is nonlinear in its structure in order to trigger different kinds of ideas and understandings. ■

FELLOW

Taubman College of Architecture and Urban Planning offers three fellowships in the areas of architectural research and instruction. Fellows spend a year at Taubman College, teaching three classes as they pursue their fellowship interests.

RESEARCH / SANDERS FELLOWSHIP

The Sanders Fellowship supports individuals with significant, compelling and timely research dealing with architectural issues. Research could dwell within architectural, urban, landscape, or cultural history or theory; architectural or environmental technology; or design studies. These agendas could emerge from recently completed doctoral dissertations or other intense and rigorous research format. The fellowship will support both research and the development of research-related curriculum.

PROJECT / OBERDICK FELLOWSHIP

The Oberdick Project Fellowship facilitates the development and realization of a significant exploration into some aspect of architectural speculation and production. Fellows are provided with resources for the execution of a project that may take the form of an exhibit, publication, installation, or any other material construction. Projects may range from the exploration of emergent building, fabrication, and environmental technologies to the realization of architectural works and endeavors typically unsupported within conventional models of practice.

DESIGN / MUSCHENHEIM FELLOWSHIP

The Muschenheim Fellowship offers design instructors early in their career the opportunity to develop a body of work in the context of teaching. Muschenheim fellows play a significant role in the definition of studio culture while pursuing their own creative endeavors. Proposals for the Muschenheim Fellowship focus upon the development of a specific project individually or with students, outside of teaching or center upon a particular set of pedagogical themes to be engaged in the studio context.

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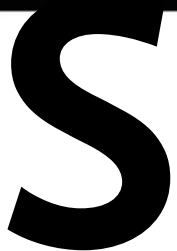
CLARK THENHAUS
Secret Landscapes & Non–Urban Objects
Willard A. Oberdick Fellow in Architecture

Clark Thenhaus continues to teach at Taubman. Thenhaus has previously held teaching appointments at the Royal Melbourne Institute of Technology (RMIT), University of Colorado, and Otis College of Art and Design, and has led workshops at SCI-Arc, University of Southern California, and the University of Kentucky. Thenhaus earned his Masters of Architecture degree from the University of Pennsylvania where he studied as the recipient of the three-year Fideli Fellowship and was awarded the Dales scholarship. Thenhaus earned a Bachelor of Environmental Design from the University of Colorado at Boulder. His work has been published in 306090, Monu magazine, Kerb journal, Soiled magazine, AWM, Futures magazine, and Conditions among others, and has been exhibited in Los Angeles, Melbourne, Cleveland, Baton Rouge, St. Louis, Ann Arbor, and New York City.

FARZIN LOTFI-JAM
Hairy Value: Preserving the Elvis Hip Thrust
Walter B. Sanders Fellow in Architecture

Farzin Lotfi-Jam, Principal of FarzinFarzin, holds a Master in Advanced Architectural Design from Columbia University, having previously completed a Master of Architecture at RMIT University. He has held teaching appointments at Columbia University, Pratt Institute, SCI-Arc and RMIT University. He has 10 years of professional experience at architectural practices in Australia, Germany, and Slovenia. His work has been recognized in open competition formats and his research has been funded by the Veski organization. FarzinFarzin explores the intersection of culture, perception, and algorithm.

LEIGHA DENNIS
Pleasure Box and *Clouds*
William Muschenheim Fellow in Architecture

Leigha Dennis is the Chief Intelligence Officer of the Network Architecture Lab and Co-Director of the Architecture Online Lab at the Graduate School of Architecture, Planning and Preservation at Columbia University. She received her Masters of Architecture from Columbia University, earning the Lucile Smyser Lowenfish Memorial Prize and the William Kinne Fellowship, and a B.S. in Architecture from the University of Michigan. She has worked as an architect, designer and researcher in San Francisco and New York, and has established a number of collaborations, among them with the Buell Center for American Architecture, MOS and AUDC. Her speculative design, research and writing have been published in New Geographies, Bracket, The New City Reader, Junk Jet, Domus, The Buell Hypothesis and has been exhibited at the New Museum, the Museum of Modern Art, MoMA PS1, the Museum of the City of New York and the Van Alen Institute.

Blending teaching and research, these fellowships offer a unique opportunity to pursue a variety of interests and share new insights with the College.
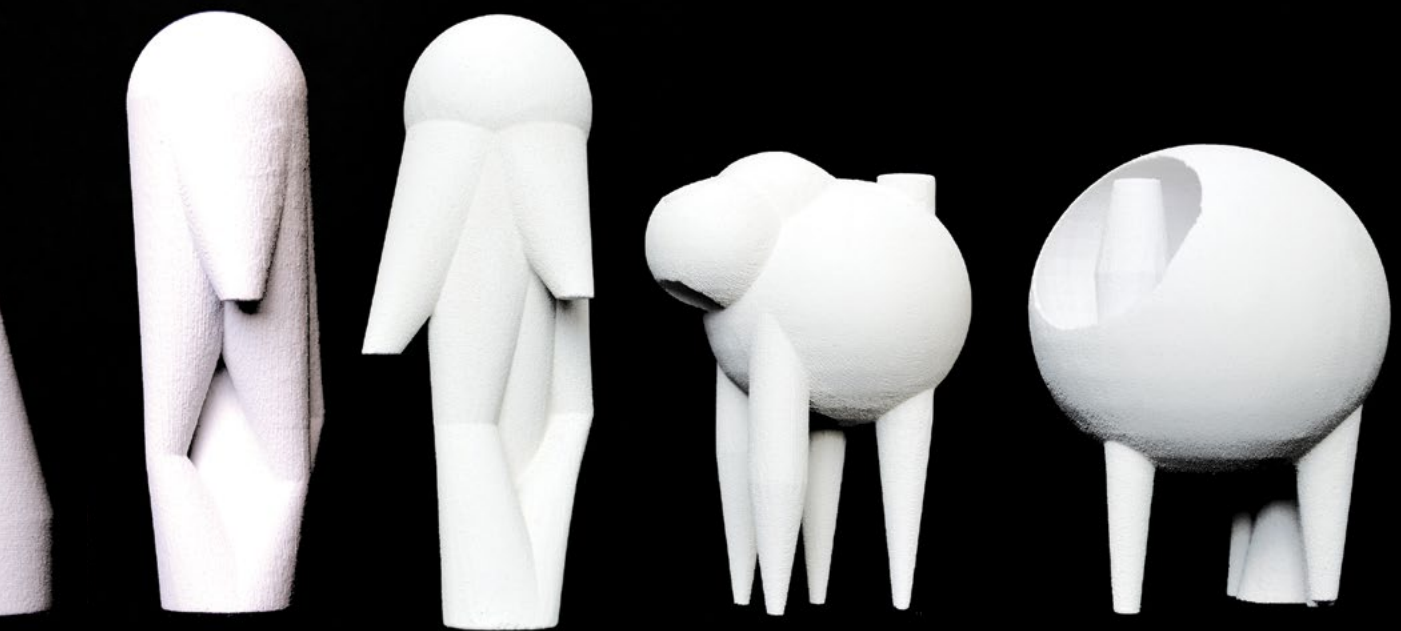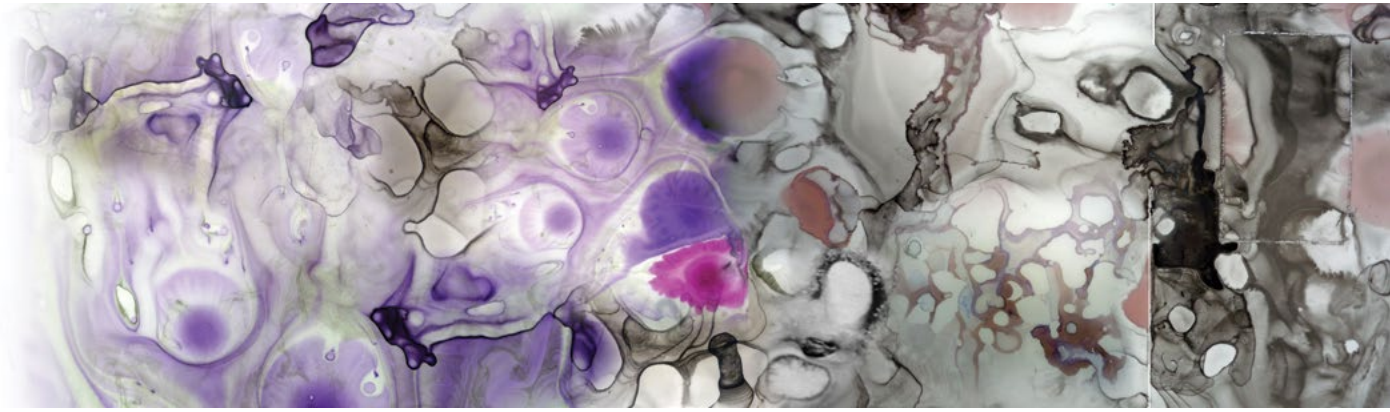
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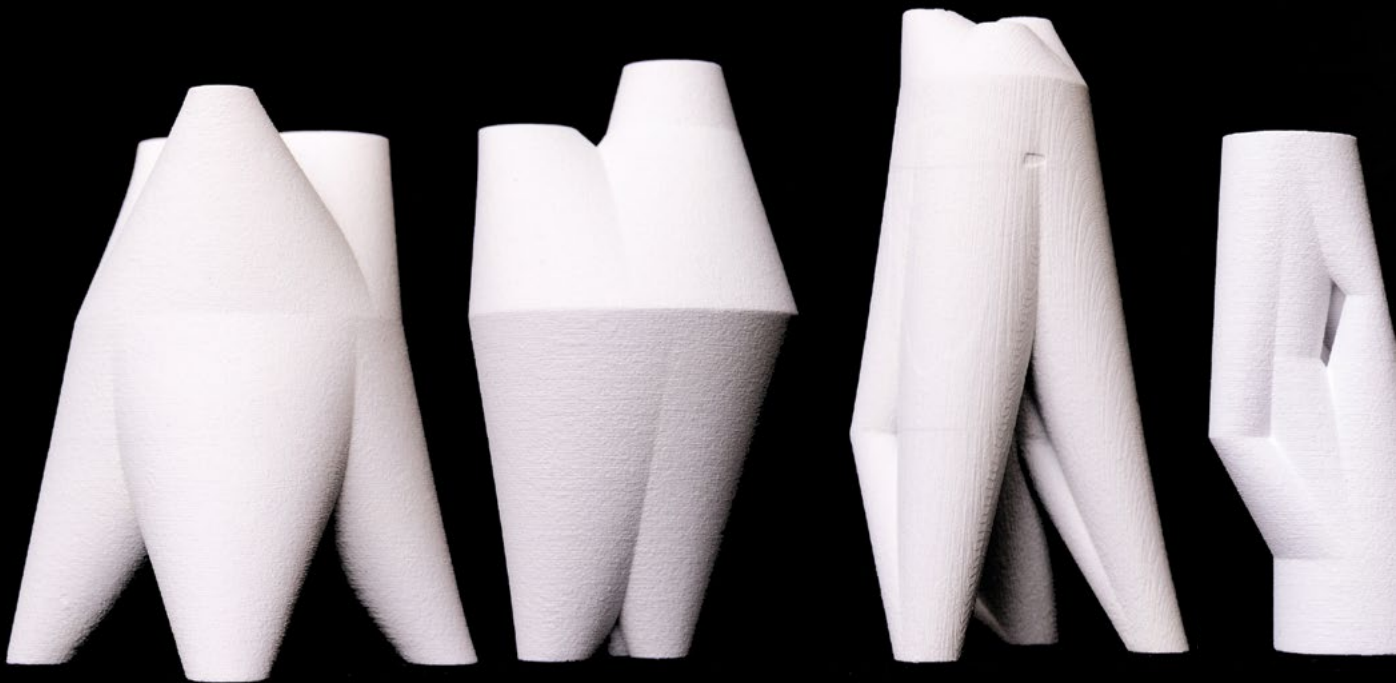
& NON-URBAN OBJECTS

