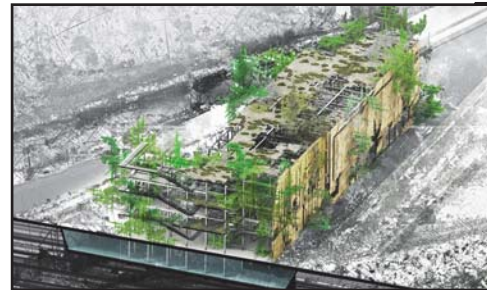




Advisor: Jake Newsum  
Year: 2017  
Featured: Arch Reporter, Super Architects

[1-3]

Robo-Loom



Advisor: Casey Rehm + Marcelo Spina  
Team: Sanhita Vartak  
Year: 2017

[4-6]

Biophilia



Advisor: Herwig Baumgartner  
Team: Anvitha Jagadish, Soham Doshi, Shabnam Moravveji, Mitch Bennet  
Year: 2017

[7-9]

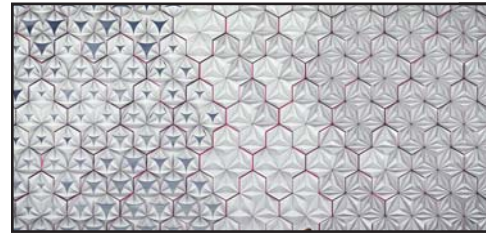
en Pointe



Advisor: Curime Batliner  
Team: José David Mejías Morales, Lijun Zhongel  
Year: 2016

[10-12]

Animated Tessellations 2.0



Advisor: Mark Newell Cabrinha  
Team: Emmanuel Osorno and Zahra Safaverdi  
Year: 2014  
Sponsors: Kreysler Associates, Enclos and Gensler L.A.  
Exhibited: AIA Chicago 2014  
Published: ACADIA 2014, Facade Tectonics World Congress 2016

[13-15] Animated Tessellations 1.0



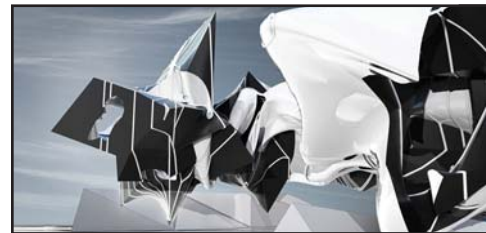
Advisor: Karen Lange  
Honors: Selected Thesis  
Year: 2013-2014

[16-19] Tekton Fluid



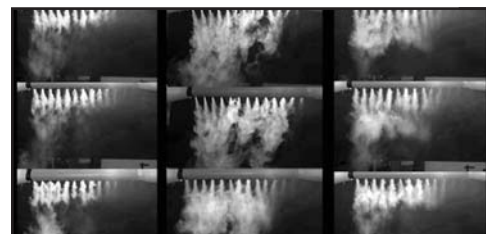
Advisor: Stephen Phillips  
Year: 2013

[20-22] L.A. Film Institue



Advisor: Stephen Phillips  
Year: 2013

[23-25] Sound Pipe



Advisor: Karen Lange  
Year: 2013

[26] Musical Cortex



Office: Asymptote Architecture  
Location: Moscow, Russia  
Role: Facade Detailing, 3D Modeling, 2D Work  
Status: Under Construction

[27-28]

ZIL Gateway Tower



Office: Asymptote Architecture  
Location: Miami, FL  
Role: Facade Detailing, 3D Modeling, 2D Work  
Status: Under Construction

[29-30]

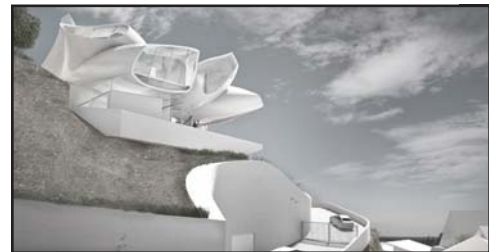
Missoni BAIA Residences



Office: BplusU Architects  
Location: Krems, Austria  
Role: 3D Modeling, Rendering, Illustration  
Status: Competition

[31-32]

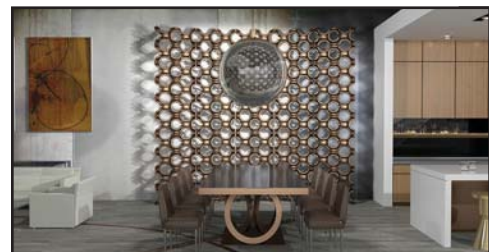
Galerie Niederösterreich



Office: BplusU Architects  
Location: Hollywood, CA  
Role: 3D Modeling, Rendering, Illustration, Model Making, Client Meetings  
Status: Complete in 2018

[33-34]

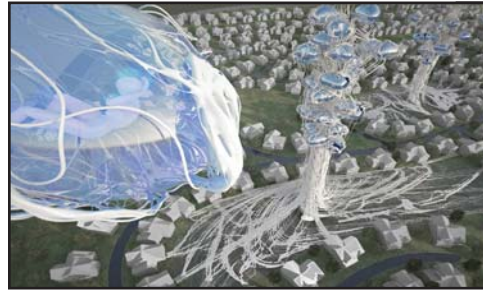
Los Angeles Residence



Office: Tighe Architecture  
Location: Los Angeles, CA  
Role: Screen Design  
Status: Project Completed

[35-36]

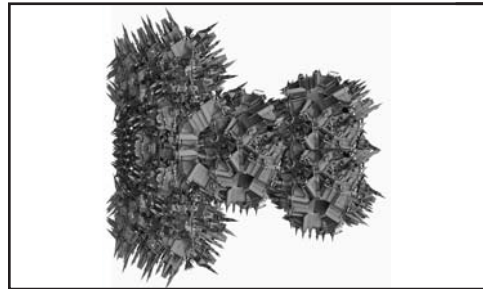
Douglas Elliman H.Q.



Type: Competition  
Year: 2015

[37-38]

Death by Virtual Intimacy



Type: Competition/Collaboration  
Location: ACADIA- Los Angeles, CA  
Year: 2014  
Honors: 2nd Place

[39-40]

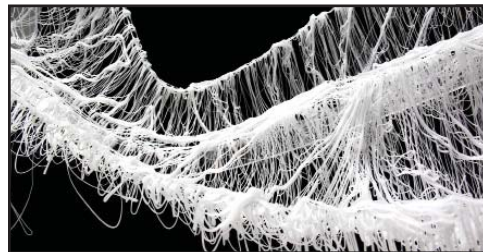
Mickey Tech



Type: Exhibition  
Location: St. Supery Wineries, Napa, CA  
Owner: Edmonds + Lee Architects  
Year: 2015

[41-42]

S\_it\_EAT

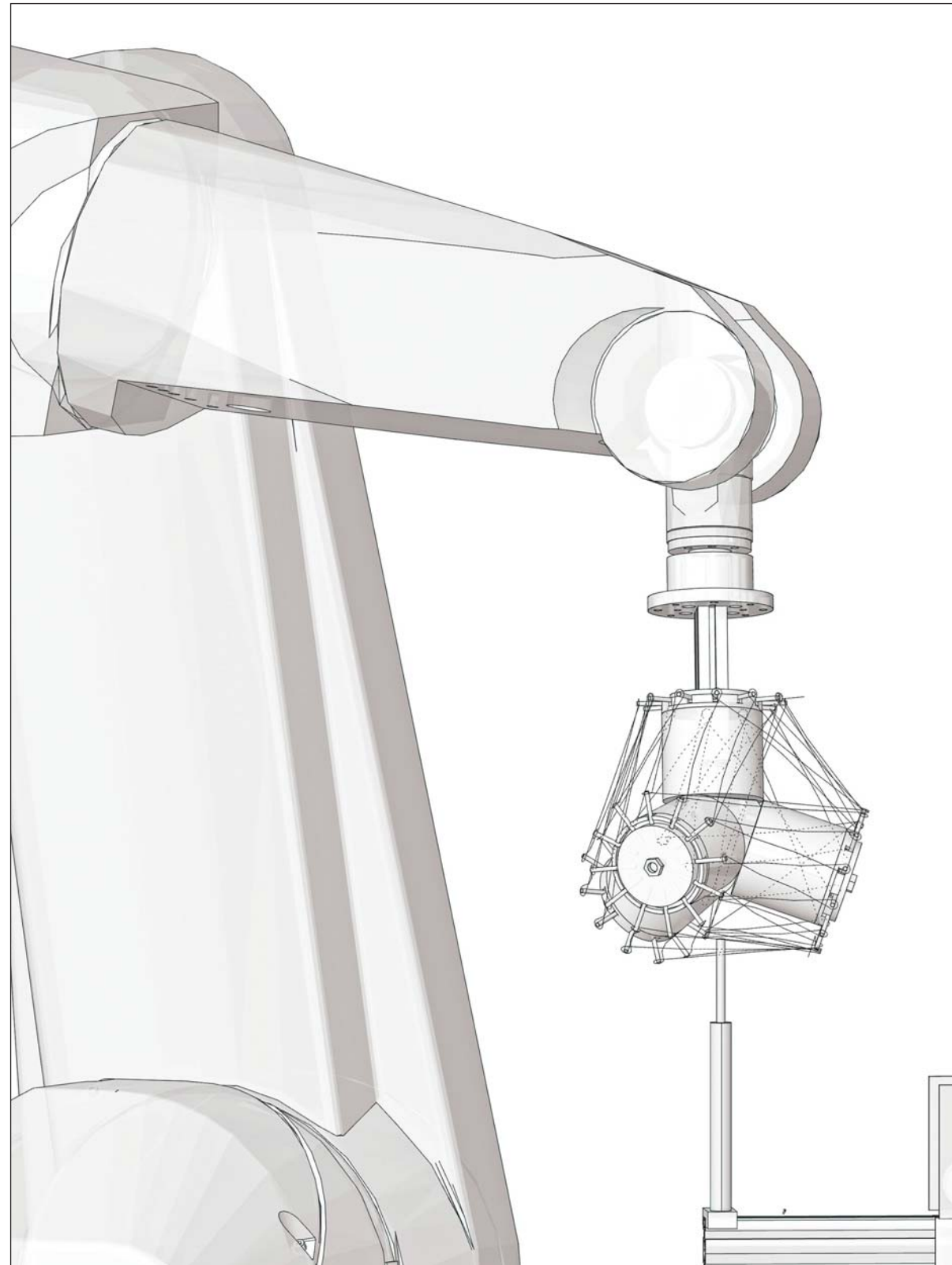
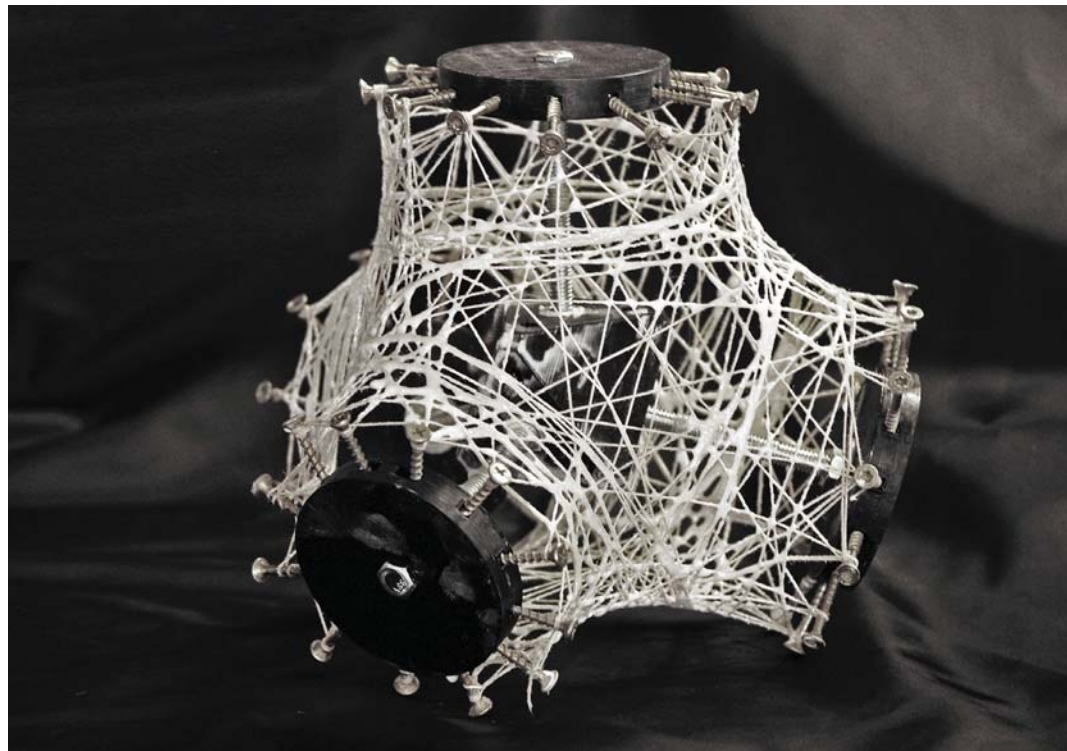
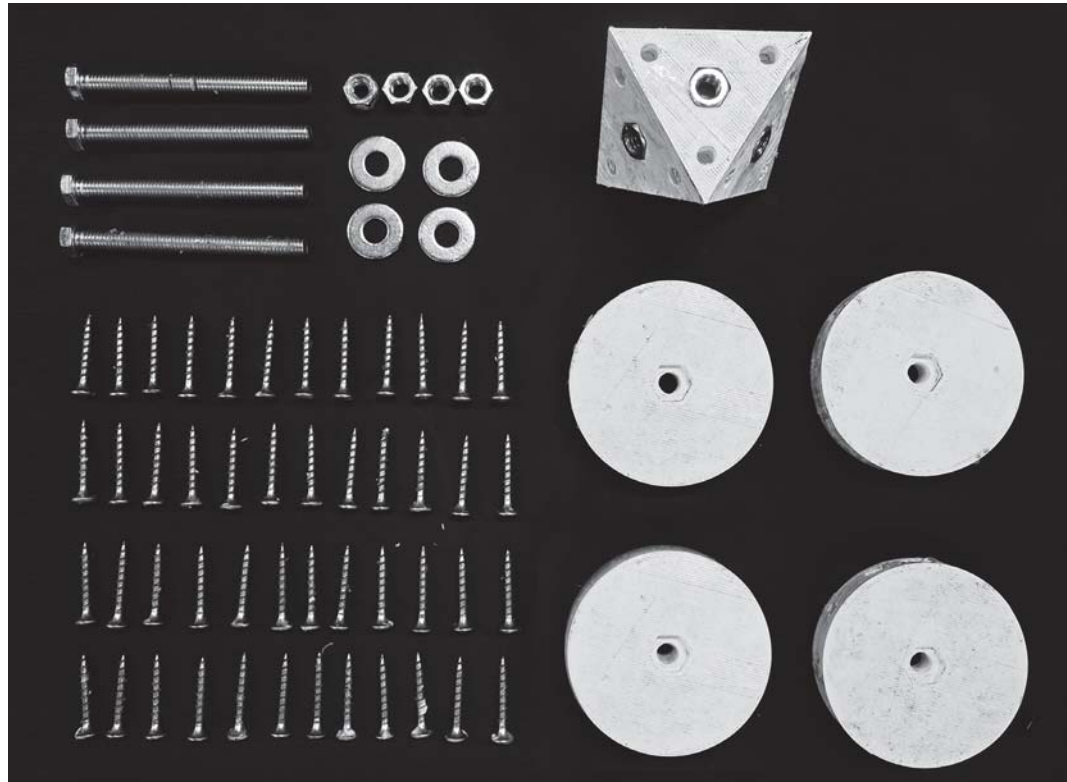


Type: Collaborations  
Year: 2016

[43-44]

Ghosted Furniture





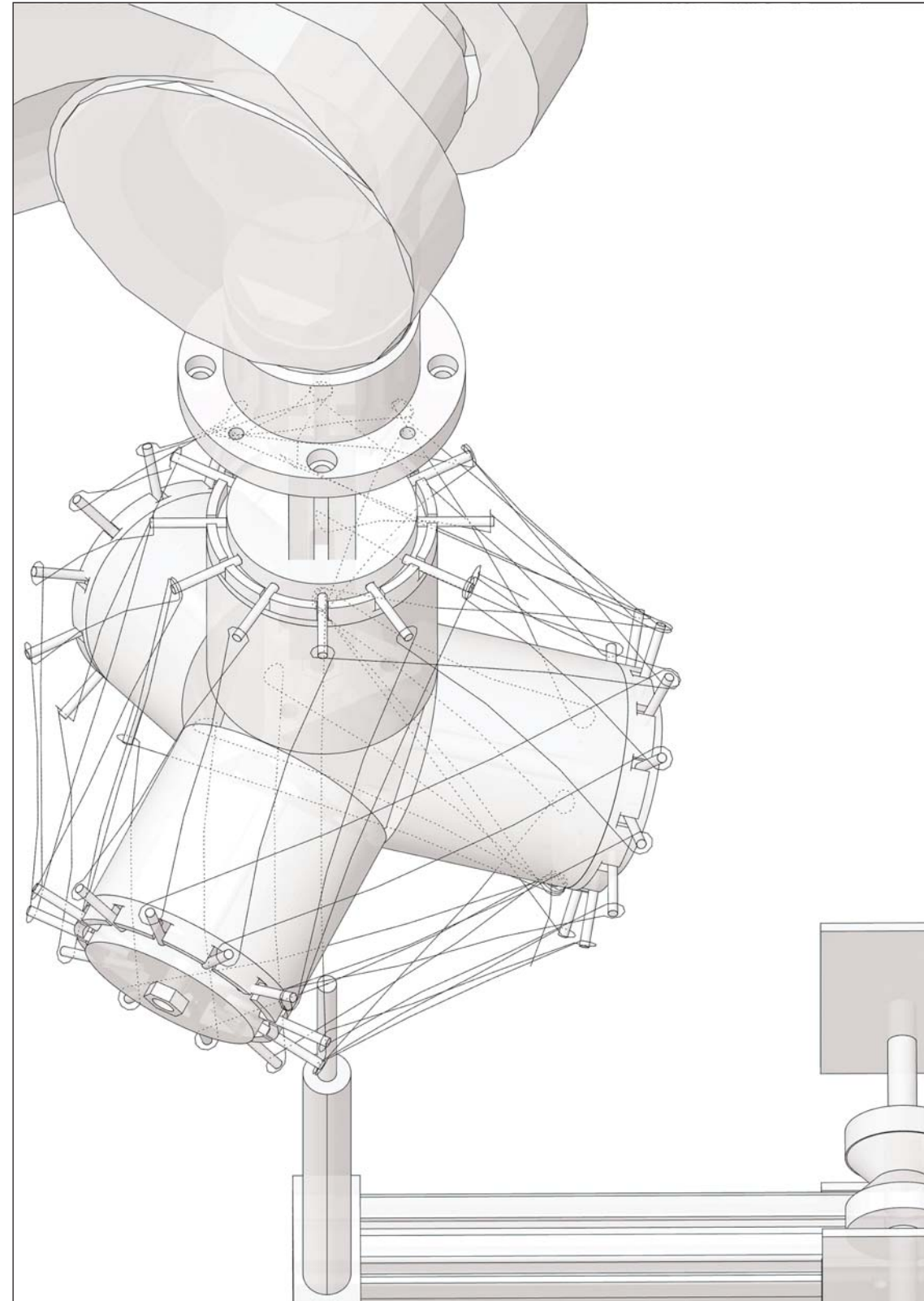
Robo-Loom: Digital Objects to Discrete Assemblies

Advisor: Jake Newsum

Year: 2017

This research project looks at light-weight discrete assemblies with a focus on weaving strategies to produce digital objects(i) as serial units with a range of weave densities. Discreteness in the design of part to part relationships aim to embed all intelligence needed for describing potential assemblies into individual parts. These investigations are inspired by the recent works in material science and particle physics where the details of the individual types of units determine the range of materials and elements, such as in the work of Neil Gershenfeld on the development of digital materials.(ii)

As opposed to mass-customized parts, digital objects have the potential to decrease fabrication cost, while increasing production and complexity. Digital objects for discrete assemblies have the self-correcting joint logic as seen in the works of Casey Rehm, Gilles Retsin, Jose Sanchez, Manuel Jimenez Garcia, and Neil Gershenfeld. This logic is an open ended construction principle, such as in Legos, that guide the assembly process, resulting in a non-holistic catalog of discrete assemblies.