CLARK THENHAUS | 2013–14 WILLARD A. OBERDICK FELLOW

Consider for a moment the terms of banality and remoteness. Where one describes a quality of a place or thing as disinteresting, the other locates it as distant, out of the way, or secluded. These are not terms generally seen as favorable or sought by the architect. Both terms are, however, often enlisted in the description of the American pastoral. While often characterized as banal, particularly in the wake of a globalized metropolis, the pastoral offers unique possibilities as a frontier for architectural experimentation. The pastoral, once called the Great American Garden, is a place of surrealism and politics, folklore and technological sophistication, avant garde and kitsch; a close read raises suspicions that something else is going on 'out there.'

In 1844, Nathaniel Hawthorne produced a written record of the sounds and smells he experienced in the woods near Concord, Massachusetts. The bellow of a distant train whistle heard on Hawthorne's trip signaled technology's interruption to the pastoral scene, forecasting an increasing cultural and technological weight as a 'Machine in the Garden.'[1] One hundred and ten years after Hawthorne's writing at Sleepy Hollow, technology in the garden had become much more sinister and secretive. Across the American landscape, 1,500 missile silos were sutured into the 'banal' farmlands of middle America, a quantity at absurdum, during the Cold War, quietly reconstituting the pastoral 'garden' into the world's most lethal and technologically advanced landscape. As the terms of warfare became increasingly cybernetic and aerial, many of these terrestrial, non-urban objects of defense were decommissioned, revealing sites that are locally specific and territorial, yet also site-less and universal in concept of environment. In order to work at the scale of an individual site, rather than an expansive territory, individual

sites are biopsied from this infrastructural defense network. De-networking and de-infrastructuralizing this network diffuses the once relational status of the politicized architecture-infrastructure, and instead elevates the status of existing forms and the introduction of new architectural objects. This atomization and individuation of sites from a network acquires new disciplinary value by emphasizing the fodder-object— the cylindrical missile silo—with a certain architectural objectivity, or problems aimed at architecture rather than those of an expanded field of influences or value judgments on the ideologies and contingencies surrounding the history and original function of the silo as a military object.

With this, three themes are brought into contact in a middle-out framework between disciplinary concerns and external influences: context, form, and field. The middle-out project is neither top-down nor bottom-up, neither autonomous nor consequential to external forces; it seeks alternative discussions that partners

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1. This is reference is the Leo Marx's book, Machine in the Garden, from which the recounting of Nathaniel Hawthorne at Sleepy Hollow is excerpted.
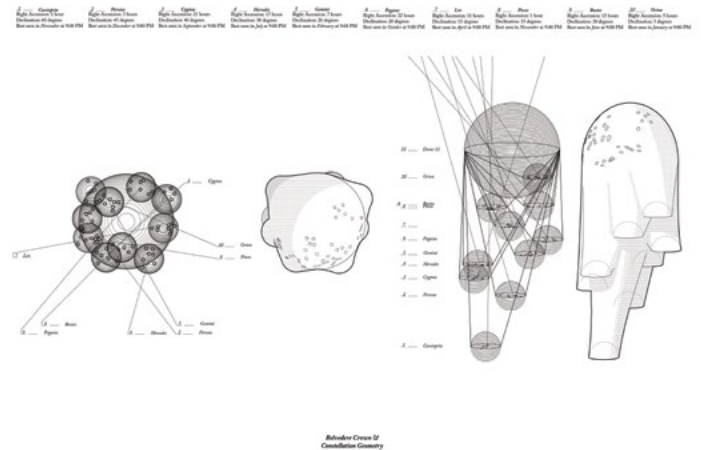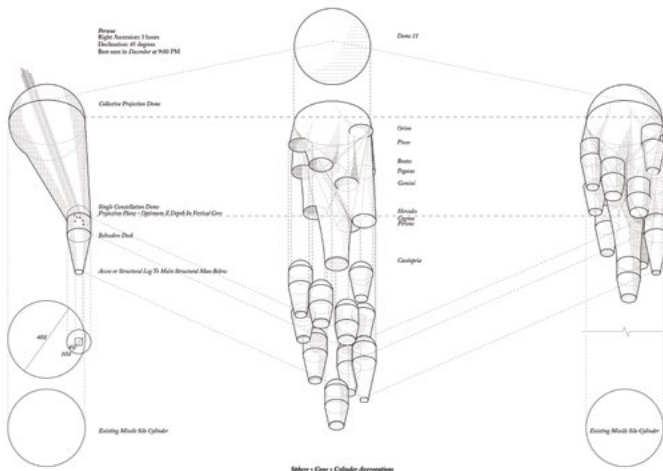
disciplinary concerns with alternative sites with unique histories.

ON FORM

Claiming shapes are 'crude, fast, and explicit' in 12 Reasons To Get Back Into Shape, Bob Somol asserts graphic expediency has the capacity to communicate quickly among diverse audiences without alienation, and that this has the capacity to convene new social collectives. This is not dissimilar from Nicolas Bourriaud's Relational Aesthetics (1998) where "… convivial aesthetics or an art that draws people from their introverted and alienated reveries and forces interaction between them."[2] The 'graphic' is characterized by shapes and recognizable figural profiles. On the other hand, an expressive mass offers the possibility for subjective (mis)-readings and cognitive 'error,' thereby clearing room for qualitative interpretations based primarily on subjective perceptions of aesthetic and spatial experience. As Le Corbusier wrote in the introduction to Towards A New Architecture, "mass is the element by which our senses perceive and measure and are most fully affected."[3] Where Corbusier spoke of mass in relation to perception, Heinrich Wolfflin spoke of association by claiming that, "with head and foot, back and front: we can comprehend the dumb imprisoned existence of a bulky,

memberless, amorphous, conglomeration, heavy and immovable, as easily as the fine and clear disposition of something delicate and lightly articulated."[4] Wolfflin is speaking, then, of the attendant qualities of bodies; mass, bulk, figure, orientation, and stability, which point to issues of posture, compound figures, and association.

Perhaps best suited to bridge this disciplinary gap between the legibility of graphic shapes and the aesthetic perceptual experience of mass, is the primitive solid. This triggers a re-familiarization with anachronistic geometries and suggests new possibilities in using of familiar forms in unfamiliar combinations. Primary to this is a visual oscillation between the legibility of familiar parts within an unfamiliar whole characterized by cleavages and clefts where geometries intersect.

From here we consider the Belvedere, a unique typology for experimentation, as it is traditionally constructed for the purposes of looking out over pleasing scenes. Provided such simple programmatic responsibility, emphasis can shift to formal, expressive qualities. In the context of the post-military landscape, rising proximate to 199 other missile silo sites, the Belvedere's presence signals neutralization of an otherwise unsettling, though ultimately

covert ground. The Belvedere, articulated as a cleaved and clefted compound mass of spheres, cones, and cylinders, seems almost alien in relation to context, an out of place figure in a banal field. Yet, it is precisely the condition of familiar strangeness that allows everything around it to be experienced differently: de-concealed, de-networked, de-infrastructuralized, and de-familiarized. It is spherical but not a sphere, cylindrical but not a cylinder, and conical but not a cone. It is doubled-coded with a distributed legibility, oscillating between shape and figure as it both alleviates and frustrates recognizability by visually shifting between formally legible parts and an ambivalent whole. It is didactic in its contextual de-concealing, or revealing something of its place and can be characterized by an a-frontality, or lacking a frontal facade despite maintaining a specific orientation.

The Belvedere crown aggregates ten spheres (1/50th the size of Newton's Cenotaph) connected to an eleventh crowning sphere with cylinders and cones. Each of the ten spheres are cut horizontally in half, forming domes and balconies. The vertical elevations of each of the ten domes are located in such a way as to neither overlap, nor appear as autonomous, therefore aggregating into one compound mass. Connecting the crown to the silo are four intersecting cones and below ground an 'urn' hugs and supports the excavated silo inside a vast chamber.

2. Graham Harman, "Towards A Non-Relational Los Angeles; Or How to Free Kwinter from Whitehead". http://www.offramp-la.com/towards-non-relational-los-angeles/

3. Le Corbusier, Introduction to Towards a New Architecture. Dover Architecture, 1985.

4. Anthony Vidler, "Losing Face" in The Architectural Uncanny: Essays in the Modern Unhomely. Boston, MIT Press, 1994. 87

ON FIELD

Whereas the architectural forms re-familiarize form-making with primitive geometries, the designed landscapes in this work de-familiarize the contextual, territorial, and ideological politics of the post-military landscape through disciplinary techniques of superimposition and drawing translation.

In contrast to the limited palette of architectural form-making primitives, the 'messy,' excessive, and indulgent mixed-media drawing is central to the form-finding processes of new topographies. Drawings are made by mixing ink, wax, dye, salt, and water in a shallow bath over a paper substrate. Unlike more conventional architectural drawings concerned with accuracy and quantification, these drawings are less concerned with information than qualitative provocation. Where normative architectural drawings present themselves as assured and secure in what belies them, these drawings blush and are not so sure of themselves as architectural artifacts and so they flaunt their insecurities as seductive veils concealing deeper, more hopeful potentials enacted through transformations and translations. They are cohesive, yet constituted by difference. They are dynamic and intensive mixtures better understood through sensing than deciphering, meaning they are better characterized by intensity and density then by metric or measure. The competing formations within each drawing exposes material idiosyncrasies as well as unforeseen continuities with an expanded palette of possibilities in the acquisition of topological geometry and topographic relief. By pivoting between the material drawing and the digital environment, translations of the drawings are made into a field of berms, a triptych of labyrinths, and a field of 'bumps.' Our previously mentioned Belvedere is complimented by this field of Berms as functionally indeterminate yet specific in organization, idiosyncratic in effect, but cohesive in aesthetic.

The material drawing is a primary medium through which two disparate cultural constructs, art and politics, come into direct contact. This form of superimposition of art over politics is a technique of de-familiarization with an effect of estrangement of the landscape from its former self. This superimposition of art over politics via topographysheds some of the cultural weight of maintaining a landscape once primed for war and instead liberate alternative uses, identities, and socio-cultural possibilities.