Robo-Loom: Digital Objects to Discrete Assemblies

Advisor: Jake Newsum

Year: 2017

Upon the strategic study of part to part relationships, Robo-Loom's units are designed serially, and fabricated using a single mandrel. Based on a tetrahedra, the mandrel has four faces, each containing twelve nodes to guide internal and external assembly of the fabrication process. Three of these nodes are designed to guide the units to aggregate with a rotational freedom of 120 degrees. All other nodes are designed to guide the weaving process.

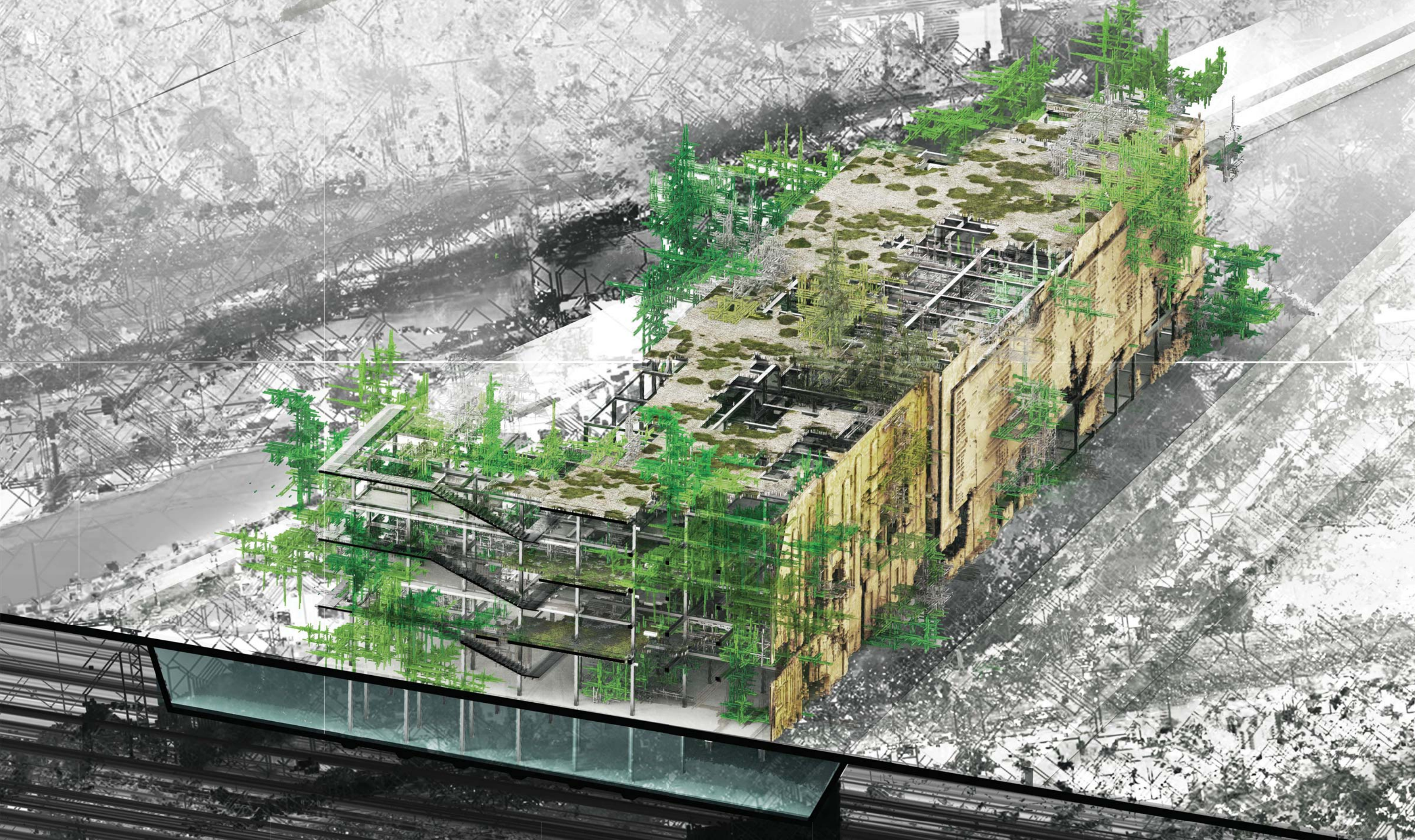
Instead of fabricating a custom mandrel per part to achieve variant densities, this process relies on the use of a single mandrel and achieves variation based on different combinations of weaving patterns. The mandrel is designed to attach a Stäubli robot arm for automating the weaving process of the digital objects. This ongoing research aims to increase complexity in design by removing manual labor and codifying intentions. All parts of the mandrel can be dismantled for reuse after woven threads are treated with a resin compound.

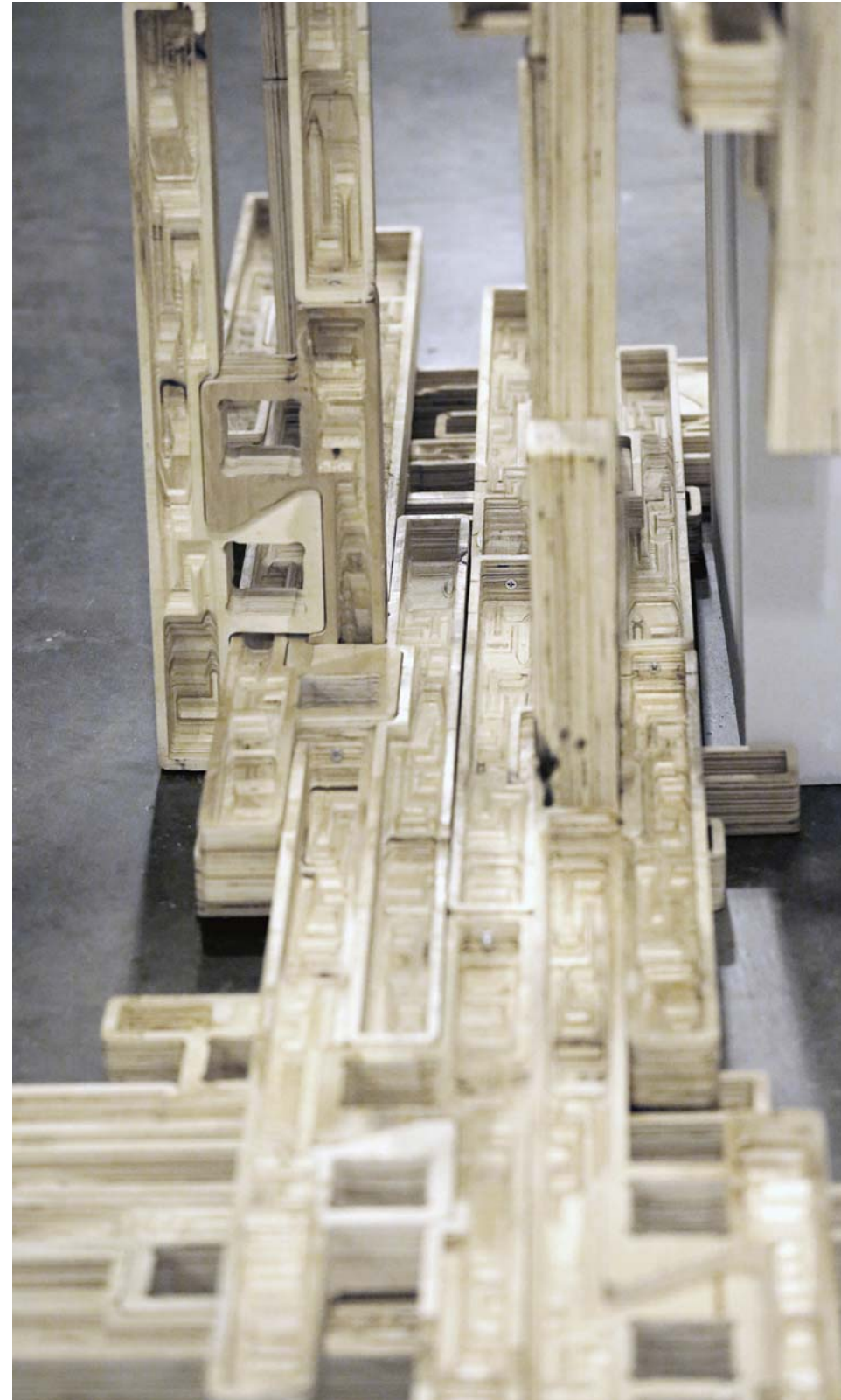
#### References:

(I) Retsin, Gilles, Et Al. "Discrete Computation For Additive Manufacturing." Fabricate 2017, Ucl Press, London, 2017, Pp. 178–183. Jstor.

(ii) Gershenfeld, Neil, Et Al. "Macrofabrication With Digital Materials: Robotic Assembly." Material Synthesis: Fusing The Physical And The Computational, Volume 85, Issue 5, 2015, Pp. 122-127.

[Http://Onlinelibrary.wiley.com/Doi/10.1002/Ad.1964/Abstract](http://Onlinelibrary.wiley.com/Doi/10.1002/Ad.1964/Abstract)





















































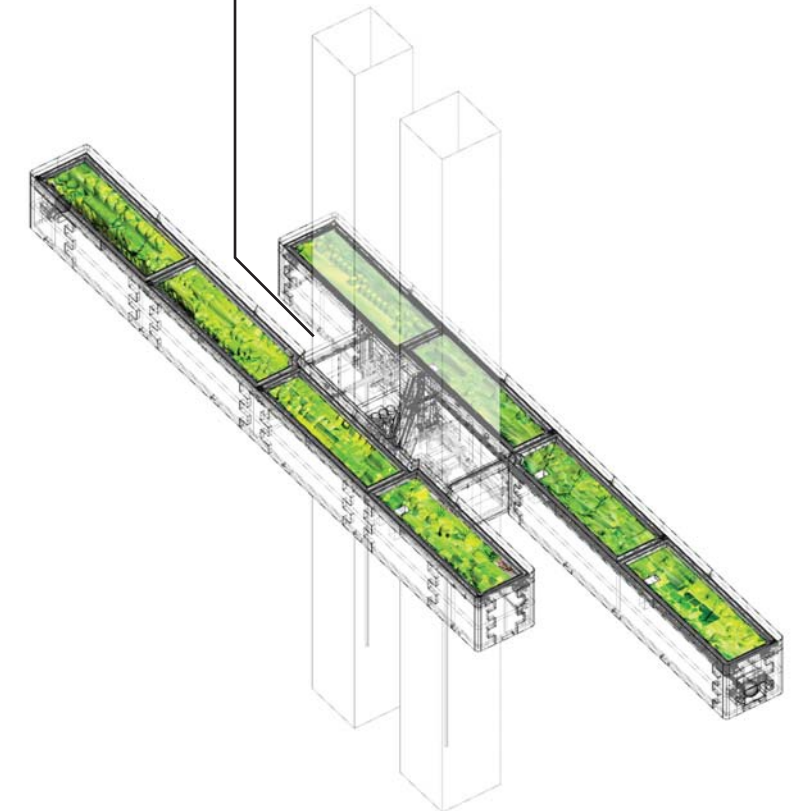
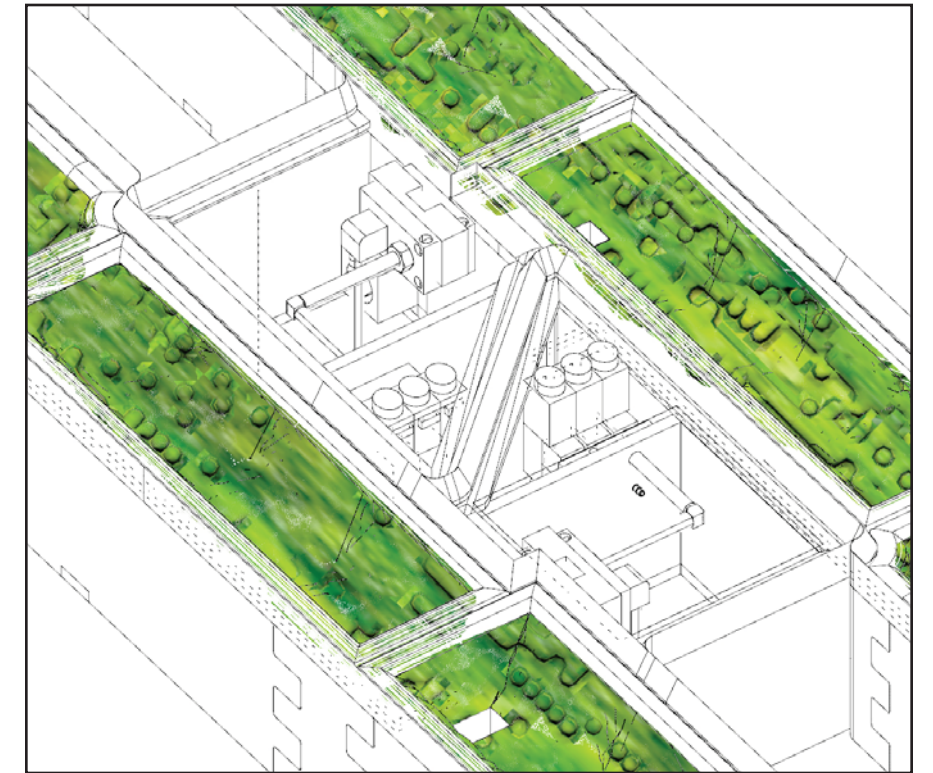
**Biophilia** An Autonomous Agricultural System  
Advisor: Casey Rehm and Marcelo Spina  
Design Team: Sanhita Vartak  
Year: 2017

This research project utilizes artificial intelligence to reintroduce wilderness into the domestic environment through autonomously monitored modular planting componentry.

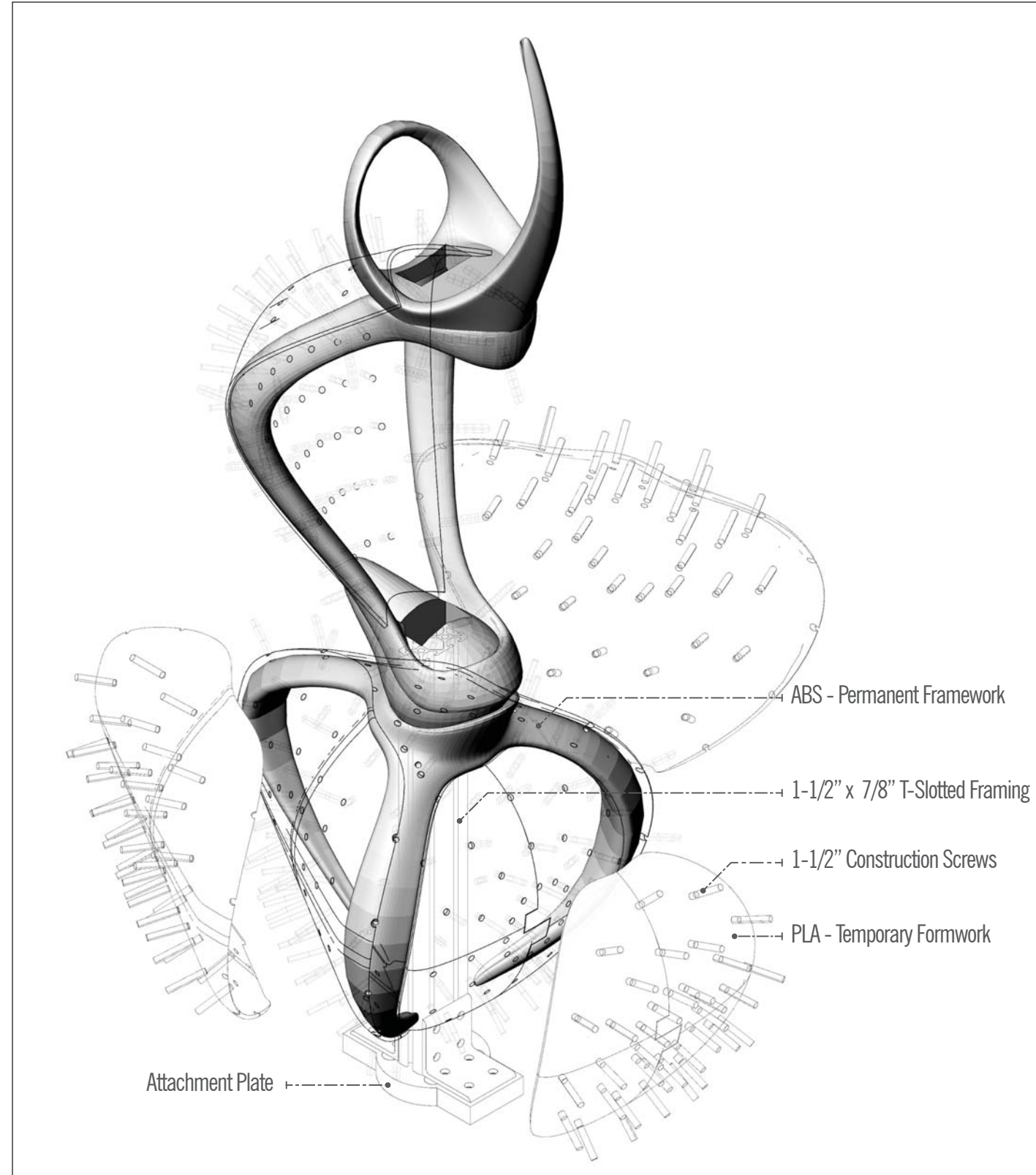
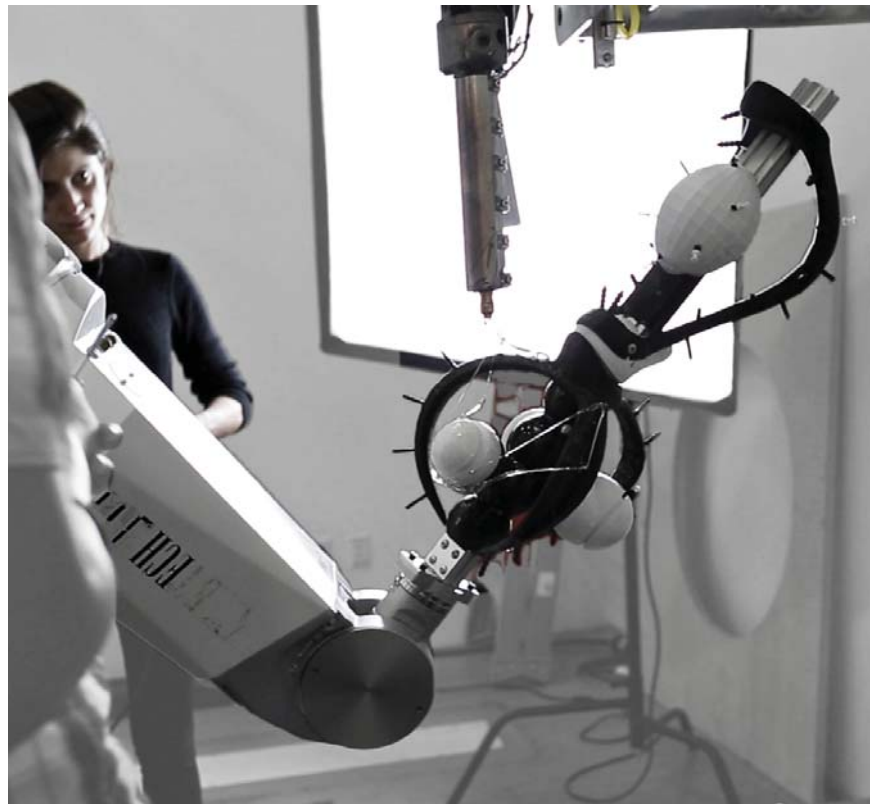
Traditionally wilderness is an unknowable environment to the human, that are complex ecologies outside of the domesticated. We expand from house to medieval cities to agricultural fields, and now wilderness is reintroduced as small pockets within the larger anthropocene.