THREE PROJECTS

With this triptych in mind, the overall project considered three old typologies seeking new expressions coupled with historically non-urban landscapes. *The Belvedere & Berms, Wishing Wells & Labyrinths*, and *Bell Tower & Bumps* themselves make a triptych through the considerations of the aforementioned issues. ∎
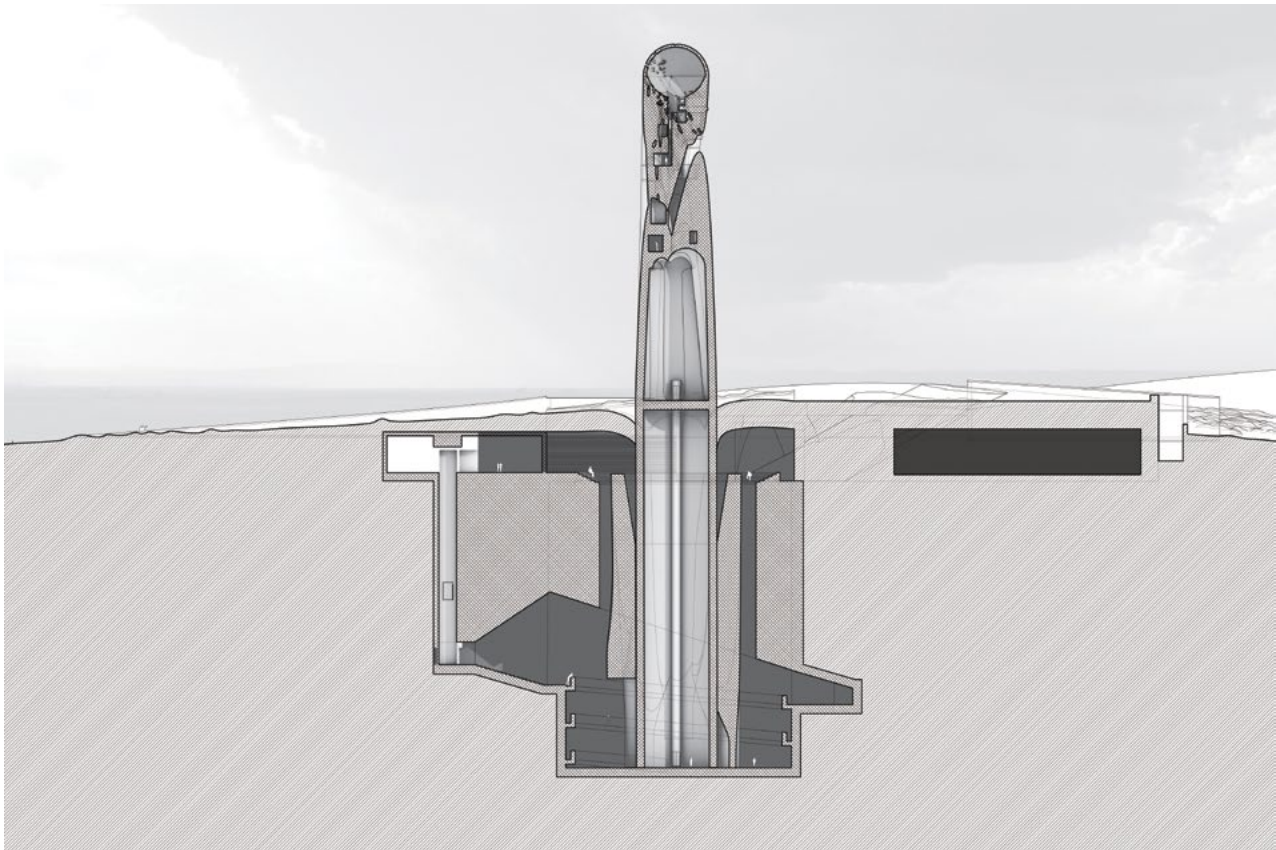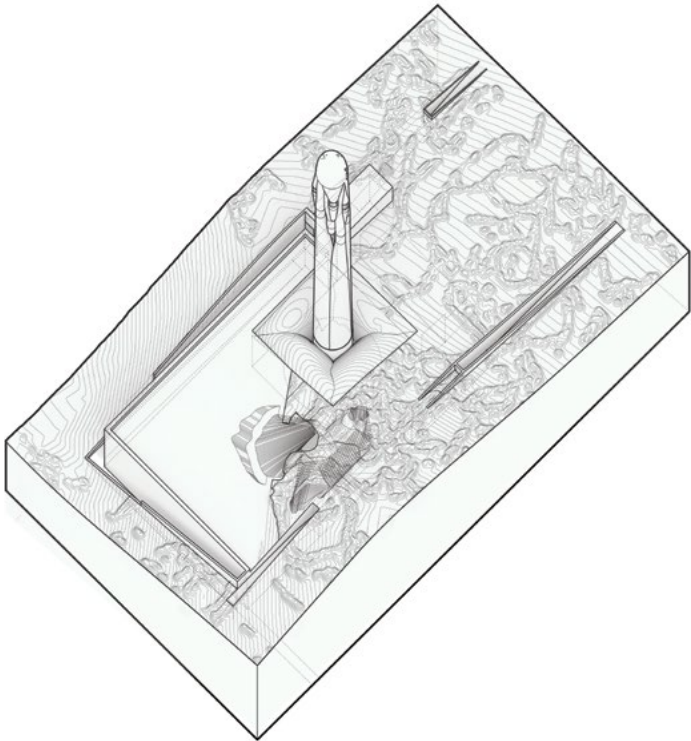
Yet, it is precisely the condition of familiar strangeness that allows everything around it to be experienced differently:

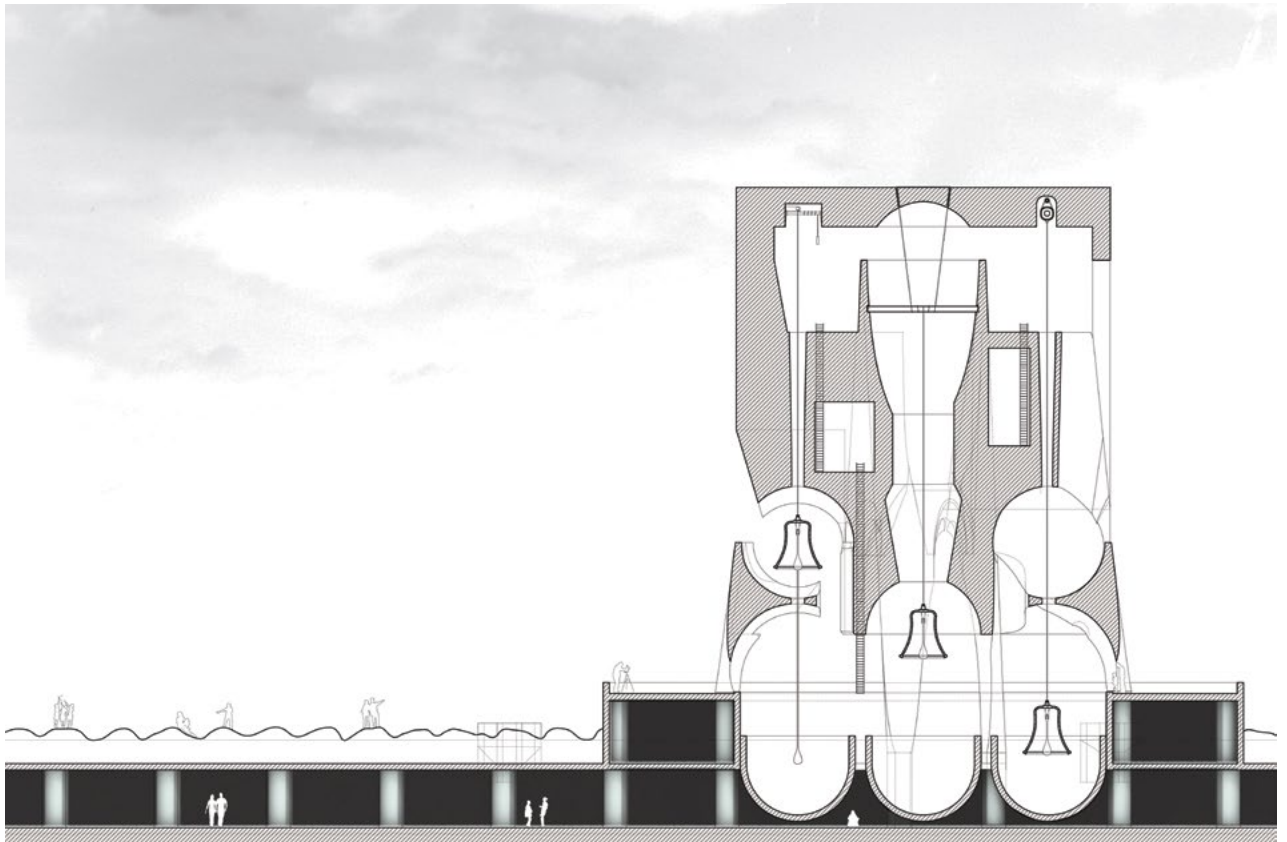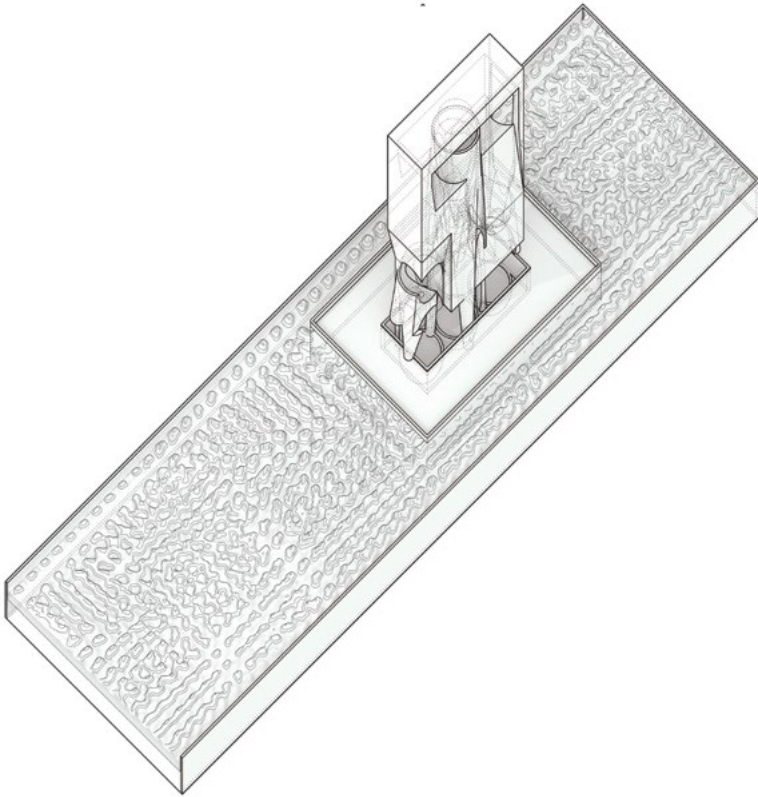*de-concealed, de-networked, de-infrastructuralized, and de-familiarized.*
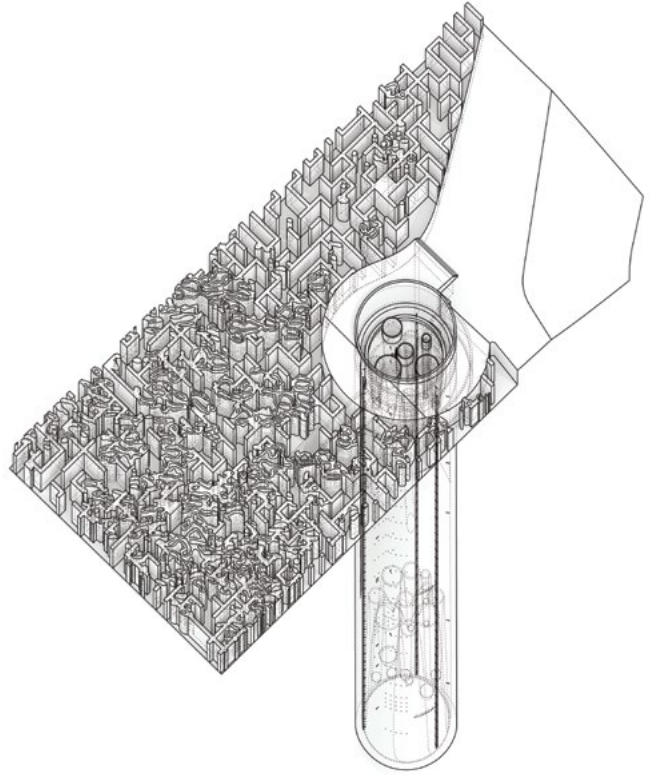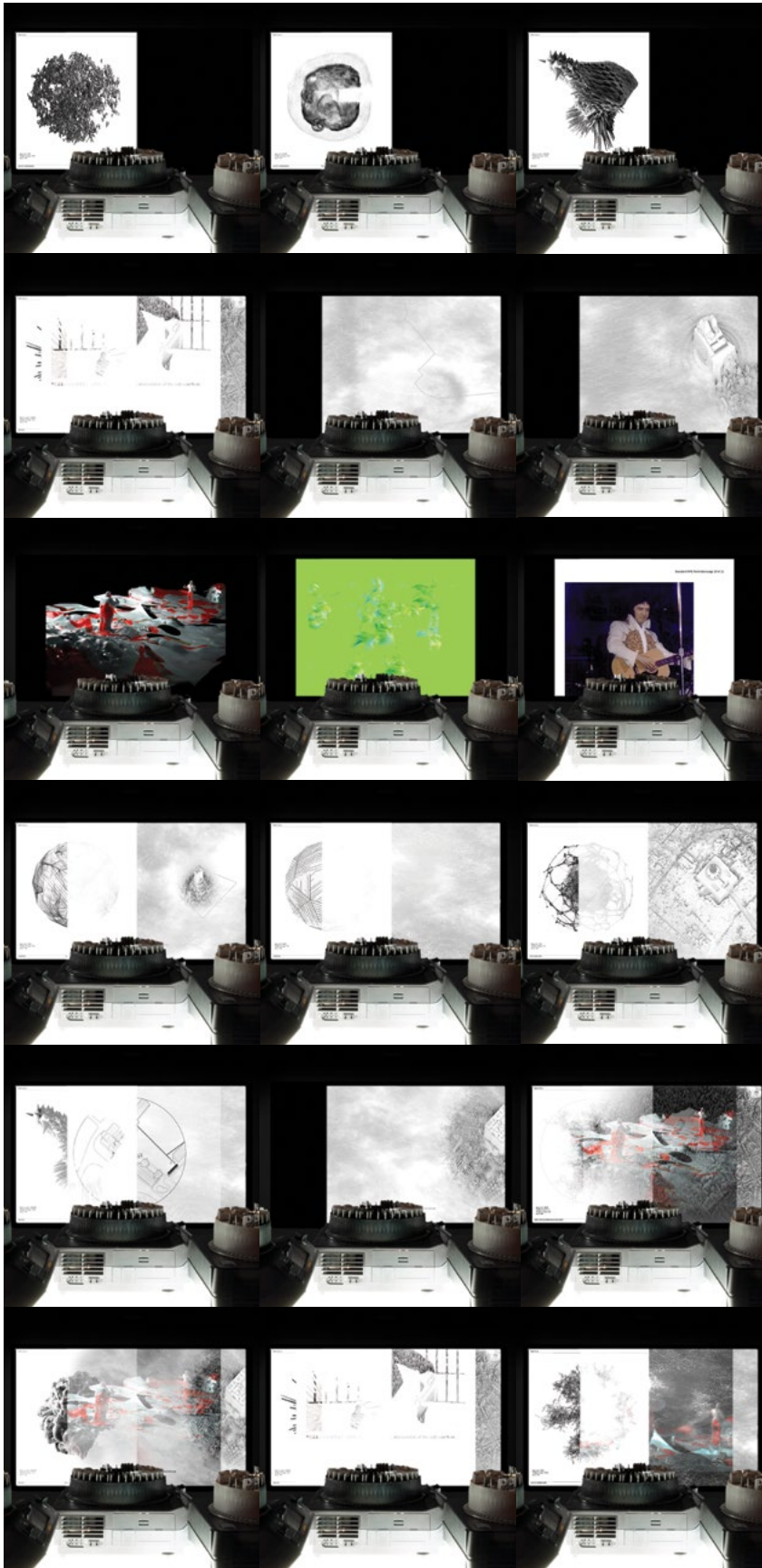

WISHING WELLS & LABYRINTHS

HAIRY VALUE
PRESERVING THE ELVIS HIP THRUST

FARZIN LOTFI-JAM | 2013–14 SANDERS FELLOW

Hairy Value investigates the means by which sites, objects, and systems acquire cultural value, and how this value might be represented as a form, or as an architecture. What is of interest is a way in which architecture can engage questions of history, preservation, and political contingency. Can a method of intervention in these matters be learned from the hairy logic of computational processes?
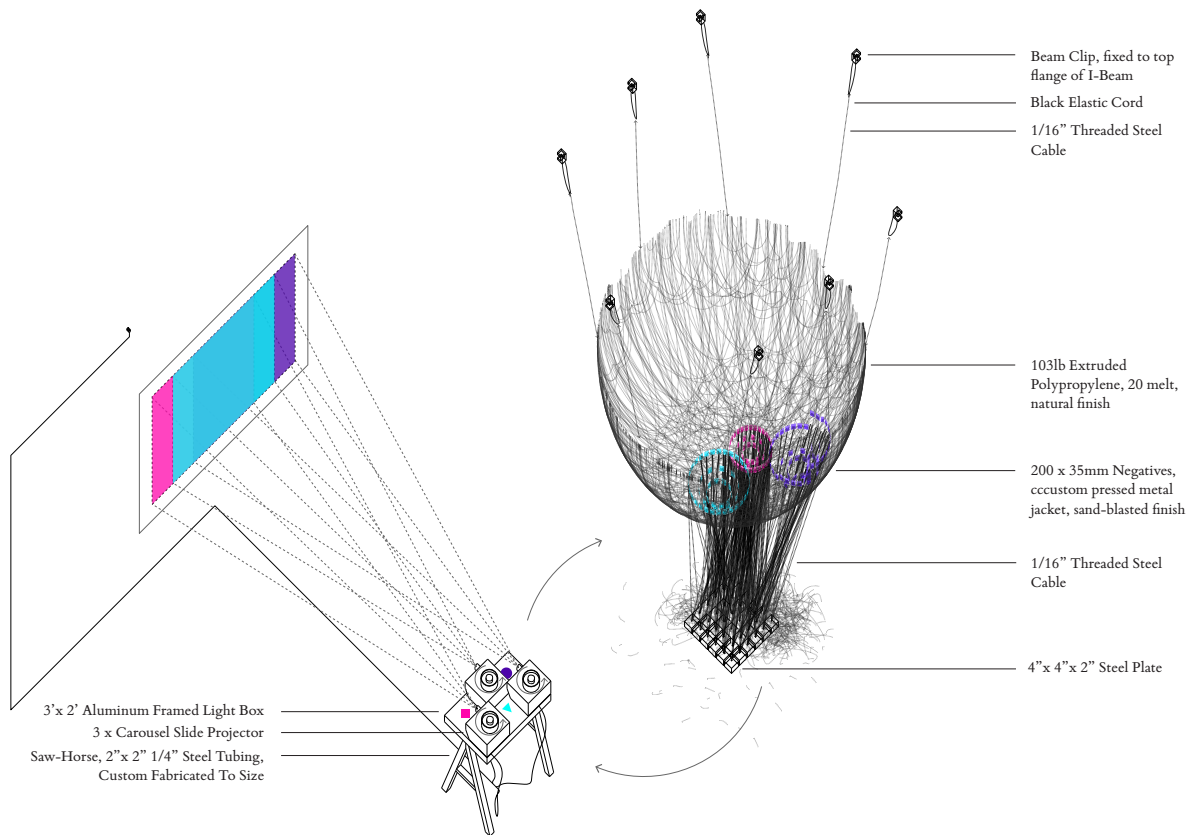
THE EXHIBITION

This exhibition sampled and presented research undertaken as the 2013–14 Sanders Fellow at the University of Michigan's Taubman College of Architecture and Urban Planning. The research explored computational systems and institutional processes that in one case produce form and in the other value. This interest was concurrently pursued under three trajectories:

> *1) Hairy Balls* conducted a series of algorithmic experiments that tested the contingent capacities of form.
>
> *2) UNESCO* analyzed the institutional logic of the World Heritage List in its formulation of "universal value."
>
> *3) Elvis* synthesized these findings into a response to preserve Elvis' cultural heritage, with a radical proposal for his home, Graceland.

The exhibition itself was an experiment in designing interactive and transforming systems. An assemblage of devices—some found, some produced, some intrinsically interactive, some forcefully made so—allowed visitors to alter the exhibition content and its appearance. The design comprised of two elements: a 103lb. Hairy Ball of robotically extruded polypropylene, suspended from the ceiling, connected and held in tension to the floor; and a light box housing three slide projectors. Attached to the Hairy Ball were two-hundred 35mm slides, in custom metal jackets, with each slide featuring one object from the fellowship research. The slides were both content and architectural detail, performing as a kind of joint when connected to the

Left: Exhibition photos of projected slide permutations.

Opposite: A Hairy Ball slide in custom metal jacket.

Beam Clip, fixed to top flange of I-Beam

Black Elastic Cord

1/16" Threaded Steel Cable

103lb Extruded Polypropylene, 20 melt, natural finish

200 x 35mm Negatives, cccustom pressed metal jacket, sand-blasted finish

1/16" Threaded Steel Cable

4"x 4"x 2" Steel Plate

3'x 2' Aluminum Framed Light Box

3 x Carousel Slide Projector

Saw-Horse, 2"x 2" 1/4" Steel Tubing, Custom Fabricated To Size

Hairy Ball, holding the plastic in tension and linking it to the weighted steel cables below.

It was a coded system. Each slide was tagged with its relevant research trajectory—*Hairy Balls, UNESCO, Elvis*—which corresponded to a similarly tagged 35mm projector. Visitors disconnected slides from the Hairy Ball, and placed them in one of the three projector carousels. Releasing a slide severed the connection, sending steel flying, and plastic unraveling. The Hairy Ball recoiled, and the collection of slides settled, reconfigured. Visitors became active researchers, contributing to the project by superimposing the projected slides, producing new relationships and adjacencies. In its initial condition, the distribution of slides was coherent, relating to the internal logic of each research trajectory, over the course of the exhibition, slides traveled from the Hairy Ball to the light box, the projectors, the floor, into visitor's pockets, and sometimes out the door.

The plastic was both fragile and resilient: the precipitate of a kinetic fabrication process. A robotic dance and chemical process became half a sphere—a proper

(half) Hairy Ball. The frozen outcome was once again made kinetic, with each interaction expediting its ruination. The more slides filled the carousels, the less the Hairy Ball survived, exponentially accelerating towards its own demise. Over the course of the exhibition, visitors were forced to reconcile their desire to participate with their sympathy to preserve the Hairy Ball. At the conclusion of the exhibition, the Hairy Ball had undergone divine transmutation. It was coerced from object into information, indexing and negotiating complex interactions between visitors, physical forces and its own material memory.
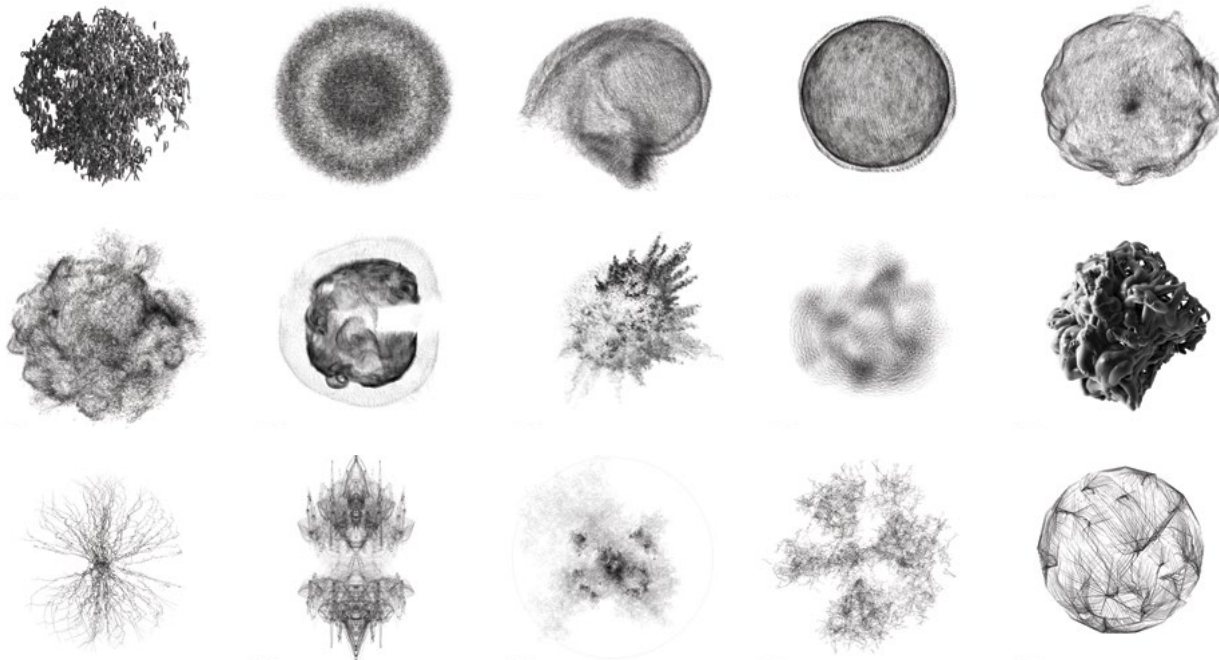
HAIRY BALLS

The current computational, or digital moment in architecture belongs to a long history of architecture's relationship to systems theory, complexity and permutational processes in the postwar period. Today, algorithms in service of other fields are borrowed, spatialized, and their capacities tested as architectures. What's at stake is the question of form's relationship to meaning. Is form hermetic, contingent, or open and permeable?

Custom software was developed to conduct a series of experiments using borrowed algorithms. These algorithms are generally used for their capacities to organize systems. Some produce emergent organization, some deal with physical or material rules, and some expand on abstract mathematical truths. What is of interest is the translation of the organizational capacity into a form-generating algorithm. It is not so much about reification as about embodiment. The initial question that these experiments addresses is: what's hairy about the balls?