Our intention is to reintroduce wilderness into the domestic environment by looking at ways of mitigating the dangers and risks of being close proximity to unknown complex systems. With this introduction, we can benefit from the use of wilderness as a computational engine for new chemicals, products, and factors of evolution.

	aa 	ba 	ca 	bb 	cb 	cc 
aa 	aa-aa 	aa-ba 	aa-ca 	aa-bb 	aa-cb 	aa-cc 
ab 	ab-aa 	ab-ba 	ab-ca 	ab-bb 	ab-cb 	ab-cc 
ac 	ac-aa 	ac-ba 	ac-ca 	ac-bb 	ac-cb 	ac-cc 
bb 	bb-aa 	bb-ba 	bb-ca 	bb-bb 	bb-cb 	bb-cc 
bc 	bc-aa 	bc-ba 	bc-ca 	bc-bb 	bc-cb 	bc-cc 
cc 	cc-aa 	cc-ba 	cc-ca 	cc-bb 	cc-cb 	cc-cc 





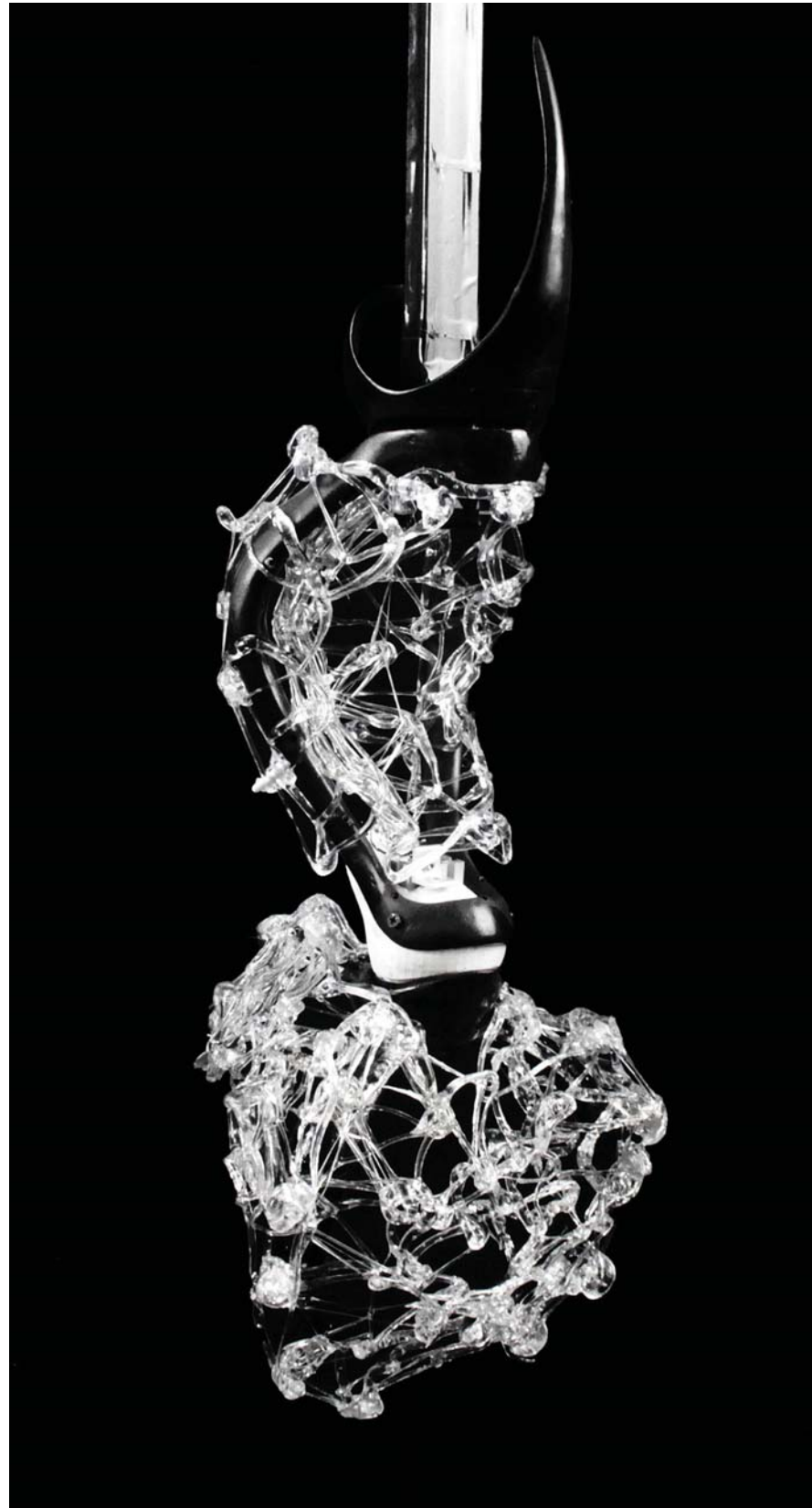


**en Pointe:** A Prototype for a Dancer  
**Advisor:** Herwig Baumgartner  
**Design Team:** Aanvita Jagadish, Mitch Bennett, Shabnam Moravveji, Soham Doshi  
**Year:** 2017

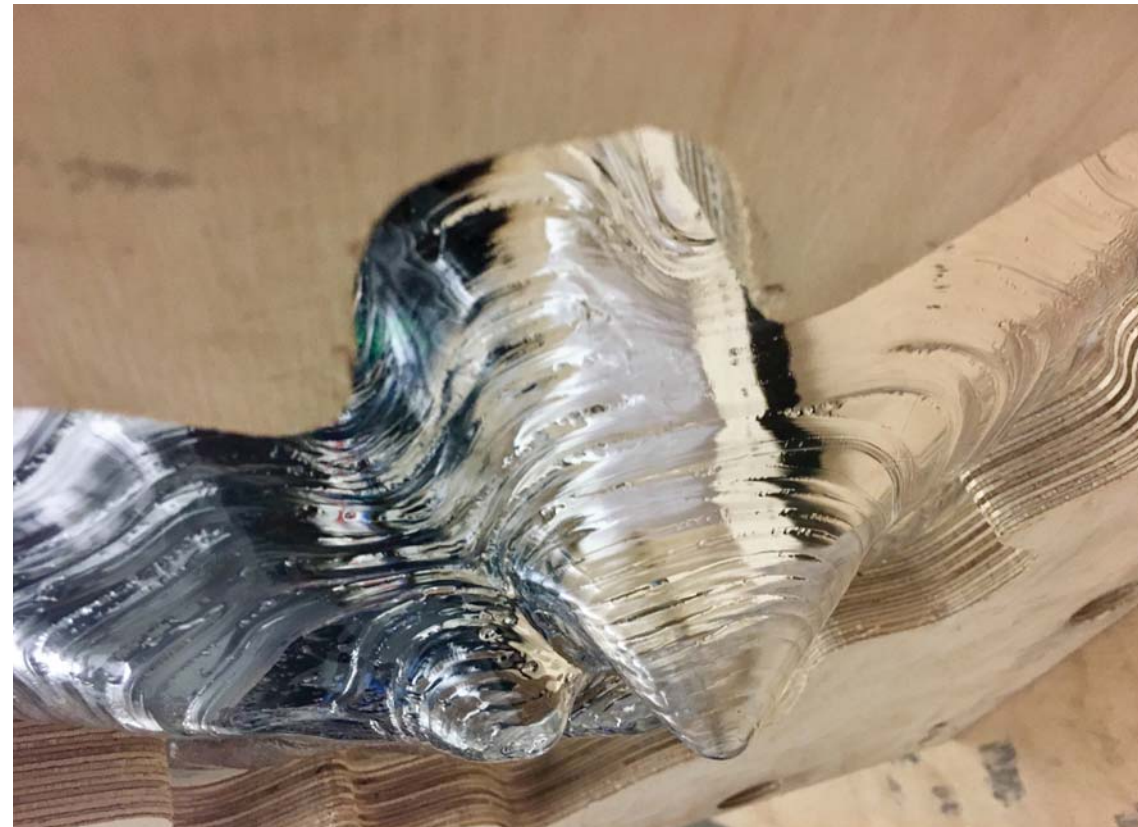
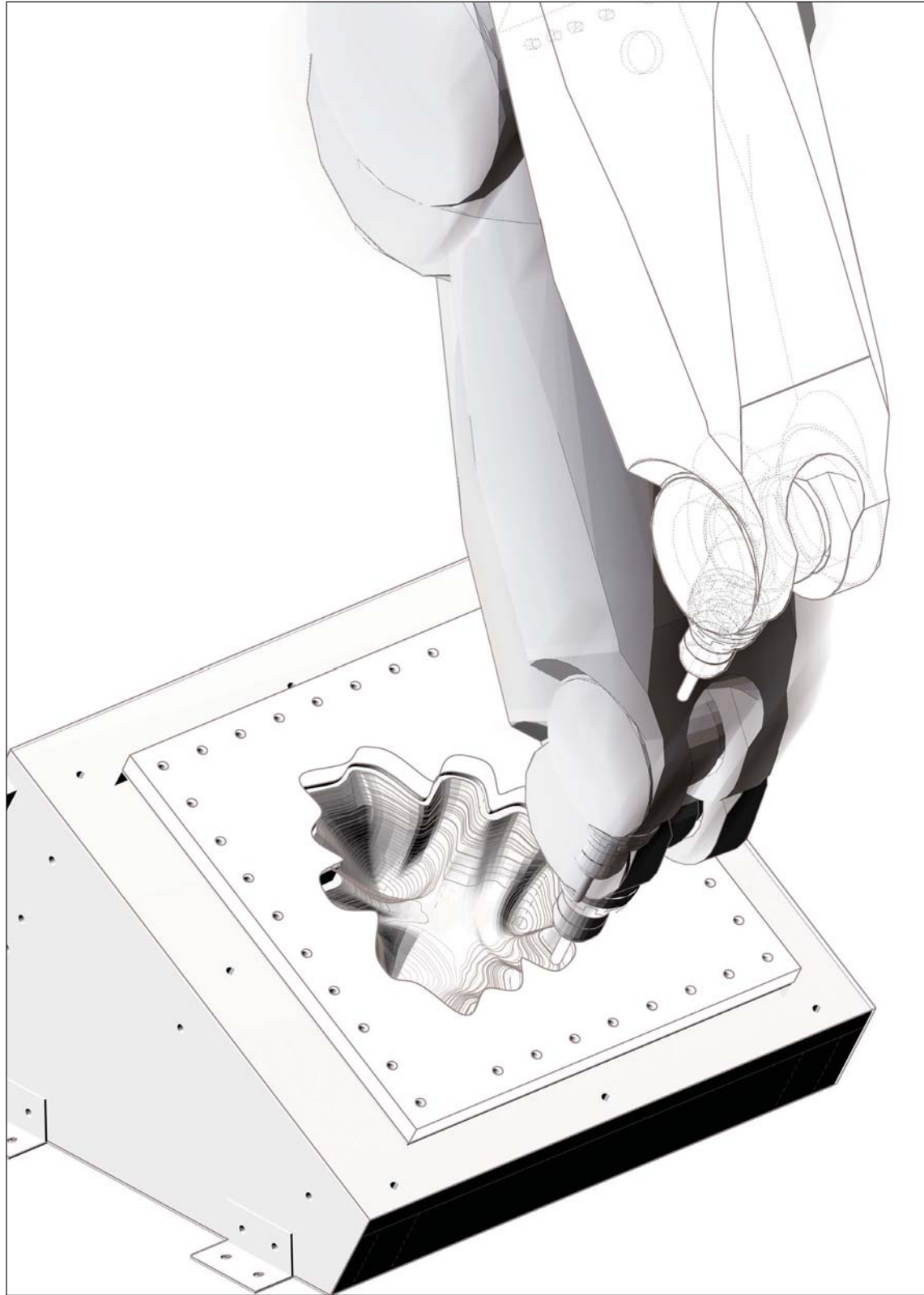
en Pointe looks at the evolution of prosthetics through new ways of touching the ground, and particularly design aims to enhance the traditional ballet movement en-pointe.

Also we try to inverse the way we read structure and surface in the traditional sense, with out thin transparent plastic lacing pattern which was traditionally ornamental starting to morph into a hybrid of structure and aesthical qualities, and the traditional structure (usually metal), now becoming just providing rigidity at important junction such as the attaching to the amputee of the touching the ground but is essentially held together by our semi structural semi aesthetic lattice structure. The design also deals with this idea of visibility, where we imagine our thinner more transparent strands while providing more structure seem to sort of disappear as we move further and further away and we start to only see the metal/form parts so creating a kind of duality in the micro and macro view of the designed prosthetic.

This design also addresses the beauty concerns of a prosthetic while being effortlessly functional.





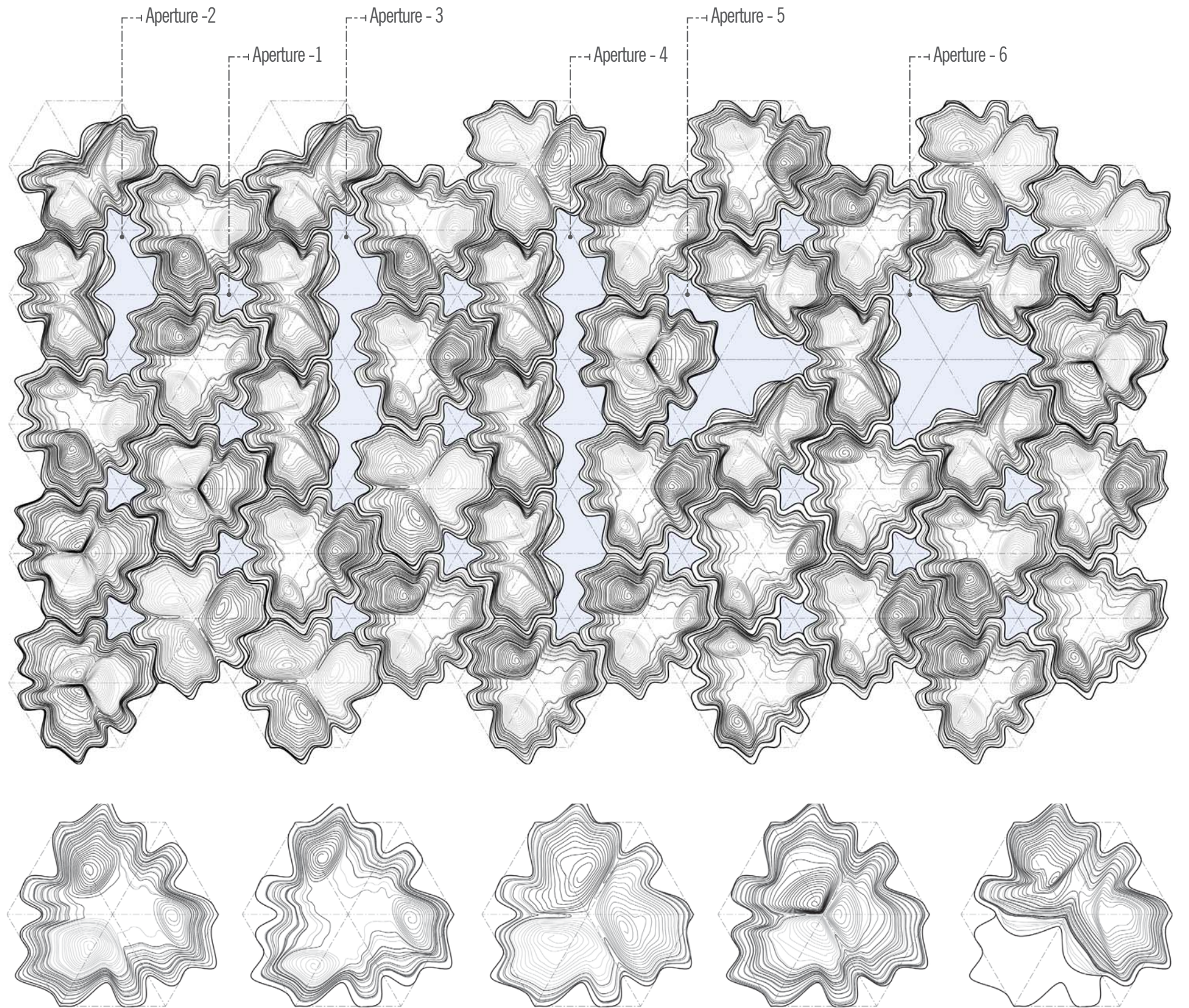
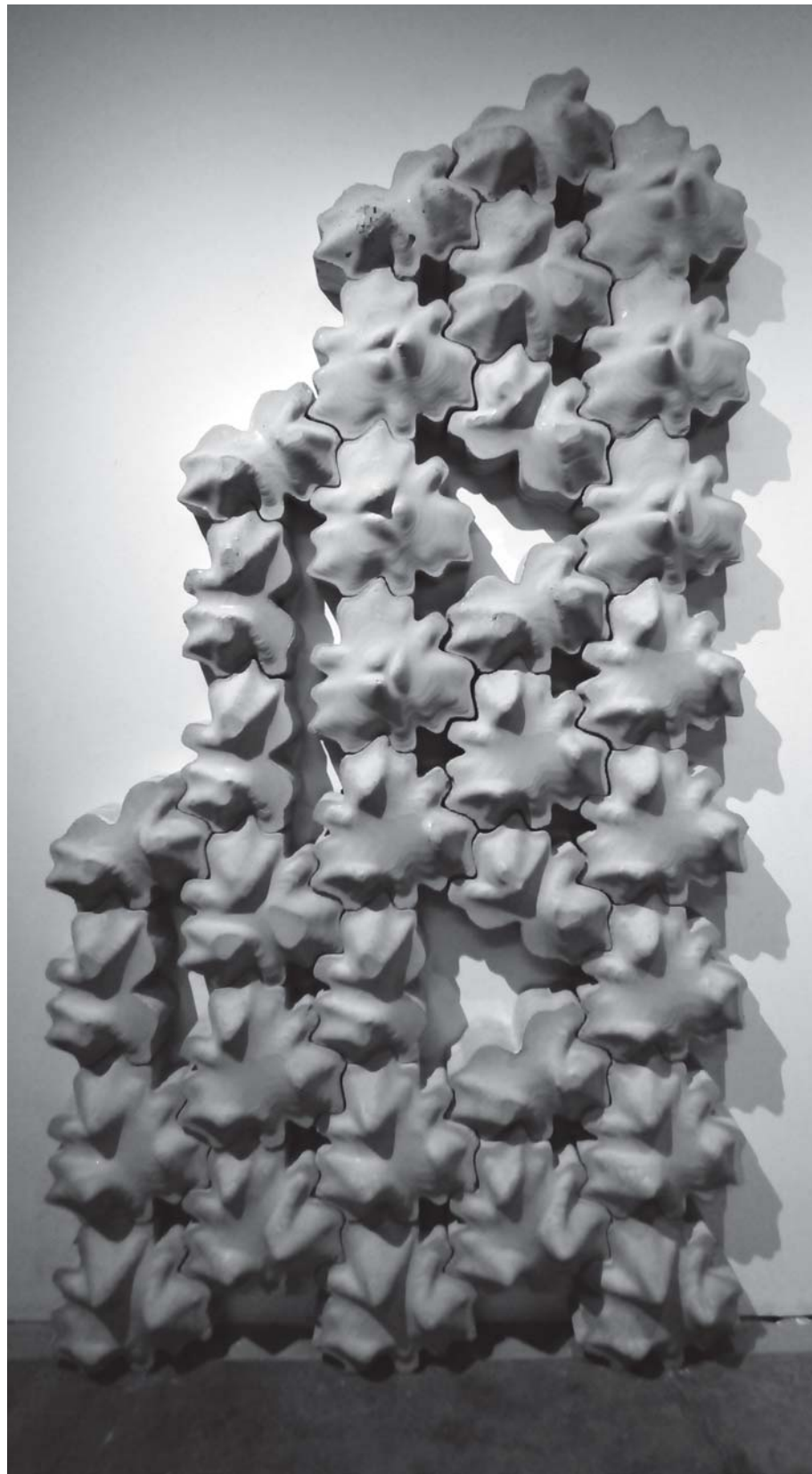


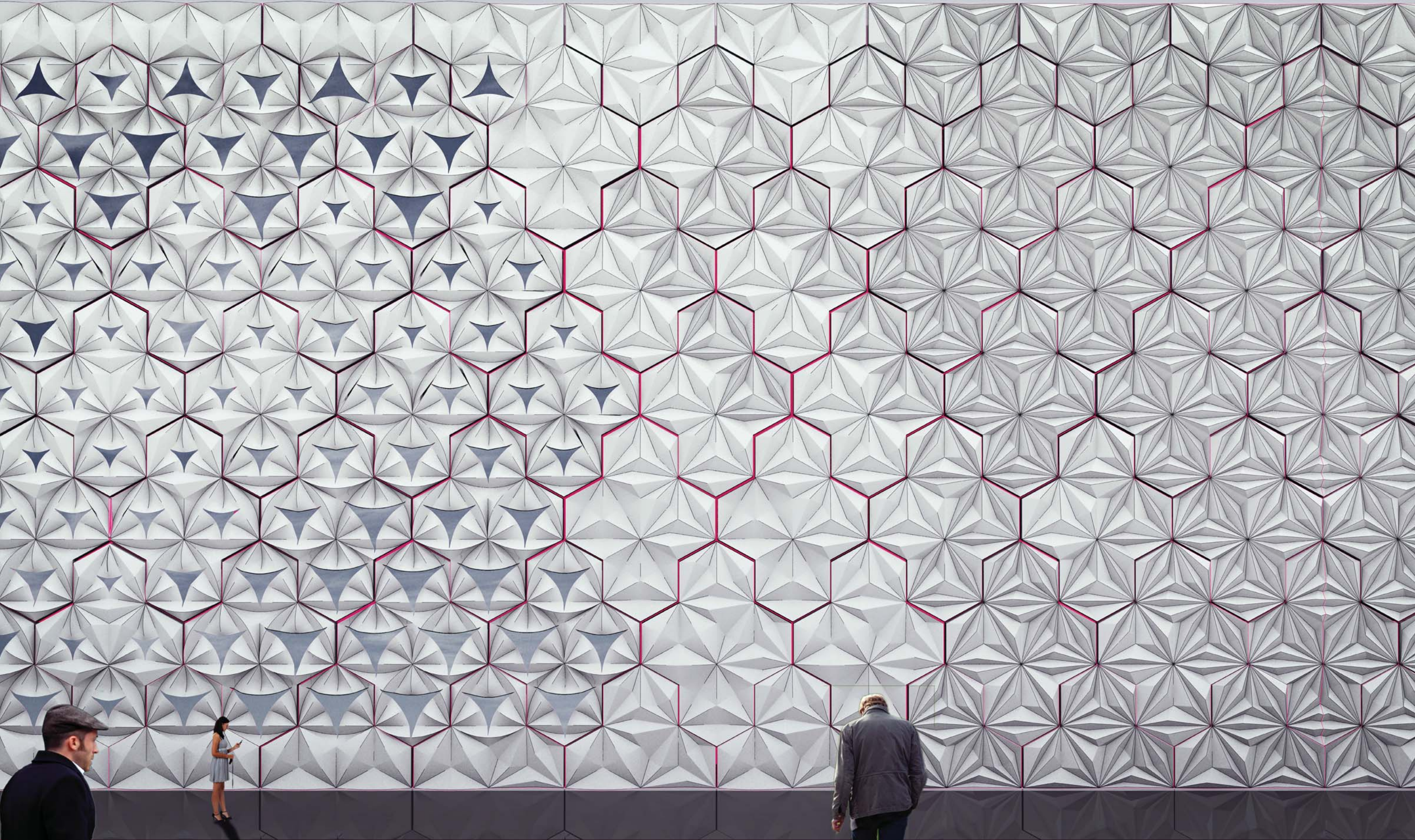
**Tessellated Animations 2.0: Incremental Sheet Forming**  
**Advisor:** Curime Batliner  
**Design Team:** José David Mejías Morales and Lijun Zhongel  
**Year:** 2016

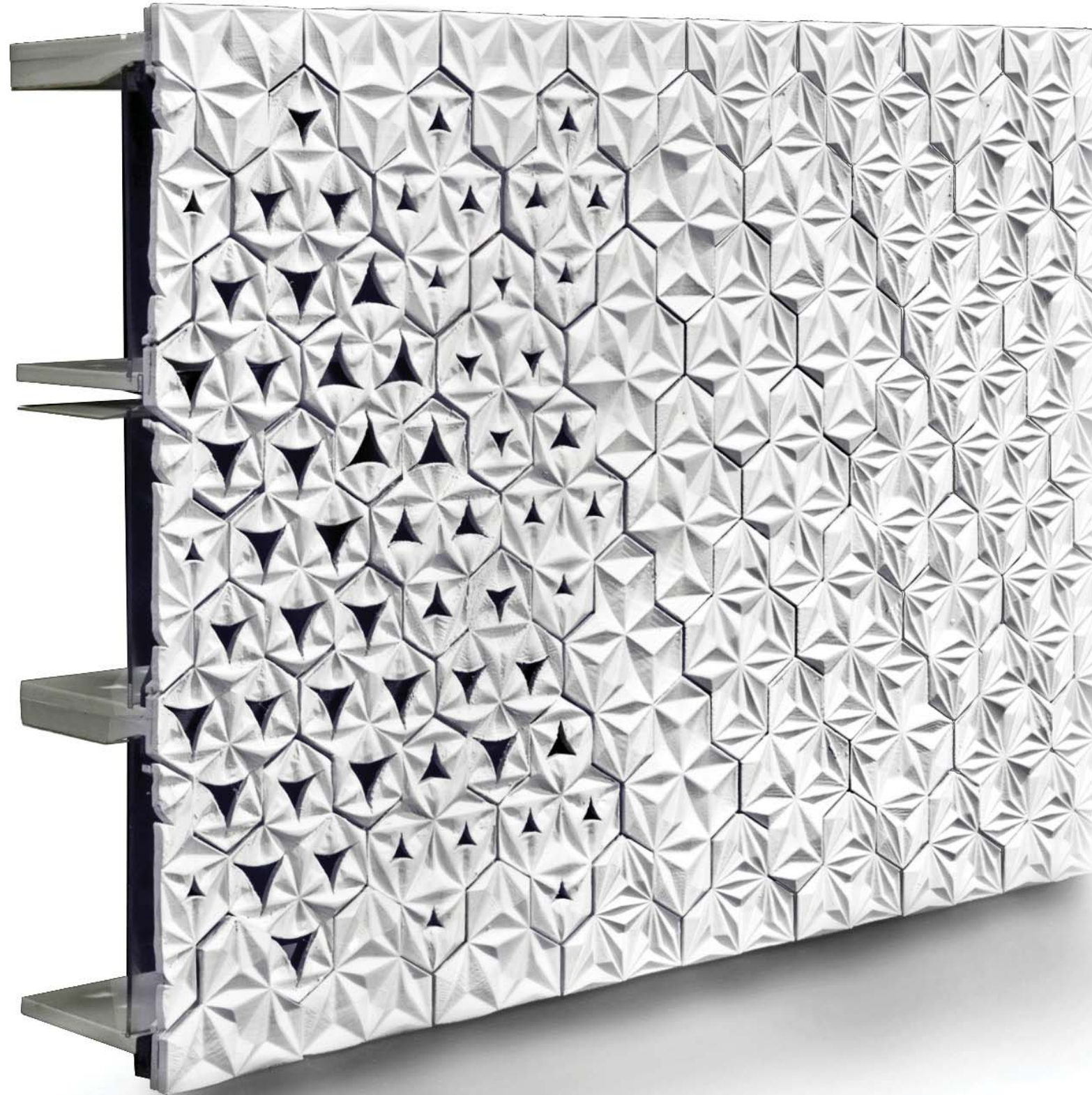
This research project looks at the making of PETG molds for cast concrete parts, with a focus on pattern variation of toolpaths through the Incremental Sheet Forming process.

Inspired by Escher's geometric studies, Animated Tessellations looks at part to part relationships of a hexagon to design a finite set of assembly instructions. Different combination of parts result in a non-holistic catalog of assemblies with a variant degree of variation. First degree of variation comes from the combination of apertures sizes based on rotational part to part relationships. Second degree of variation comes from the toolpath of each part and their immediate relationship to others.

As opposed to traditional sheet metal forming process, ISF doesn't require a die. The elimination of the die in the manufacturing process reduces the cost per piece and increases turnaround time for low production runs. Using a finite set of backing-plates, we are able to quickly run through the production of parts. Having the outer boundaries stabilized with the backing plates, we then internally animate each form independently from one another. The machine employs a combination of stretch forming by drawing the sheet incrementally down, with a tool attached to Stäubli robot arm. This is said to produce a more even distribution of thickness of the material. This allows us to exploit the full potential of gradient changing patterns.

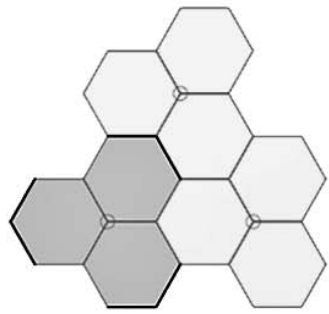




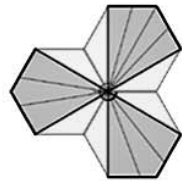


**Animated Tessellations 1.0**  
**Advisor:** Mark Newell Cabrinha  
**Design Team:** Emmanuel Osorno and Zahra Safaverdi  
**Year:** 2013-2014

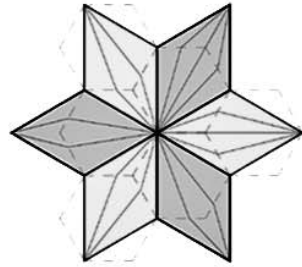
Animated Tessellations is a research project on FRP cladding systems, funded by Kreysler Associates, Gensler L.A., and Enclos. The research included the design of an algorithm for varied size apertures in response to a given spatial program and the fabrication of a full-scale prototype; results of which were displayed at the 2014 AIA convention in Chicago and featured at ACADIA 2014 in Los Angeles. Emerging from a simple hexagonal pattern, the aperture size changes in response to program, while creating an animated surface of light, shades, and apertures.