It's not just that they're complex, and that they start to break down form, that they perform a different kind of seriality then we normally think about with permutational, parametric, or serial logics, given each one is a type of translation from organization into form. What's interesting is the difference among the translations, not the seriality, and what this does to form. It's not just translating algorithms from systems logic into form, and it's not just making form into system, it's discovering what circulates between the two. In evaluating the outcomes, some additional questions arise: do they work as purely aesthetic objects; do they work as metaphors for complexities; do they solve problems in and of themselves or are they merely representations of a multi-directional approach to problem solving; or are they just aesthetic artifacts of process? In moving towards an answer, what is clear is that a Hairy Ball is not just a tool, but something possessing more attitude, which when poked, pokes back.

UNESCO

This research examines the United Nations Education Science and Cultural Organization.

Governing states nominate sites for world heritage evaluation, and sites enter the WHL if they satisfy one or more of six selection criteria, a definition and quantification of "universal value." An analysis of the 759 sites on the list found 54 permutations of the six selection criteria. This research analyzed in detail one site from each of the 54 permutations.

If what is of interest in the previous *Hairy Balls* project is the translation of algorithm into some type of complex form, what UNESCO queries is the translation from artifact into asset. This is not to say that asset is the same thing as complex form, but what is of interest is the way in which value is shown to be complexly configured in this translation—historical, cultural, or even financial—and that UNESCO is the operator of this exposure of, the amplification of, and the translation into value. The formal experiments on the Hairy Balls resonate with the experiments on the qualifications of value that UNESCO reveals. UNESCO's criteria operates as algorithm, a type of institutional scripting. UNESCO isn't exactly the same as a Hairy Ball, but it does share a logic, with one system generating heritage, and the other form.

ELVIS

More than 40 years after his death, Elvis' image continues to circulate and attach itself to the strangest sites and objects. He can be found on toasters, peddling the merits of dry cleaners, selling cars, giving intimate repose to lonely souls at saintly alters, or most recently there has even been talk of literally giving life to his image via

Above: Extracts from exhibition catalog, Hairy Ball experiments, ordered by algorithm type.

Opposite: "Fat Elvis Crooning His Younger Self, Dreaming of Times Past."

holographic reincarnation. His image has proven to be extremely malleable, a cultural obsession and a site of cultural production in its own right, a site upon which many myths surrounding Rock 'n' Roll and the American Dream have been projected. This project queries this fascination with his pop stardom, and the processes that produce and reproduce his cultural significance.

To this end, an alien cultural object is inserted into the UNESCO system of valuation by nominating Graceland to the UNESCO WHL, an ongoing process. Although Graceland operates on a different strata of cultural value, the low brow of popular Rock n Roll mythology, it is in a sense America's Parthenon. The project tests what can be entered into that system, what forms of value can be registered, what it refuses and what it accepts. What is revealed is that Graceland is absorbed quite easily, and that value is contingent. If the project makes us think about Graceland in a different way, it also begs us to reconsider our understanding of the WHL. Mythology, as with Elvis, applies equally to the WHL sites. Their value is not produced by archaeological certainty, or art/historical/scientific objectivity—even though this is part of the archaeological enterprise—it is produced by the collective mythology of their universal worth. *Hairy Value* is interested in this question of the value of myth, and seeing if that mythology can be reprogrammed. What is exposed isn't just the contingency—which would be the hairiness—of UNESCO, in a sense the project seeks to make UNESCO—and in turn architecture—hairier, by opening them up to new systems, tendrils and networks of value.

His hip thrust is best signifier, both of his popular value, and as a kind of symbol of the movement, the transformation and transmutation that the project is looking to evaluate. It has acquired cultural value, and can be translated into architectural form. ∎

I am interested in how architecture can translate cultural value into form.

CLOUDS

PLEASURE BOX AND CLOUDS

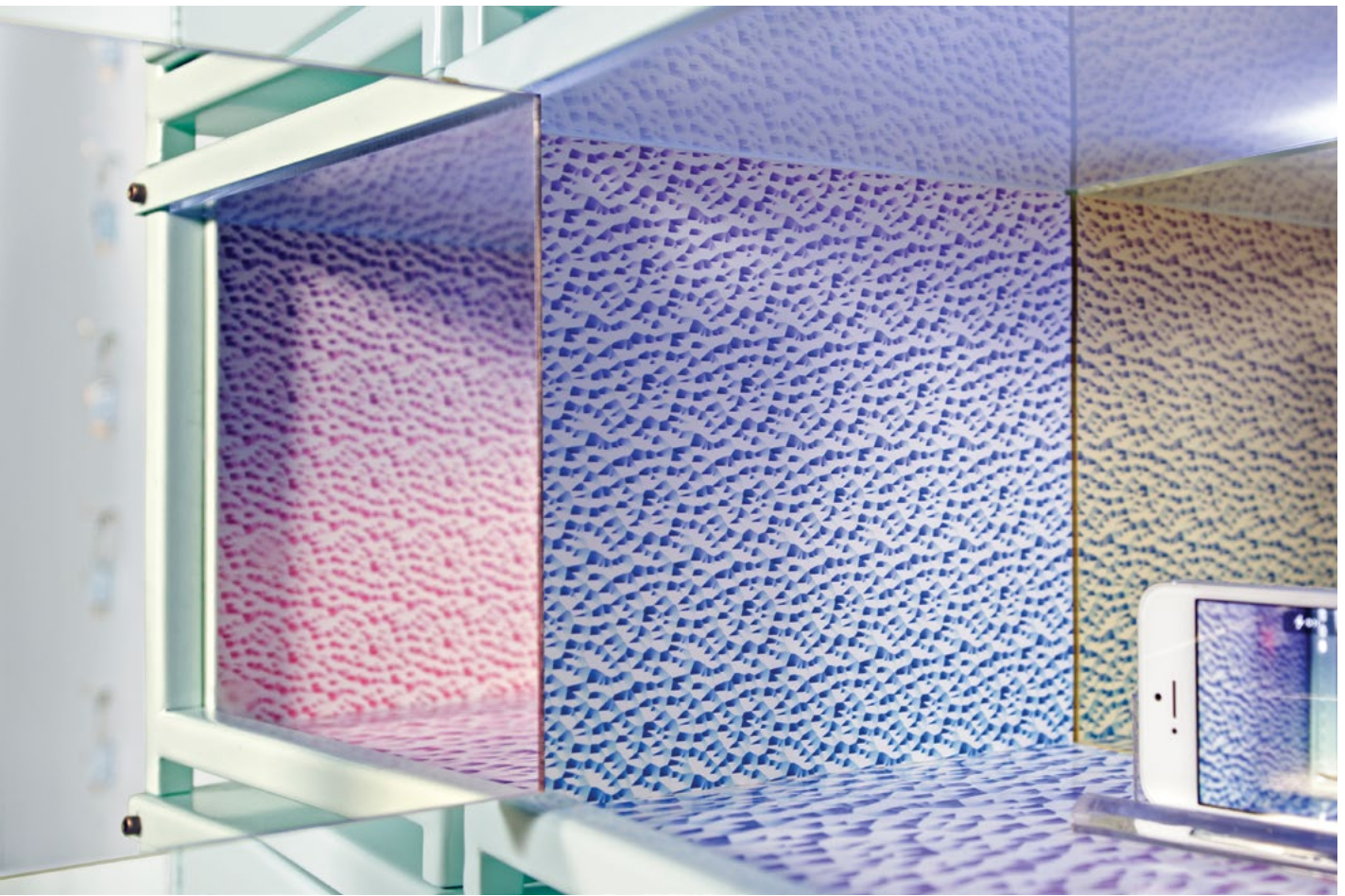**LEIGHA DENNIS** │ 2013–14 WILLARD A. OBERDICK FELLOW

PLEASURE BOX

Pleasure Box asks users to choose between an everyday reality and a simulated one. It is ambiguous which reality the box provides.

As fixations shift to screens and mobile devices, architecture's hold on its user's attention is absorbed by the production and consumption of online content. Architecture no longer commands the ambient environment like it once did. Instead of pursuing meaningful exchanges in physical surroundings, we seek pleasure in virtual connections and digital experiences. Our uncanny relationship with technological objects has left us perpetually tethered and connected, negotiating the choice between operating in the real or the virtual at every turn. Yet, if digital technology and augmented reality can offer boundless potential and possibilities for producing pleasure, who would choose to experience anything else?

According to philosopher, Robert Nozick, if a Pleasure Machine (or Experience Machine) could guarantee pleasure with entirely simulated methods, given the choice, we may still prefer everyday life, choosing to do things and not only have the experience of doing them. Still, it is common practice for actions and interactions to be mediated through machines. We willingly exchange physical experiences and relationships for virtual ones enabled by computers and mobile devices.