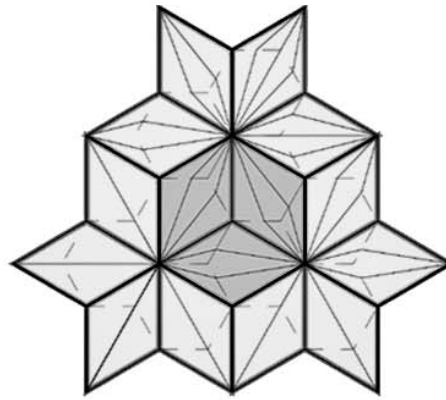
01\_Hexagonal Grid



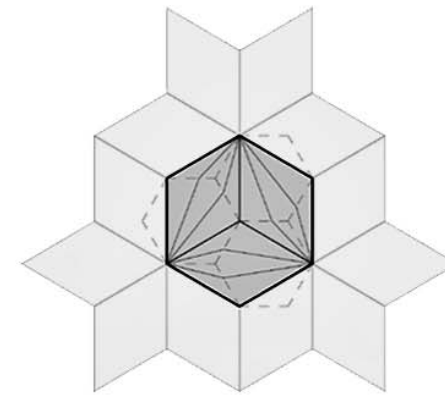
02\_Subdivision



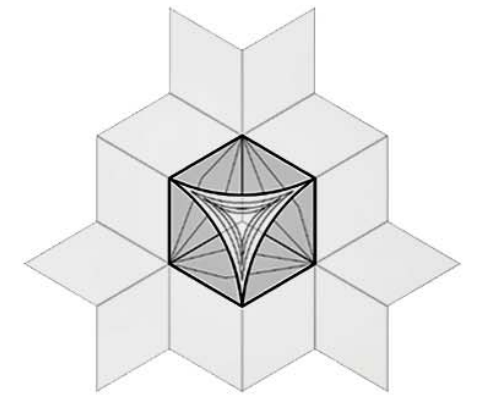
03\_Pattern Completion



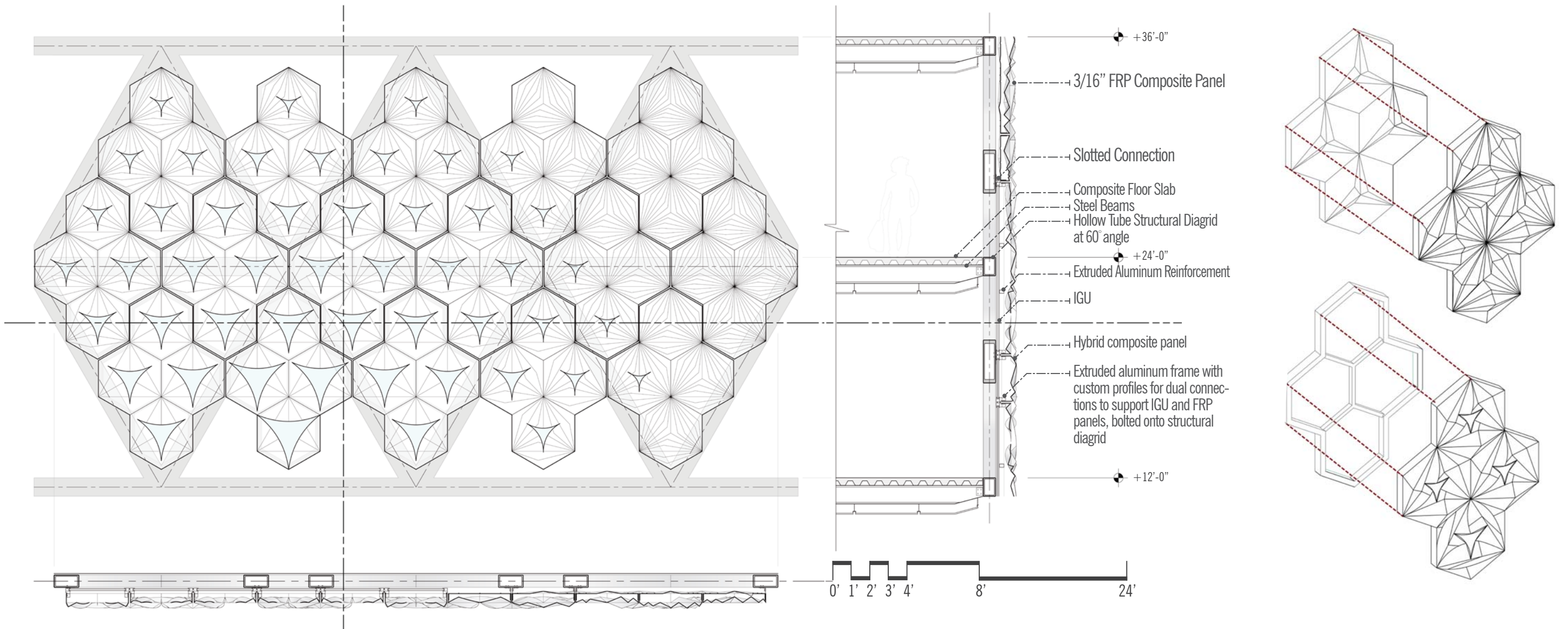
04\_New Grid



05\_Panel Geometry

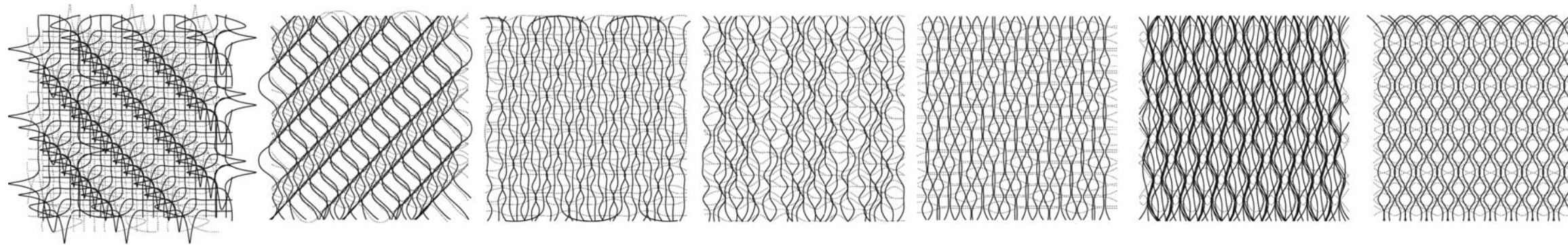


06\_Final Geometry



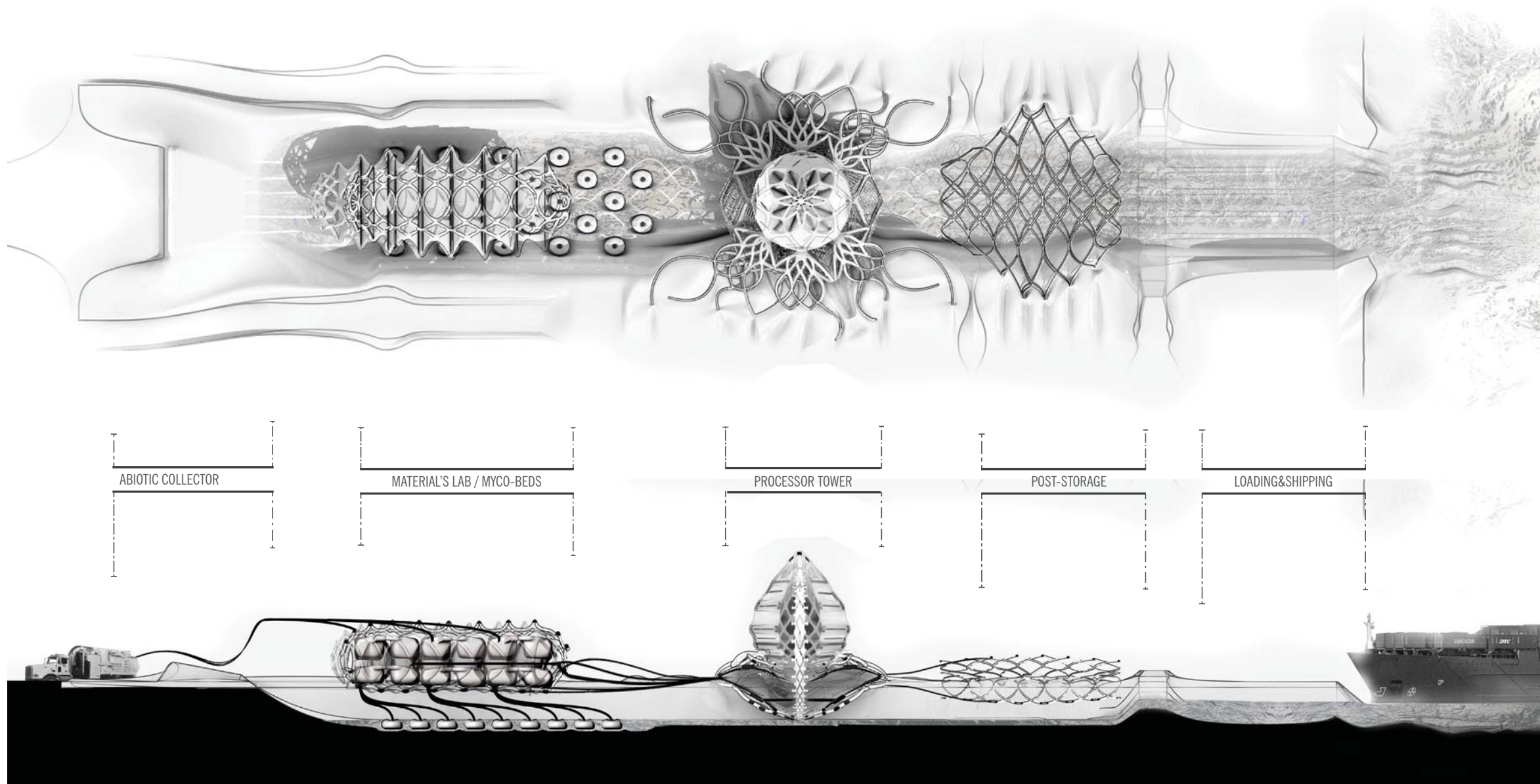


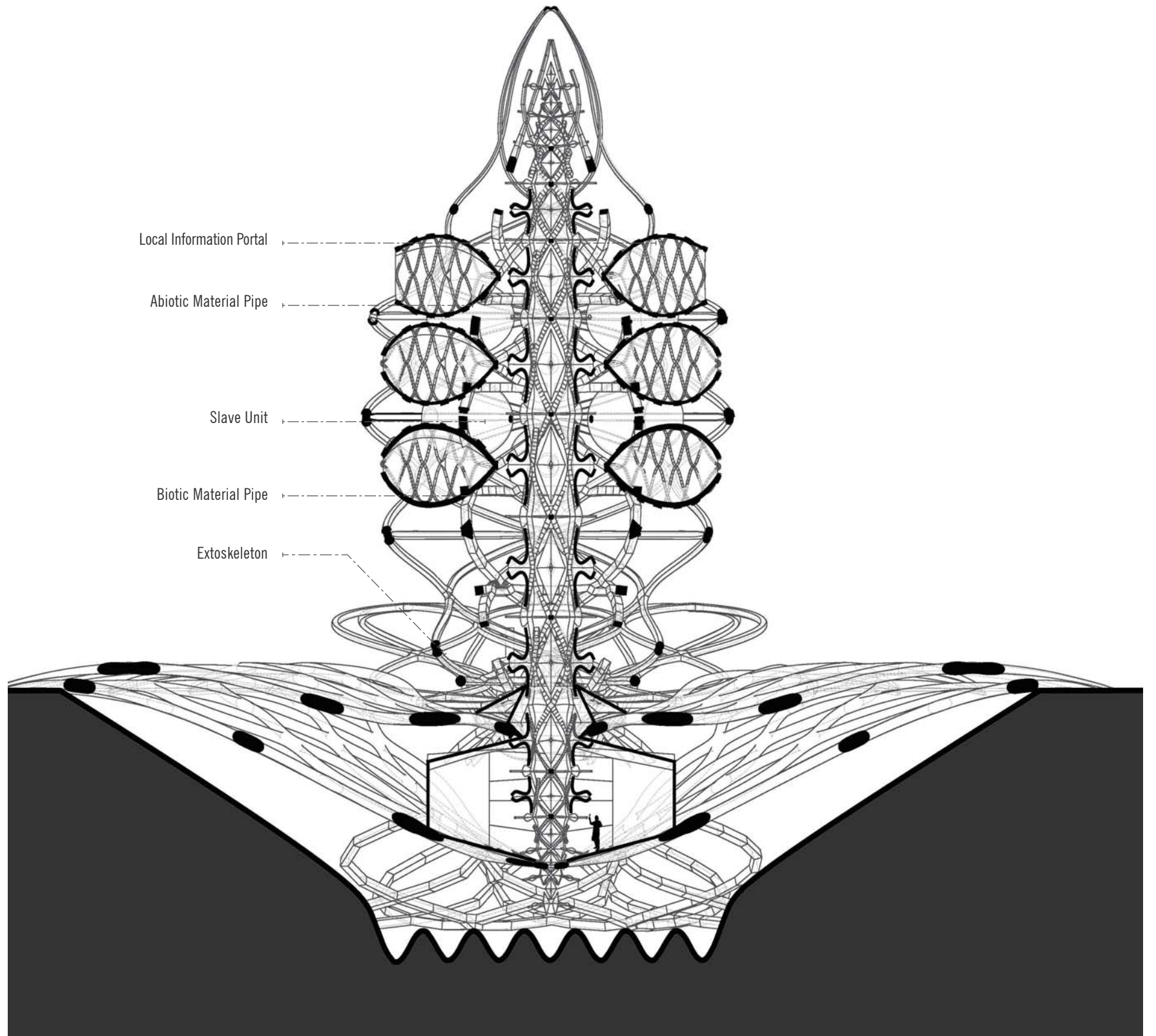
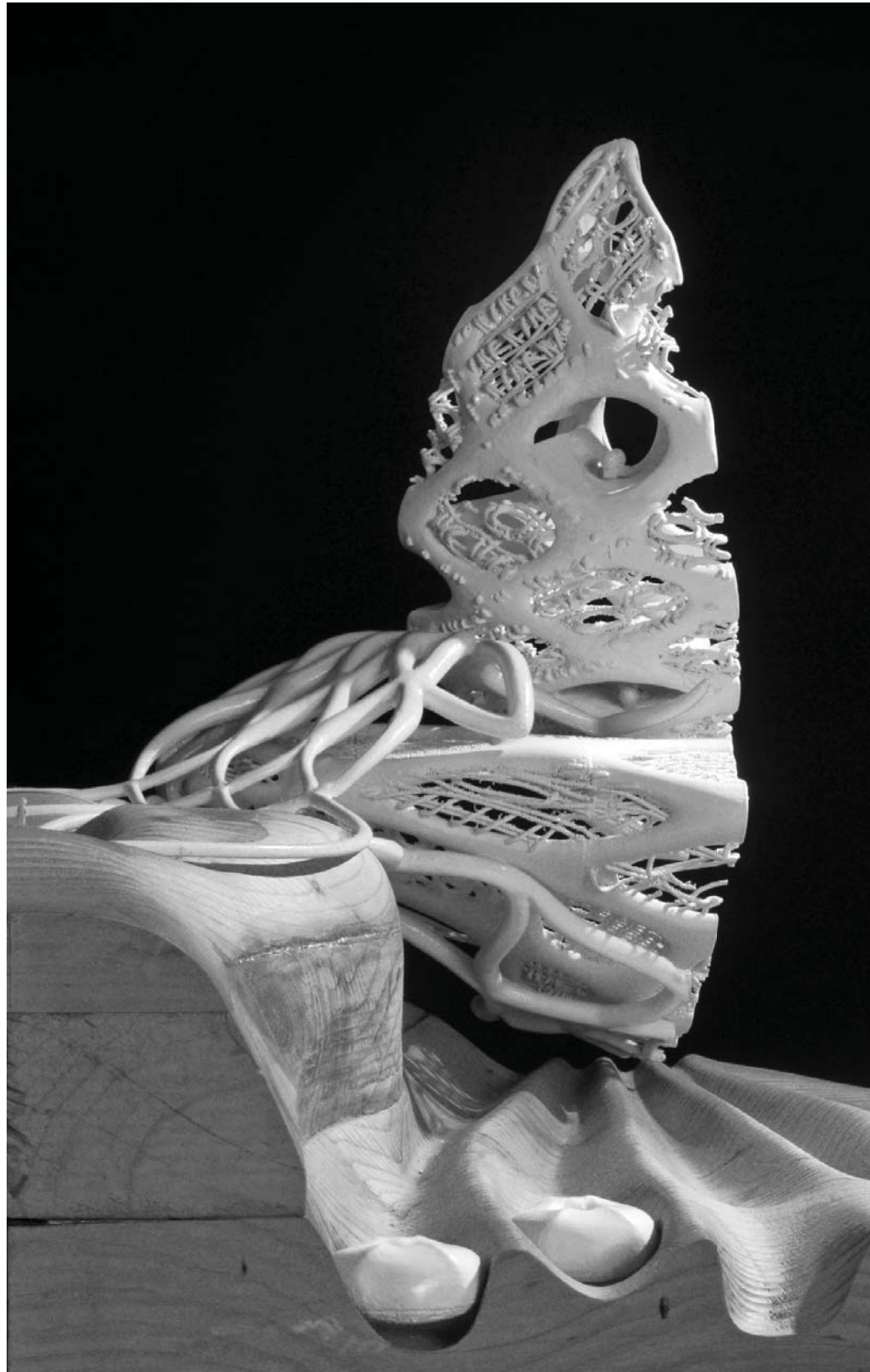


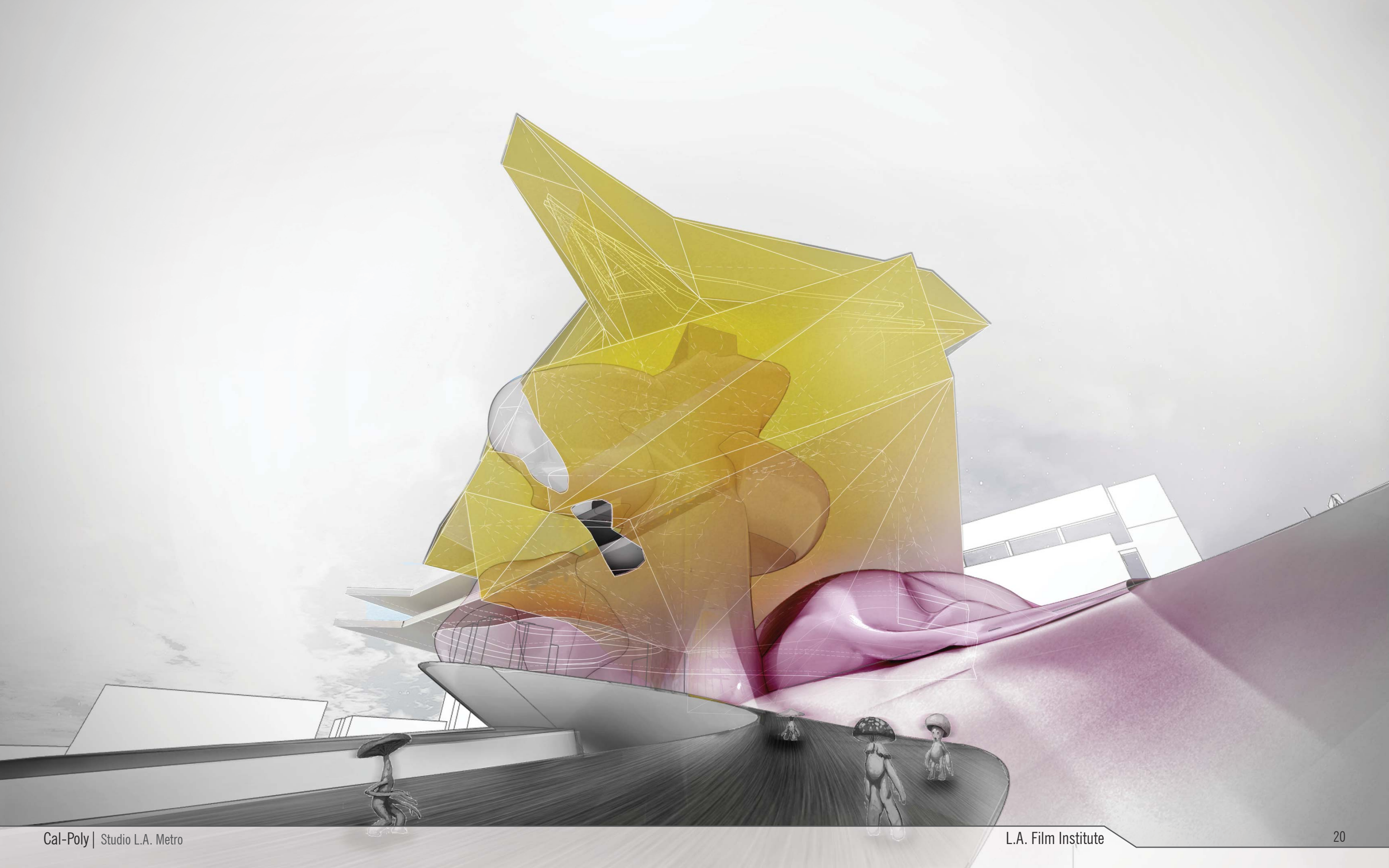


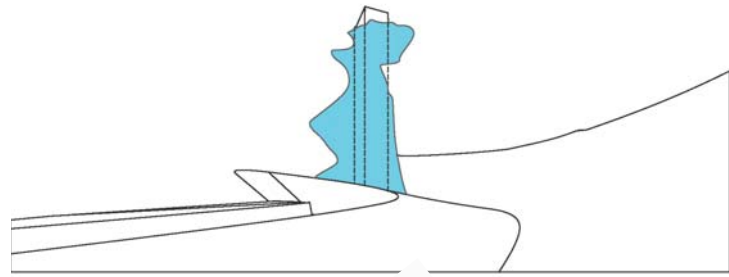
**Tekton Fluid:** A shift from Bio-Mimicry to Bio-Design  
**Advisor:** Karen Lange  
**Year:** 2013-2014

A designed ecology that progress simultaneously through digital and molecular computation. Current construction methods and materials are losing familiarity with the plasticity of the new architectural forms generated by constantly developing digital design tools and the algorithmic digital approach. In order to reunite the processes of design and construction, TektonFluid is envisioned as a construction system that translate bits into atoms through material deposition based on function, creating varied density composites with biotic and abiotic materials. Generators are the fabrication machine, with dual extruders that travel through snail-locomotion during fabrication. Initially fabricated composites are capable of adapting to the changing field-conditions through material computation and bio-computation, increasing the life-span of the design object while decreasing waste material. Maker's Factory is the first hypothesized application of TektonFluid. The factory is a place for fabrication for any designer working at any scale. It holds program spaces towards material production, design hub, fabrication units, and storage.

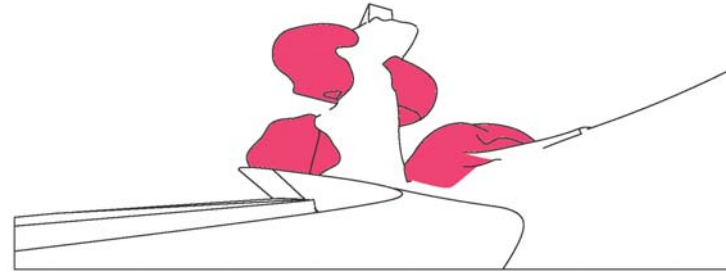




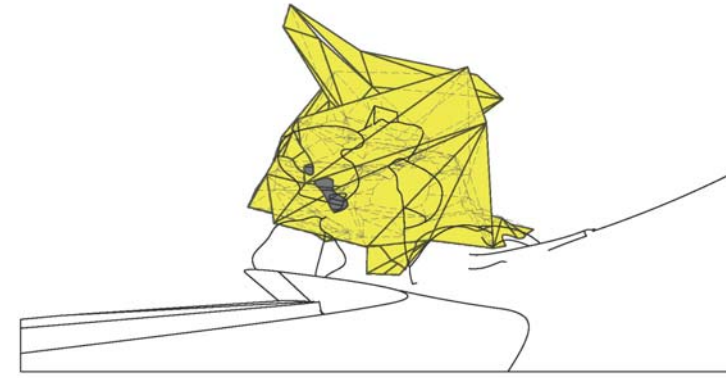




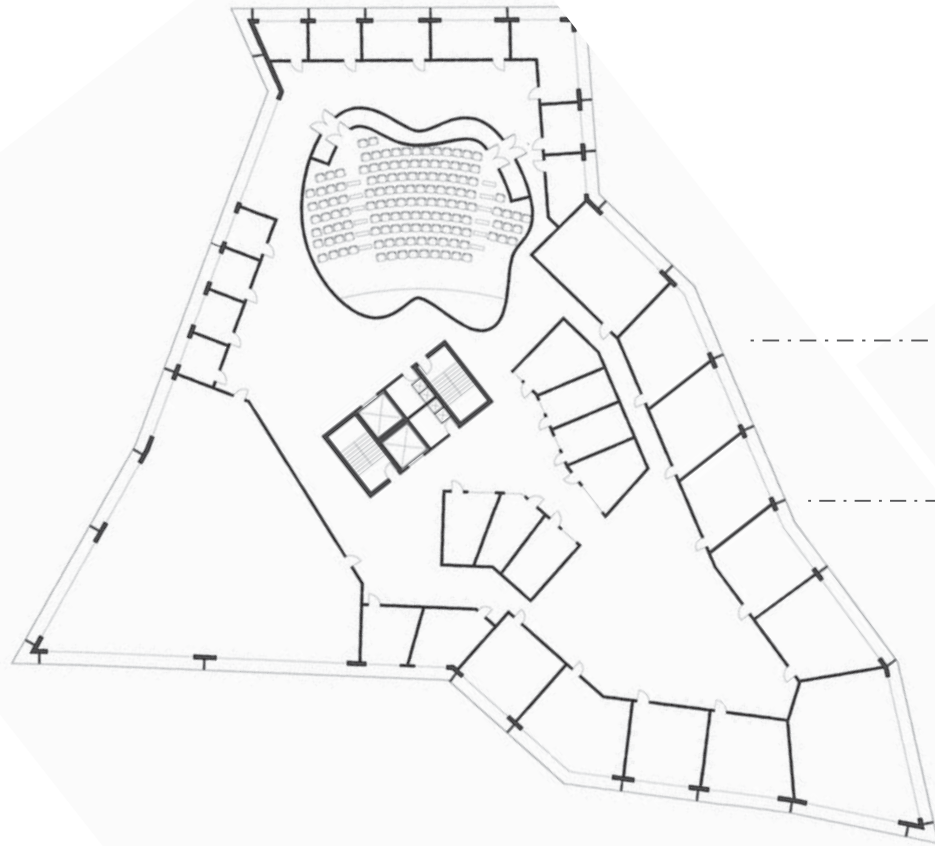
Core



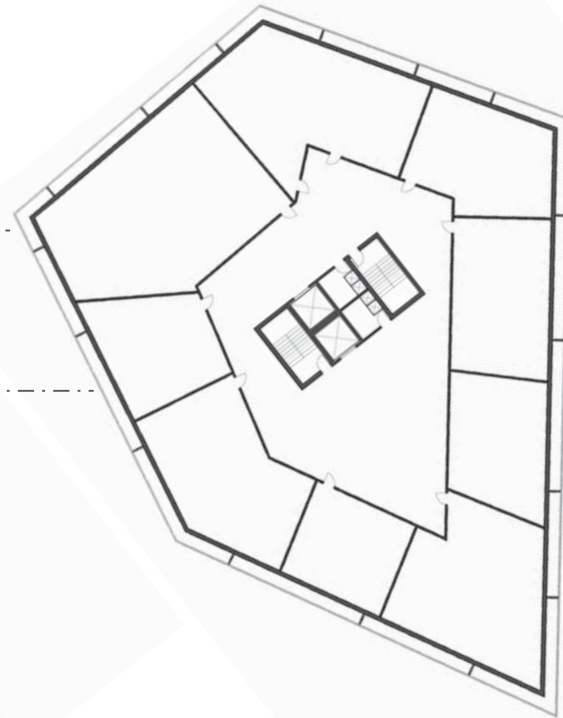
Social Spaces



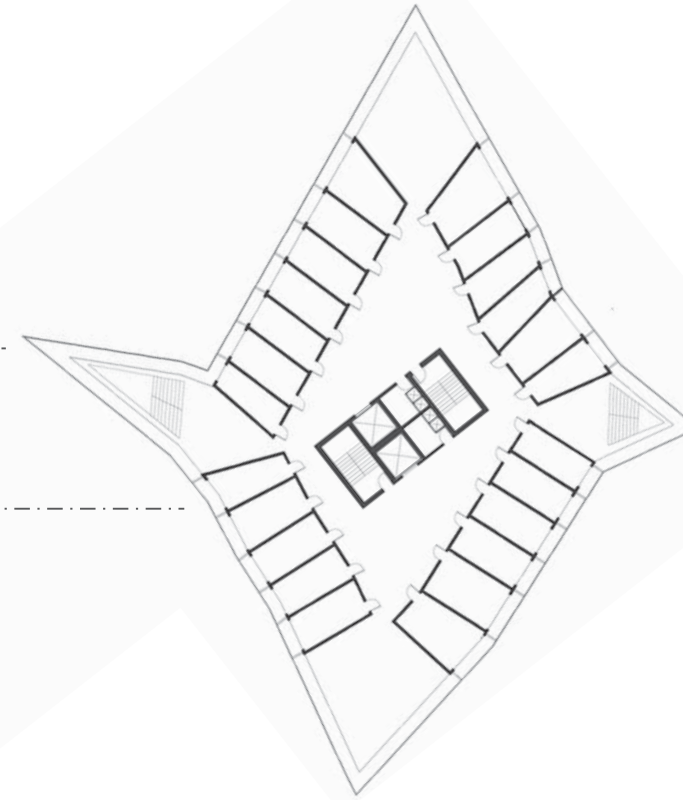
Operational Spaces



Podium Level: Performance Hall, Lobby, Cafe, Ticketing, Gallery



Transitional Levels: Offices, Classrooms, Labs



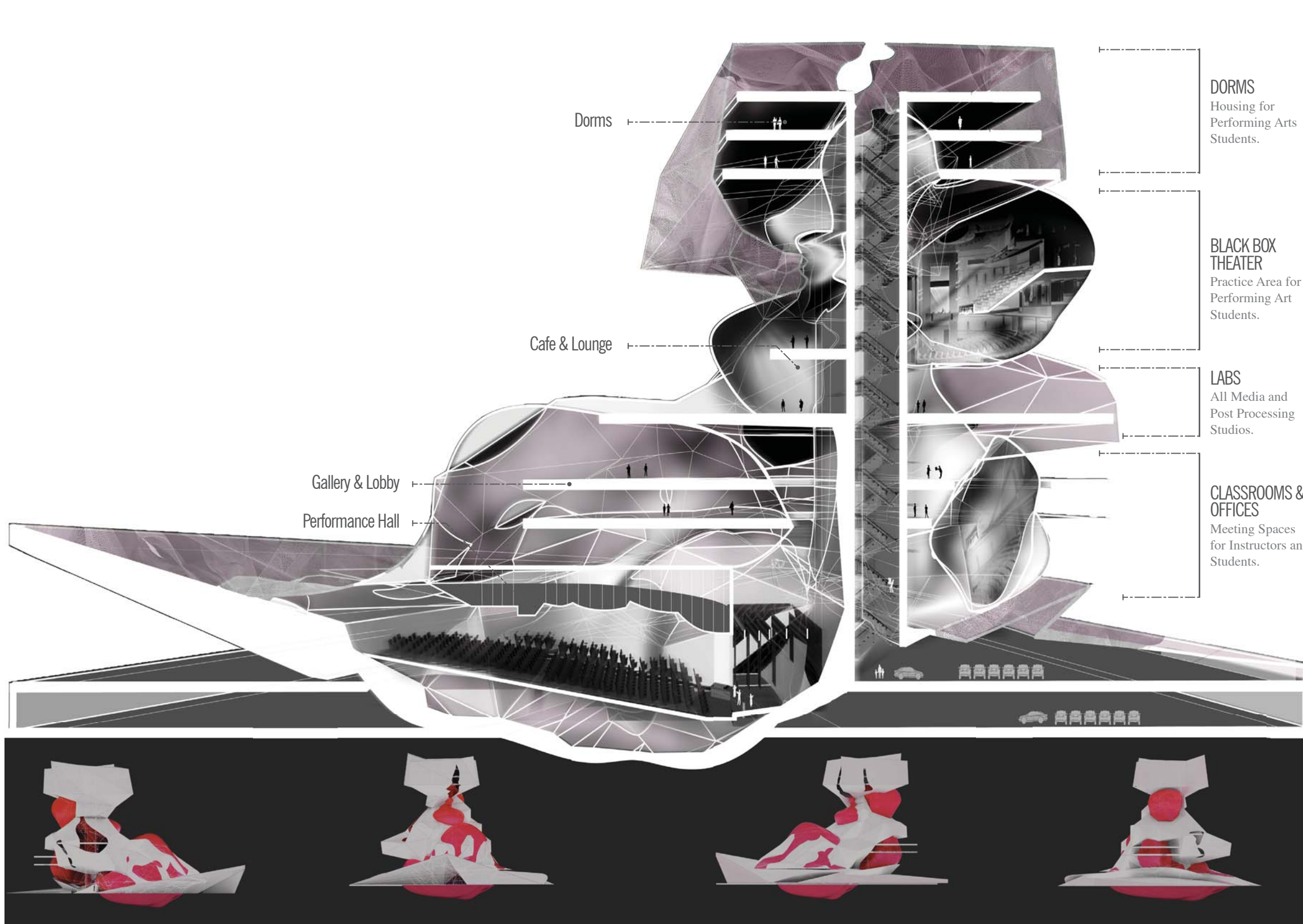
Tower Levels: Dormitory

L.A. Film Institute

Advisor: Stephen Phillips

Year: 2013

L.A. Film institute is a place where performing art students live, train, and connect with the public. Living areas are all located on the top floors to ensure the privacy of the students. Floors below the dorms contain classrooms and multi-media labs. The bottom 3 floors contain spaces that connect the performers with the public, including the main theatre, medium size theater, black boxes, cafeteria, and gallery at the entrance. Formalogically private spaces are studied through a facated language and public spaces are studied through a fluid language. The intersection of both languages form the meeting areas of public and private through a boolean operation.

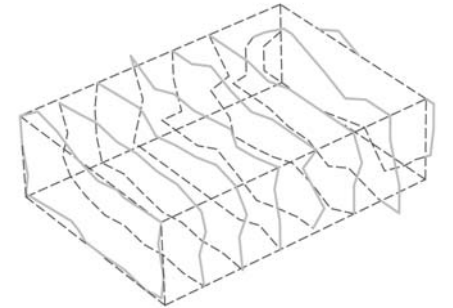
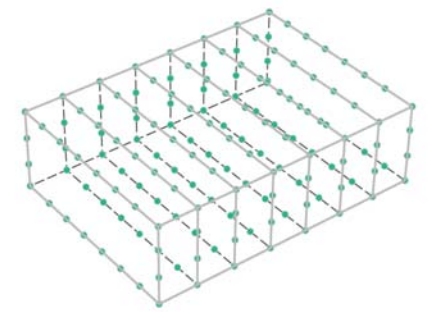
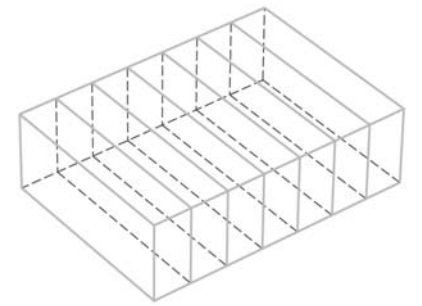


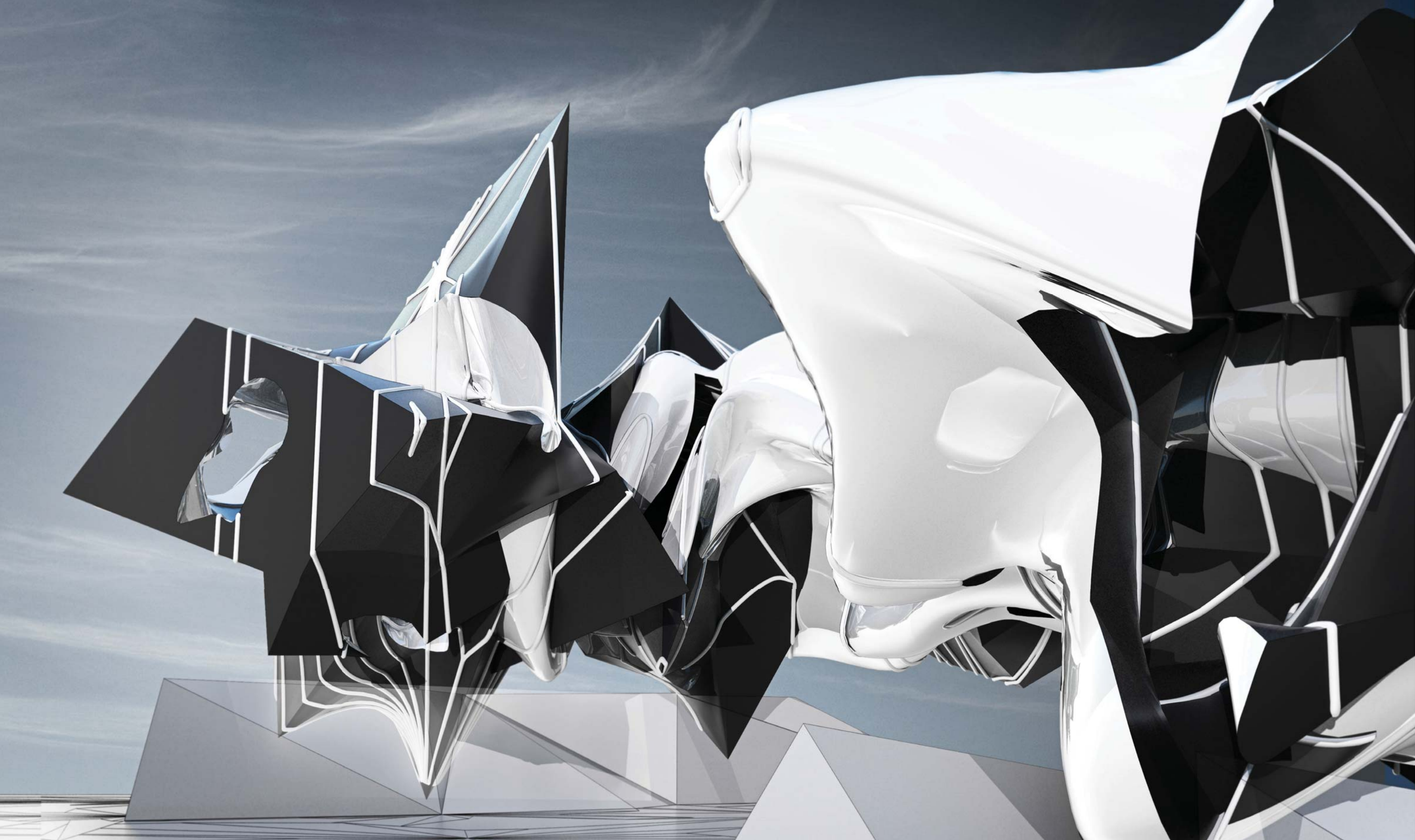
**DORMS**  
Housing for  
Performing Arts  
Students.

**BLACK BOX  
THEATER**  
Practice Area for  
Performing Art  
Students.

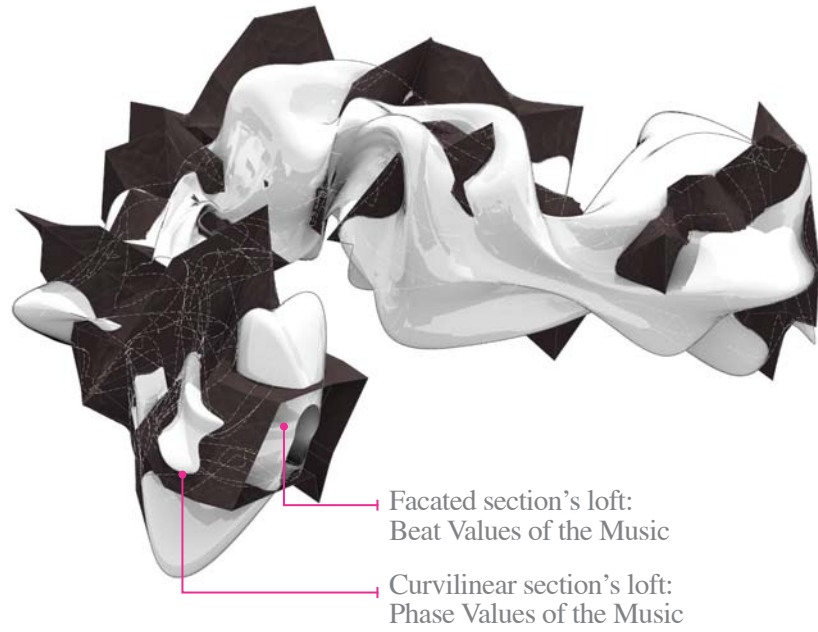
**LABS**  
All Media and  
Post Processing  
Studios.

**CLASSROOMS &  
OFFICES**  
Meeting Spaces  
for Instructors and  
Students.

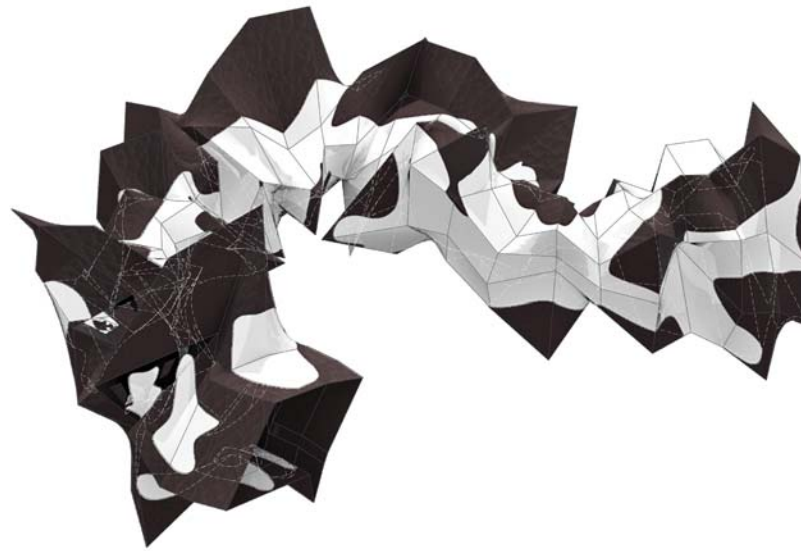




a. Lofted music values on a defined path



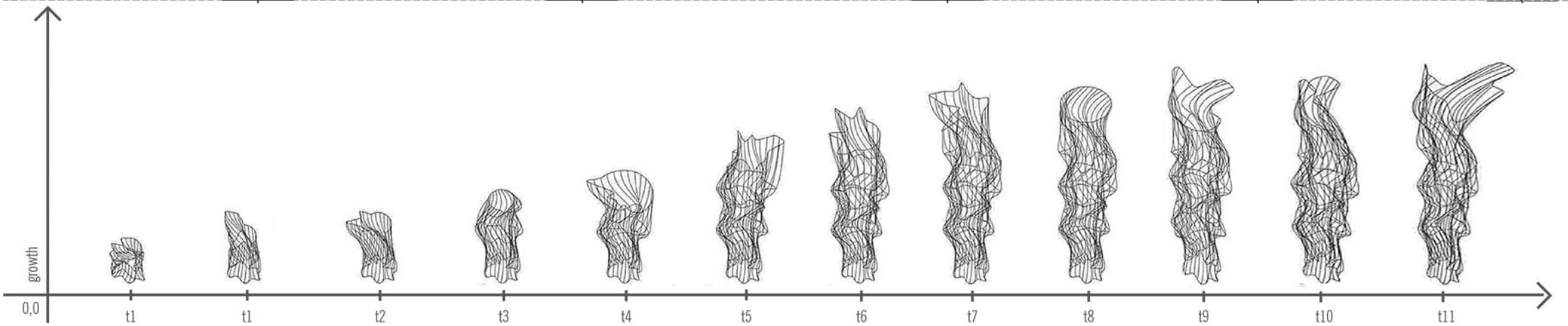
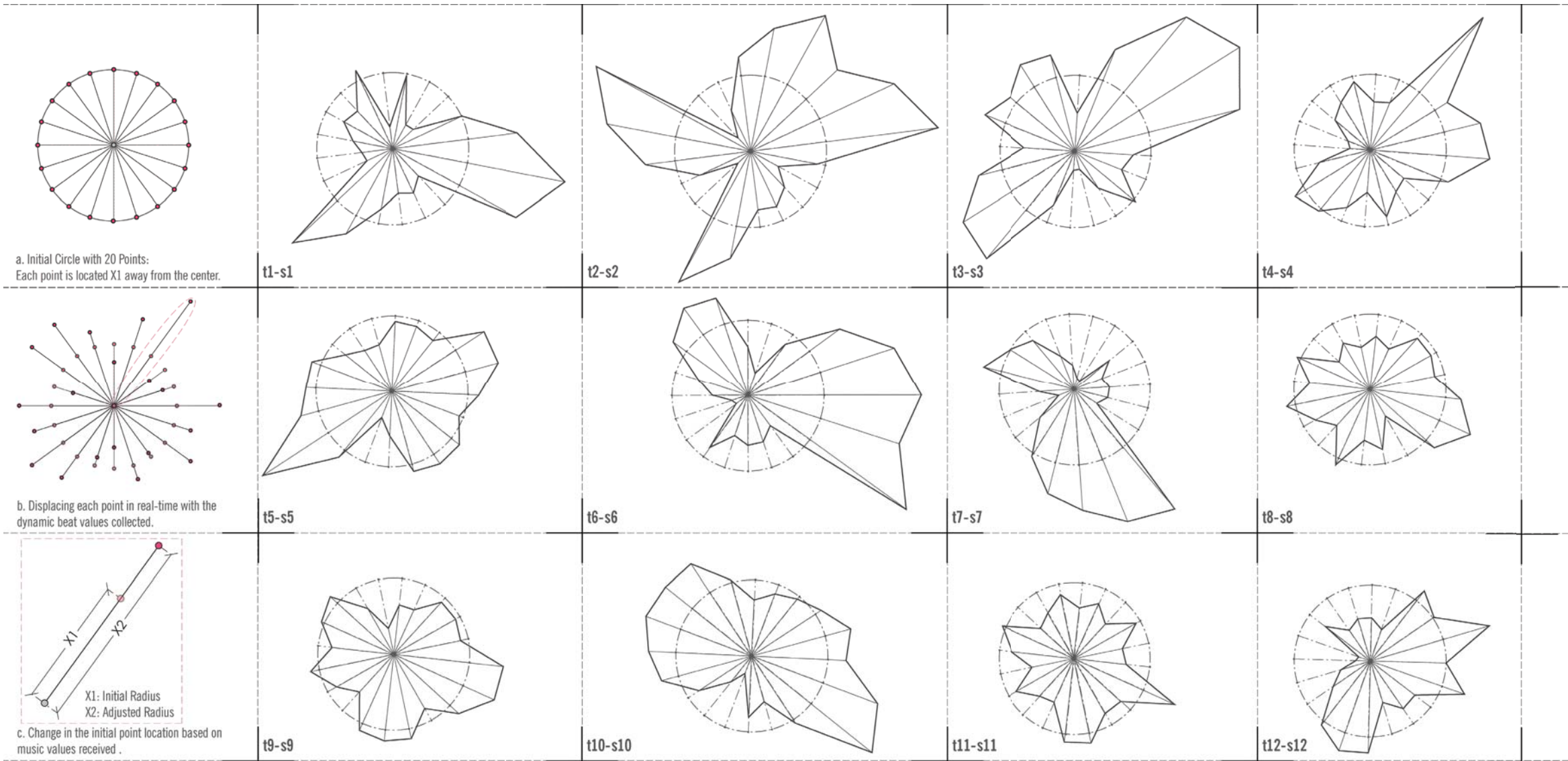
b. Intersection of curvilinear with facated forms

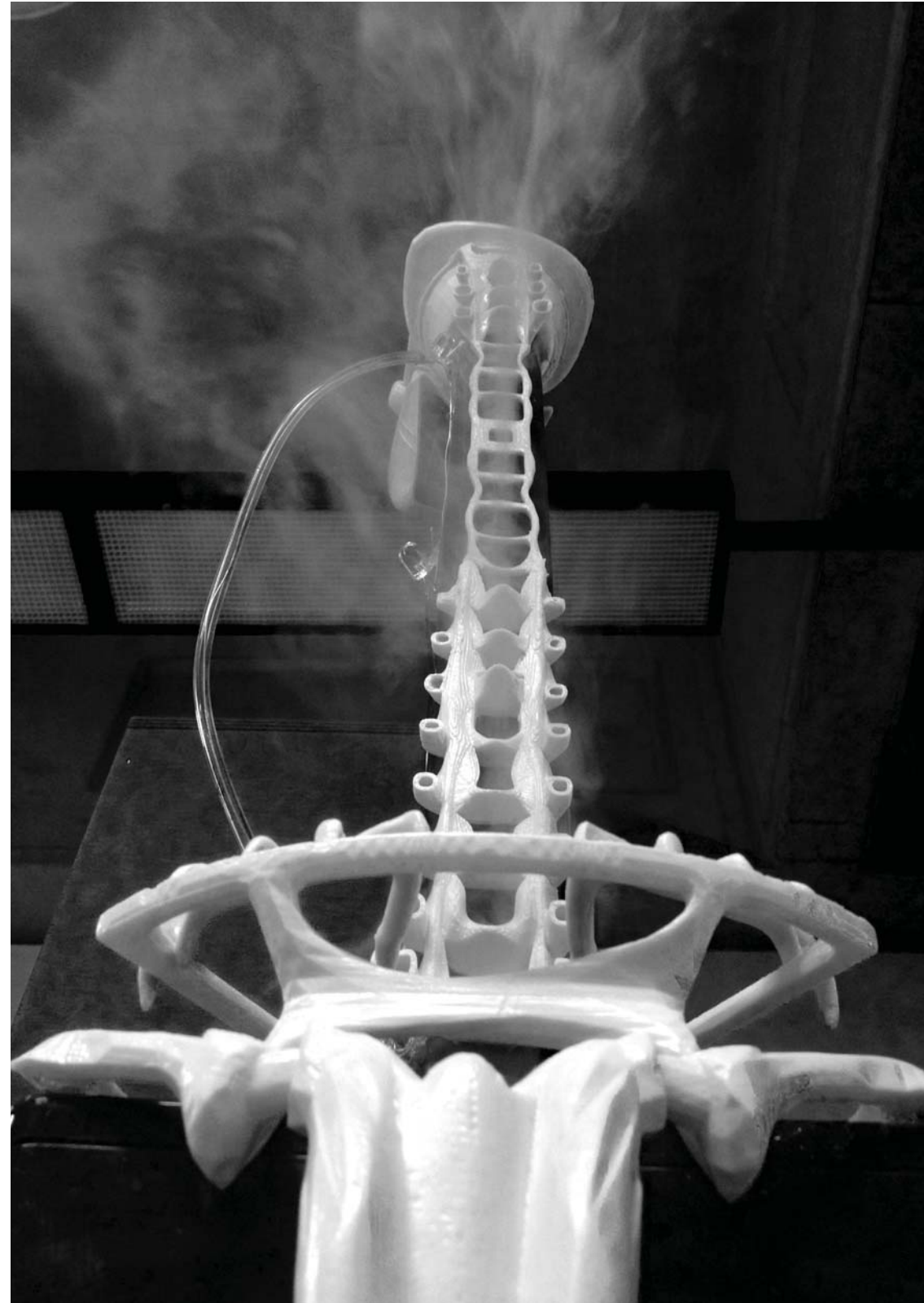
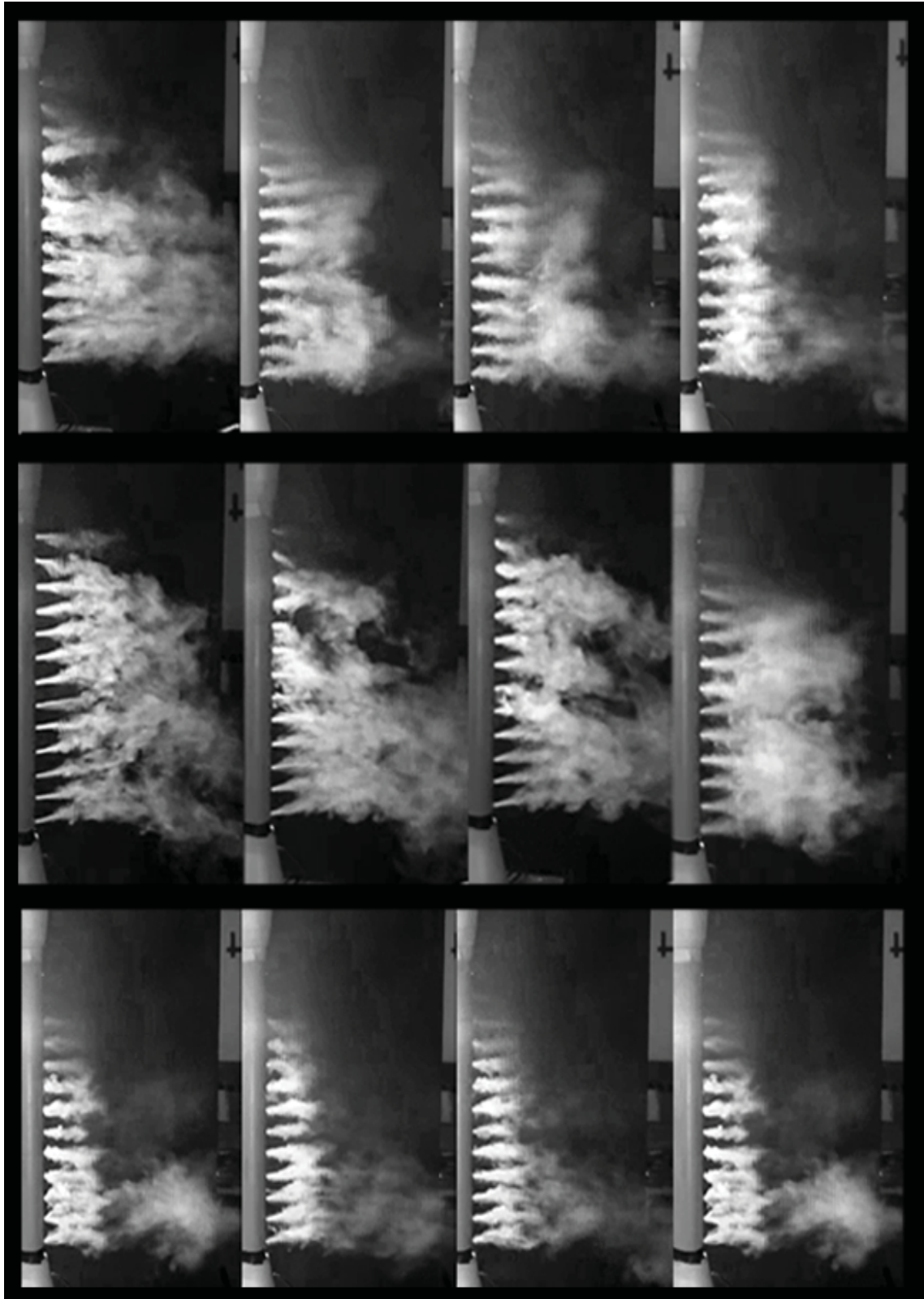