Pleasure Box gives users a choice to disconnect—to separate from mobile devices, creating temporary relief from the oversaturation of network culture. It is comprised of 12 timed lock-boxes. Each timer's duration varies—some unlock quickly, and others much slower. By locking smartphones and other devices inside *Pleasure Box*, users are detached, left to ponder other pleasures. Meanwhile, smartphones are meant to capture video while locked inside. Here the object leads a secret life, having experiences that its user cannot. Each compartment is a new kind of architectural site, one in which the audience is the device and representations are produced not for human perception, but for the object.

Above: Pleasure Box selfie.

In this case, the device records experiences without us, but in the end, is it any different?
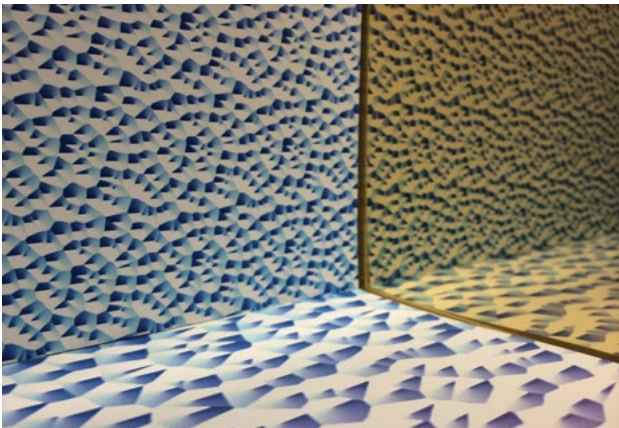
INSTRUCTIONS
Choose a key and box.

Film Turn your smartphone camera on to capture video and place inside the box with the camera facing the back.

Lock the box and wind the timer.

Retrieve your device and return the key.

In this installation of *Pleasure Box*, smartphones are taught to jailbreak themselves, and are given space for taking selfies, where photo filters are produced by the physical environment and not by an app. Using video displays and scaled physical constructs, the private interiority of the box is subverted, and smartphones are transported to new worlds and new realities. It is important to make a distinction between simulated and virtual reality. Simulated reality refers to one that is indistinguishable from actual reality, while virtual reality can easily be identified as such. Within *Pleasure Box* are 12 simulated realities, scaled down to the object, and demonstrated by the videos taken by the users' smartphones. Today we experience much of the world through our devices. We use them to document our lives, referring back to our histories by replaying videos and photographs. In this case, the device records experiences without us, but in the end, is it any different? ∎

Opposite top: Smartphones take video while locked inside *Pleasure Box*.

Opposite bottom: Once the smartphone is inside, the door is locked and the timer is turned.

*Above*: *Pleasure Box* interiors.

CLOUDS

Clouds is a photo essay that documents the self-storage industry as cloud storage for domestic objects. If today's digital clouds provide data storage with remote servers, then what are self-storage facilities but the analog clouds for our physical homes? As a critique of the contemporary aestheticization of data centers and of consumer relationships with objects, *Clouds* investigates storage space as the embodiment of stagnant pasts and latent futures.

The American single-family home has long been considered a territory for the domestication of postwar technology. The structure itself is prefabricated, duplicated and commodified—replete with televisions, coffee tables and dishwashers. Consumerism, embodied by the American Dream, has continued to fuel the commercialization of domesticity. Between 1960 and 2000, household consumption increased by four-hundred percent. Modernity is overabundance.

The American Dream is no longer what it once was. The economy could not sustain it. But as budgets decrease, consumption rarely wanes. As today's economic downtown results in joblessness and stagnant salaries, mass-production and mass-consumption lives on. Households continue to acquire more objects. Homes are bursting at the seams. As a result, the multi-billion dollar self-storage industry services one in every ten American households.

We love our stuff. We hate our stuff. We dream of being free of it. Keeping email inboxes at zero and routinely cleaning the refrigerator, we purge for the cathartic impression of control, and the quest to find order in entropy. Yet, many of us own more objects than we realize. They are ambient, contributing to the atmospheres of our homes. They represent past relationships, and hold untapped potential. They possess histories and stories—some nostalgic, some banal, and some just meaningful enough to keep around. Ultimately, it is easier to house excess possessions remotely at a nearby storage facility then to discard them. In turn, the home can appear tidy and pure. ∎
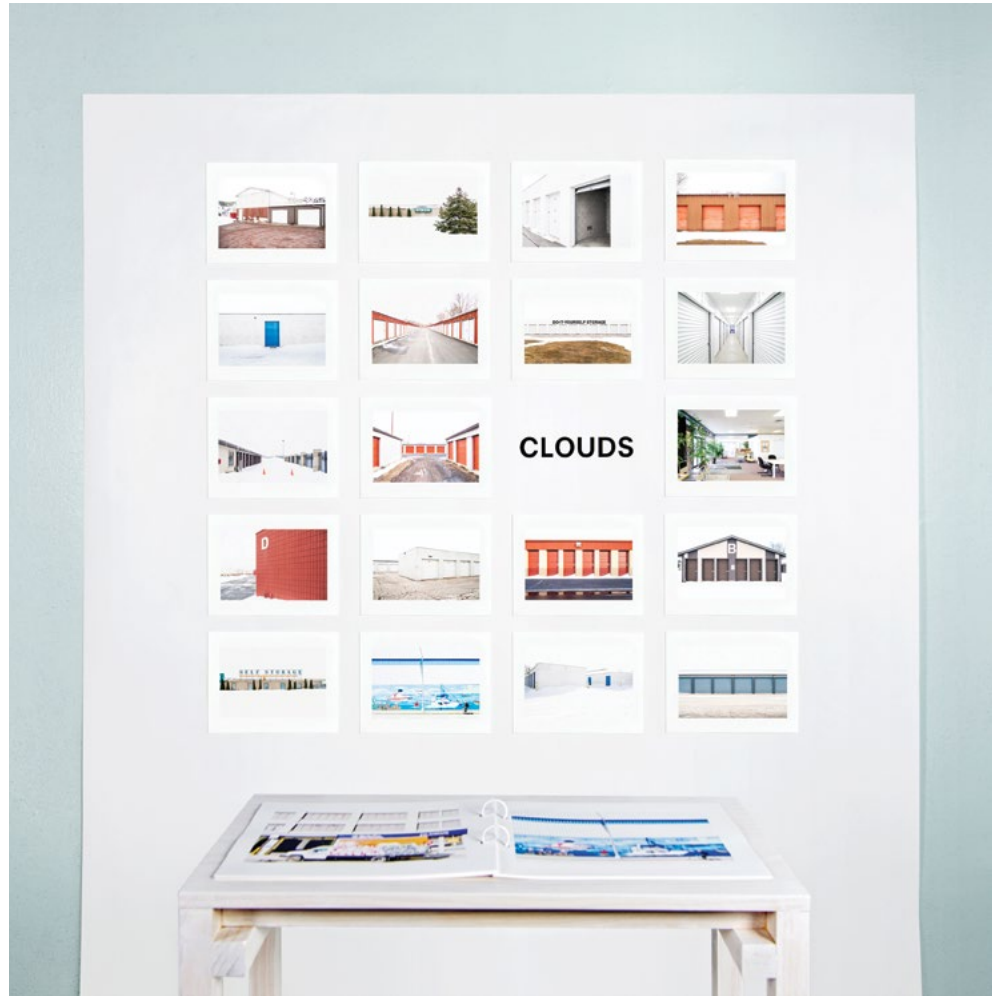
What is the difference between a collector and a hoarder?

The photographs in this series were taken between New York, New York and Ann Arbor, Michigan—sites of the photographer's two homes. All photographs are by Leigha Dennis.

Fabricator: Joseph Vidich, Kin & Company.

Artists: Gold Palm Forrest, Adam Frezza and Terri Chiao Untitled, Mark Keller.

Team: Ian Donaldson, Max Drapey, Martin Elliott, Alina Granville, Andres Marin, Jeni Nguyen, Cody Pfleging, Paul Vidich, Ethan Walker, Muhammad Alshadood.

POSTSCRIPT

CHRISTIAN UNVERZAGT | FACULTY ADVISOR

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