c. Intersection of facated with curvilinear forms



This is an exploration of form-finding through geometric reaction to received dynamic variables. The logic starts with a perfect circle that has 20 control vertices. Each vertex corresponds to a musical value that is extracted from a song. As the music plays each vertex is relocated relative to a musical value. Upon relocating 20 vertices that make up a reformed circle, the relocation of the next set of vertices start towards composing a sound pipe with reformed circles arrayed vertically. Various layers that make up the music values are collected under separate lists and used towards creating either a faceted or fluid geometry.





**Musical Cortex: A Formal Study of Music and Water**  
Advisor: Karen Lange  
Year: 2013-2014

This is an exploration of form-finding through molecular computation in response to real-time music data. When sound waves meet water vapor, linear aperture become an escape point for the water vapor. As sound waves travel back and forth in a PVC pipe, it forms constructive and destructive wave formations. Based on the wavelength of sound waves that change its form in response to translate music into a formal dance through vapor meets with sound waves.

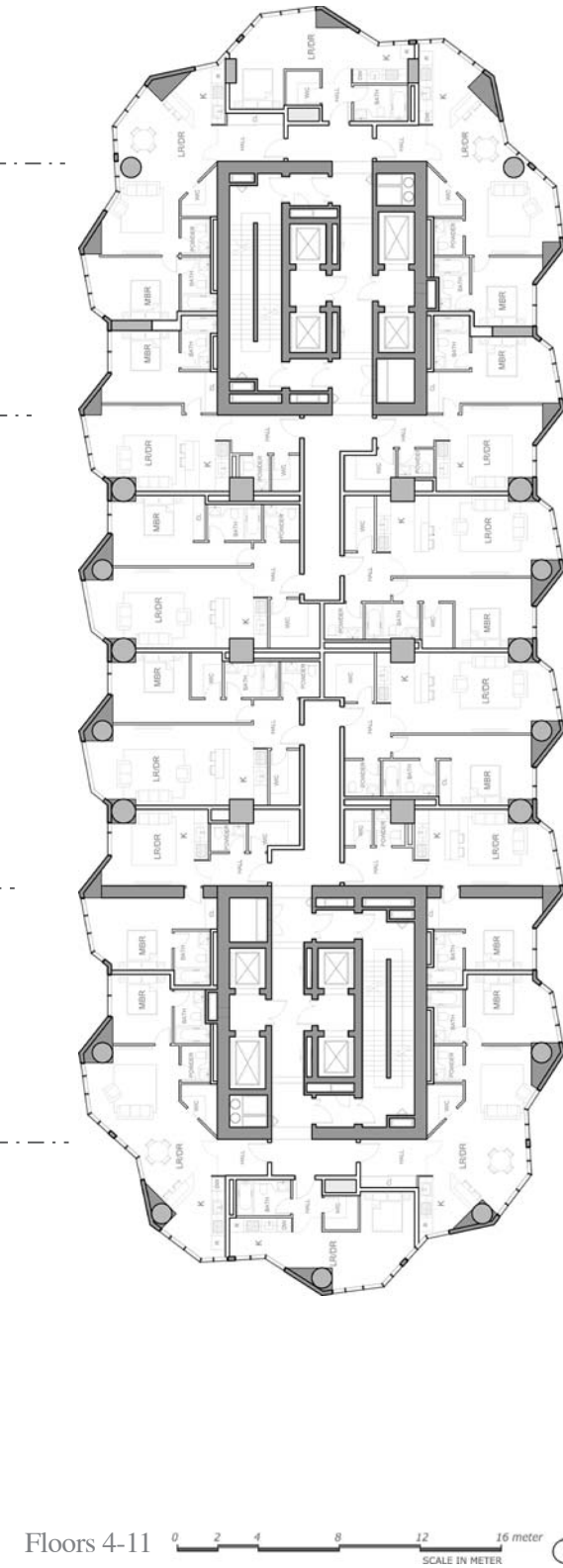
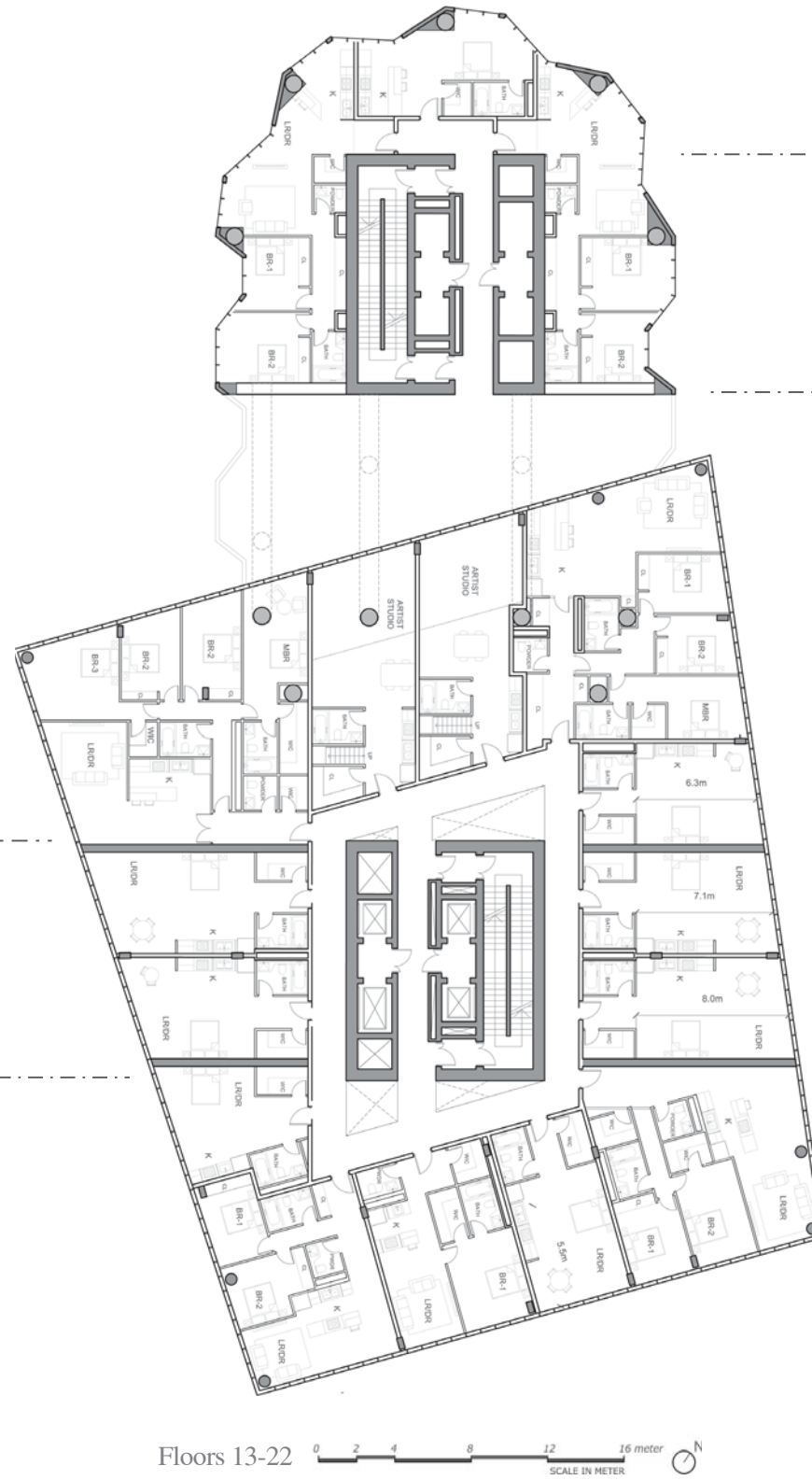
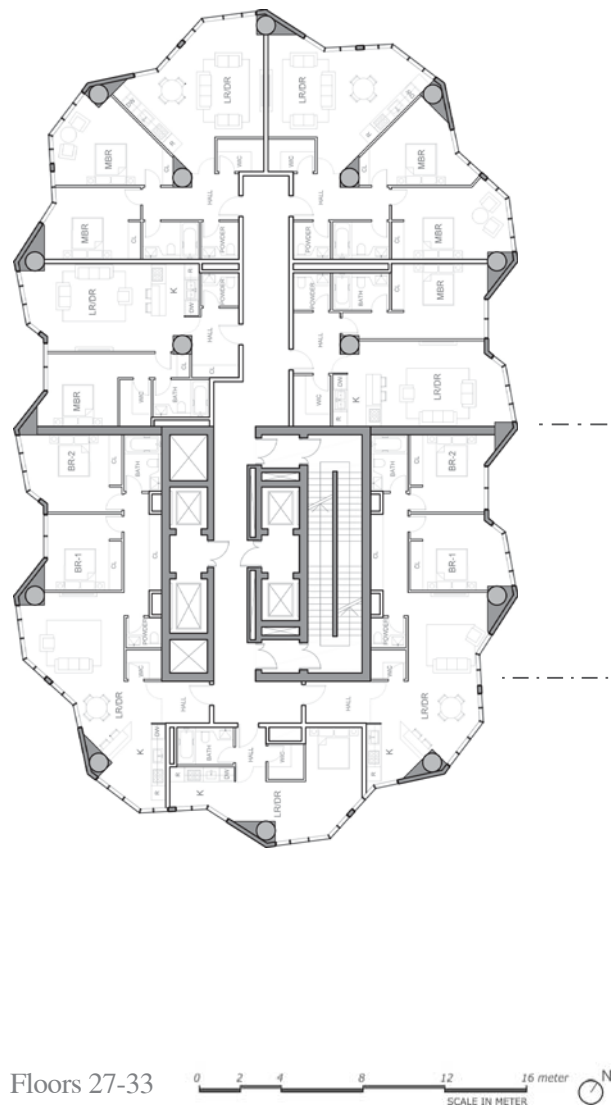


## ZIL Gateway Tower

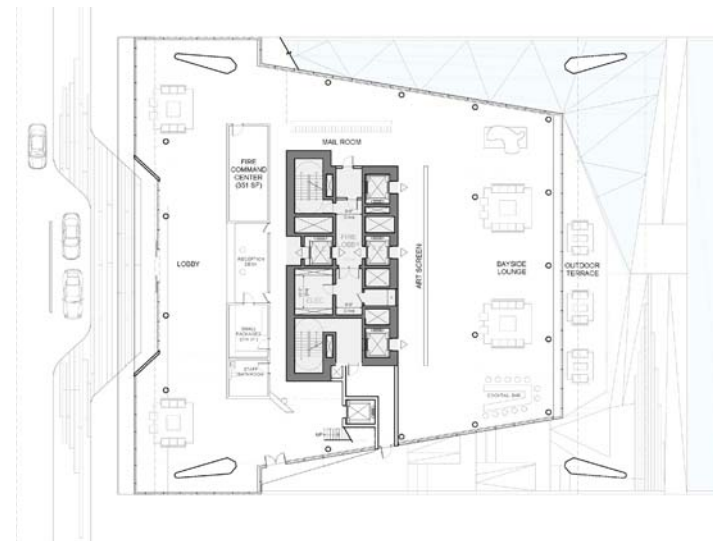
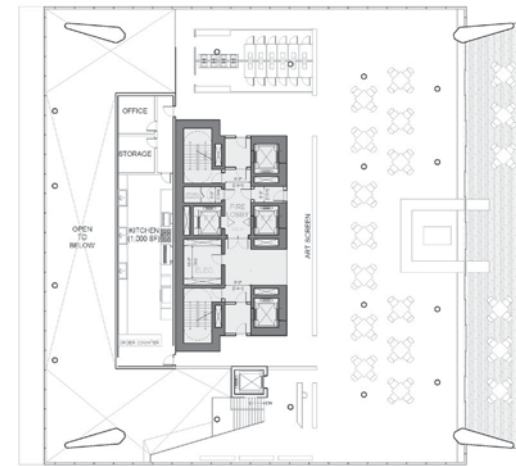
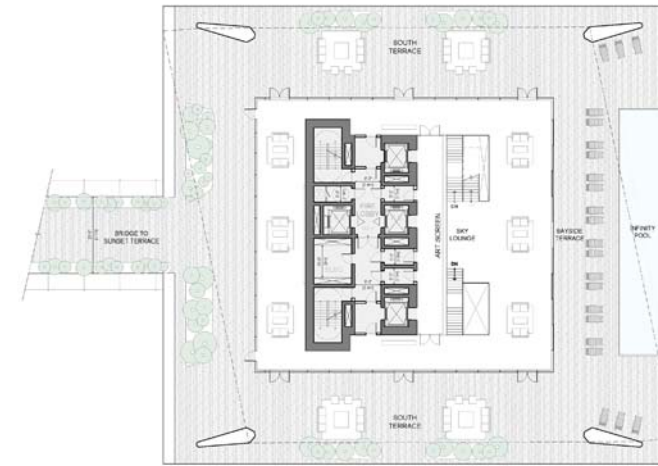
Location: Moscow, Russia

Status: Under Construction

ZIL Gateway Tower is a 150 m. tall residential tower that is part of a master plan of redeveloping the ZIL factory in Moscow, Russia. Below the tower there is a podium that holds office spaces, art galleries, and a residential lobby. Exploring into the Russian Constructivism in the modern world, programmatic massing is used to collage a coherent composition. The coherency of the massing is then further explored through the façade studies. Personal roles include unit layout of the cube, wall detailing in 2D/3D, and producing renderings/graphics for presentations.

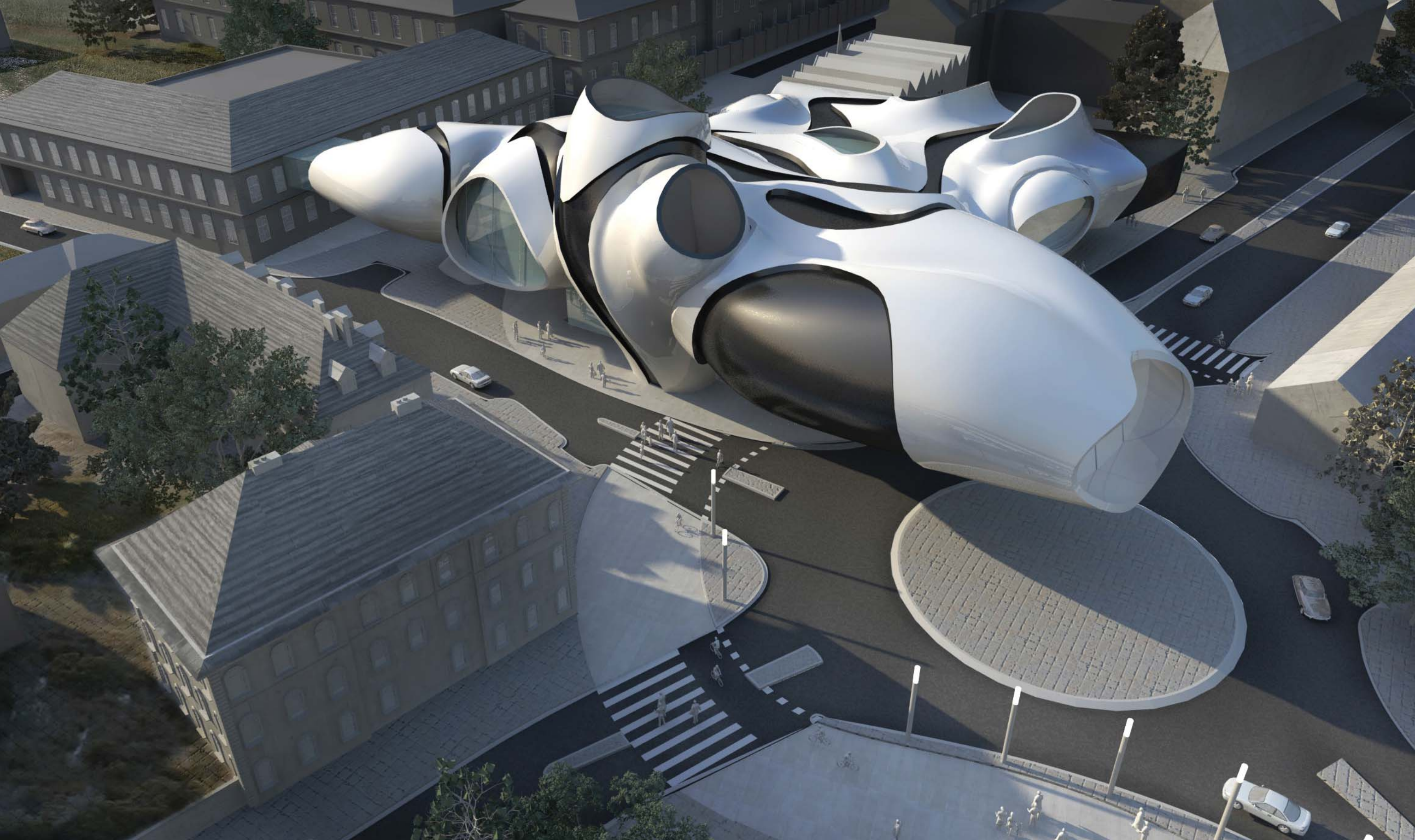


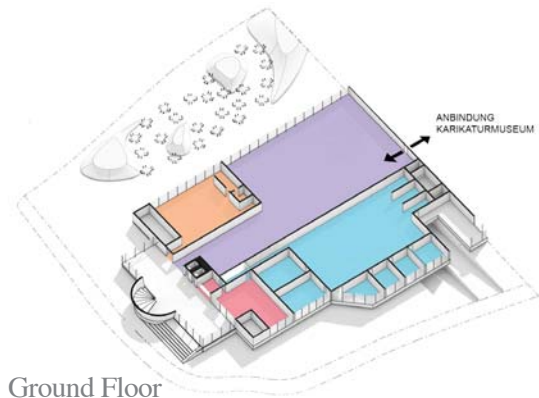




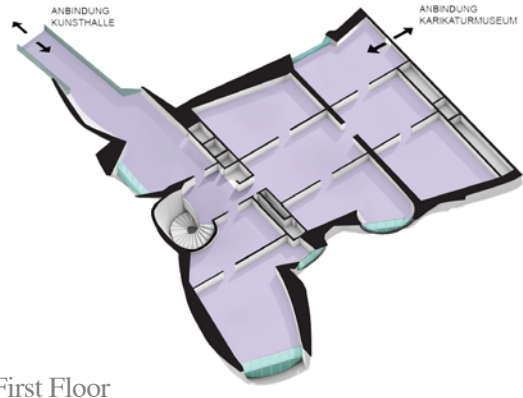
Miami EDGE Water Tower  
 Location: Miami, FL  
 Status: Under Construction

ZIL Gateway Tower is a 150 m. tall residential tower that is part of a master plan of redeveloping the ZIL factory in Moscow, Russia. Below the tower there is a podium that holds office spaces, art galleries, and a residential lobby. Exploring into the Russian Constructivism in the modern world, programmatic massing is used to collage a coherent composition. The coherency of the massing is then further explored through the façade studies. Personal roles include unit layout of the cube, wall detailing in 2D/3D, and producing renderings/graphics for presentations.





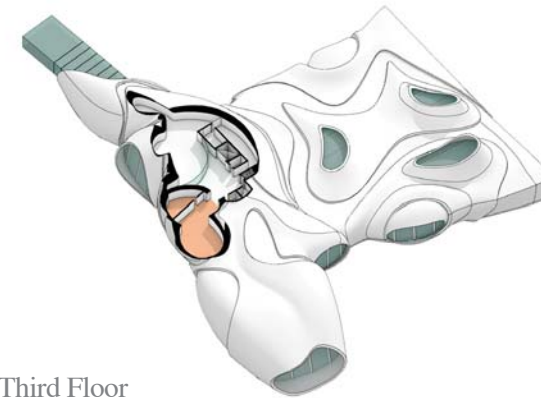
Ground Floor



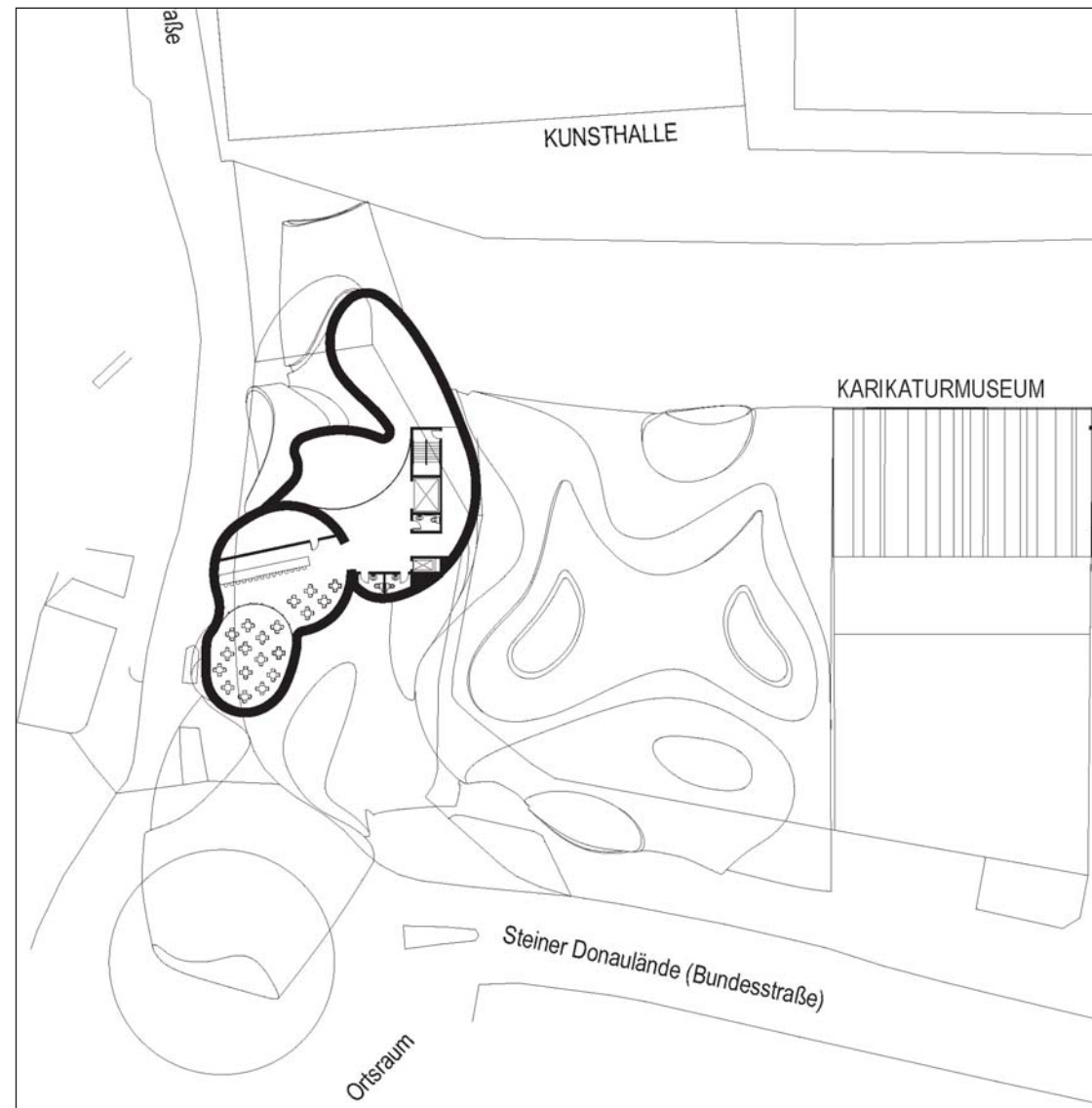
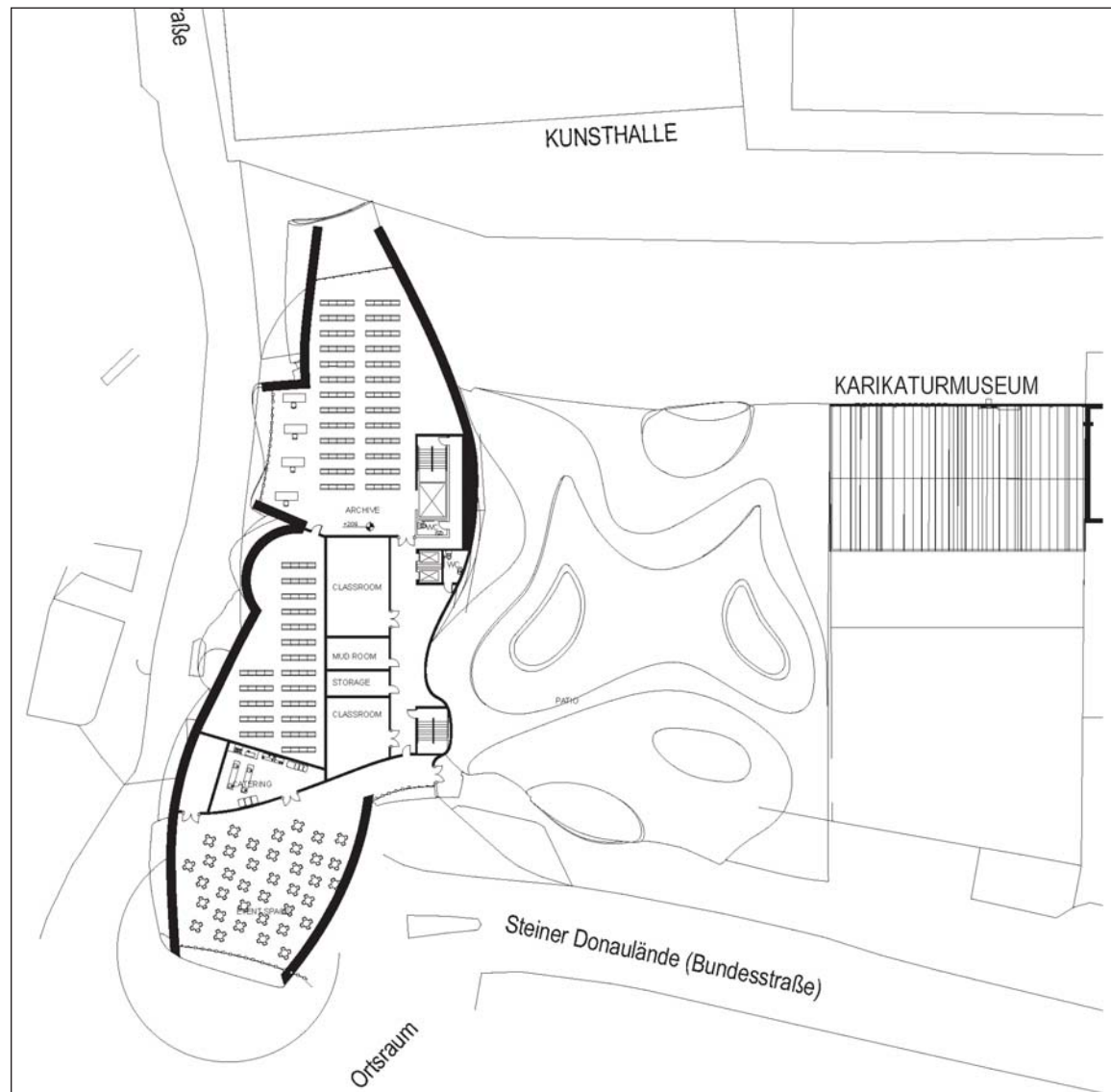
First Floor



Second Floor



Third Floor



**Galerie Niederoesterreich Krems**

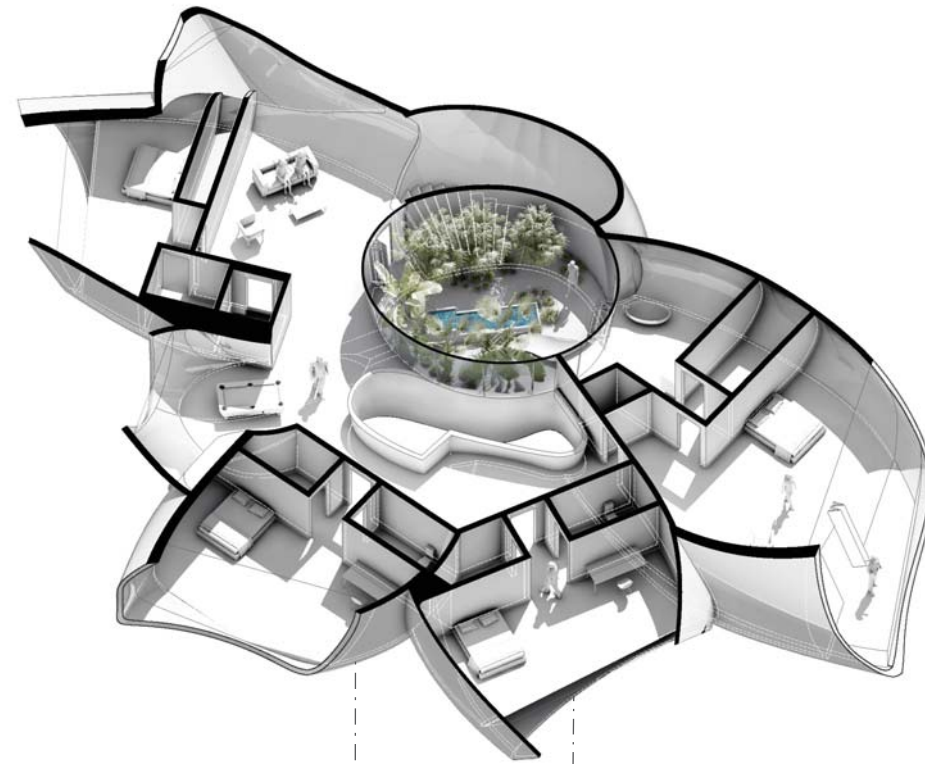
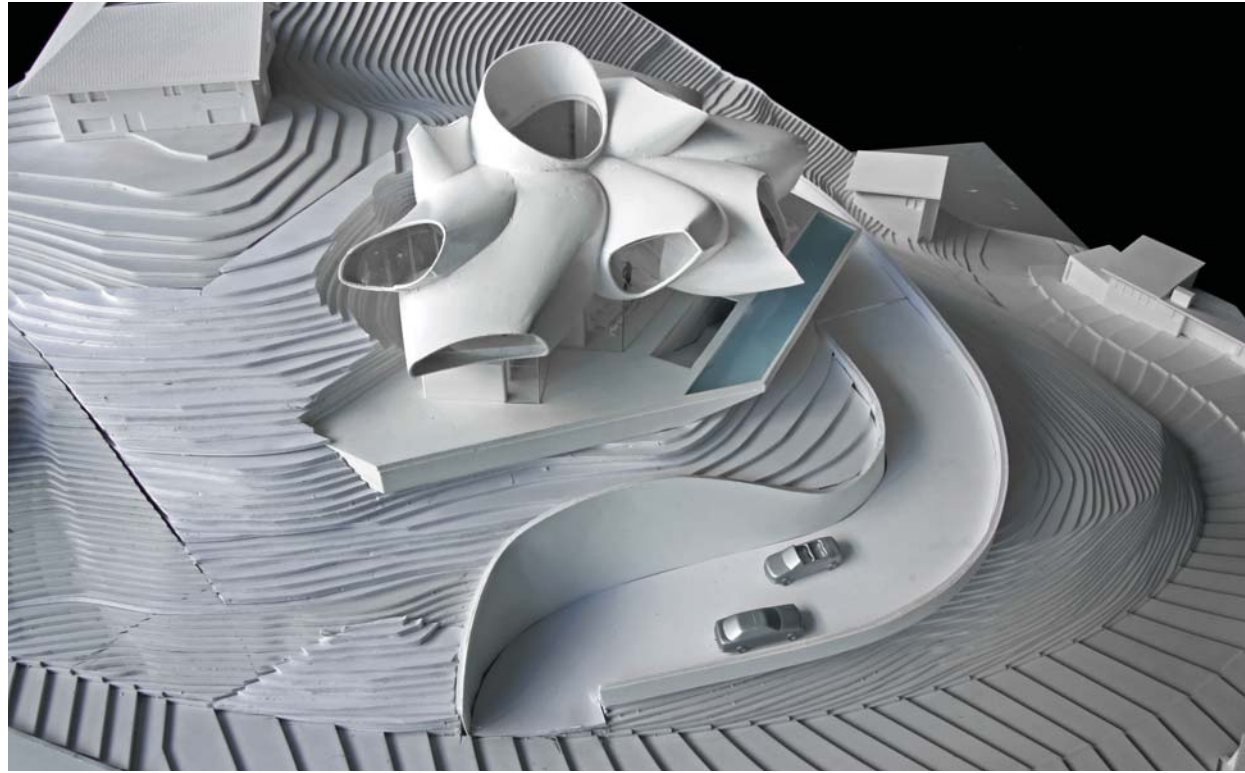
Location: Krems, Austria

Design Team: Herwig Baumgartner, Scott Uriu, Aaron Ryan

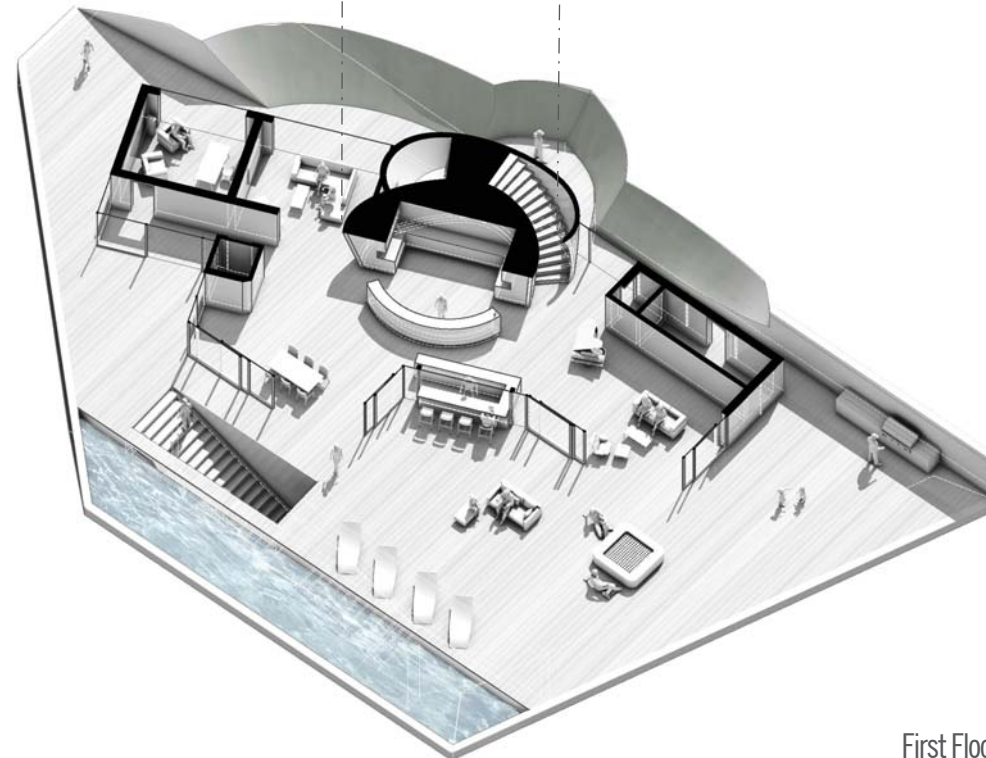
Year: Competition

Galerie Niederoesterreich Krems is a 30 m. tall museum that connects two of the existing museums adjacent to the site in Krems, Austria. Designed as a landmark that connects visitors to the city and the adjacent museums. Simultaneously responding to intrinsic and extrinsic connections, programmatic massing is used as a basis to collage apertures at varied sizes. The Cannon is the largest aperture that connects the city to Kunsthal museum on the adjacent site. The Light-Well is the second largest aperture that becomes a vertical connection that takes visitors to the Cannon, the Cube, and the adjacent museums. The Cube is holds permanent and temporary galleries. The apertures on the cube is designed in response specific lighting needs of the galleries. Personal roles include leading design work through 3D-modeling, producing renderings, graphics, and a physical model for the presentation.





Second Floor

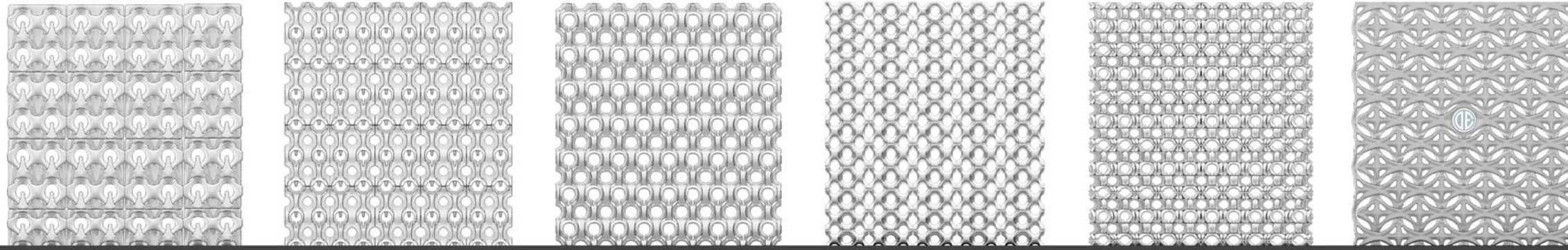


First Floor

**Kondrck Residence**  
 Location: Hollywood, CA  
 Status: Under Construction

Kondrck Residence is a 2-Story single-family house on the hills of Hollywood, Los Angeles. The site has 360 views of Los Angeles skyline. The modernist idea of an open floor plan/ribbon windows is further explored through designing directional masses with site specific apertures in response to light and views. First floor of the residence is an open floor plan that acts as the pedestal for the massing on the second floor. The open floor plan and ribbon windows on the first floor creates the illusion of a floating object up in Hollywood hills. Also, the large tubular forms on the second floor acts as an overhang for the first floor. Personal roles include leading design work through 3D-modeling, programming, producing renderings, graphics, and a physical models for the client meetings.

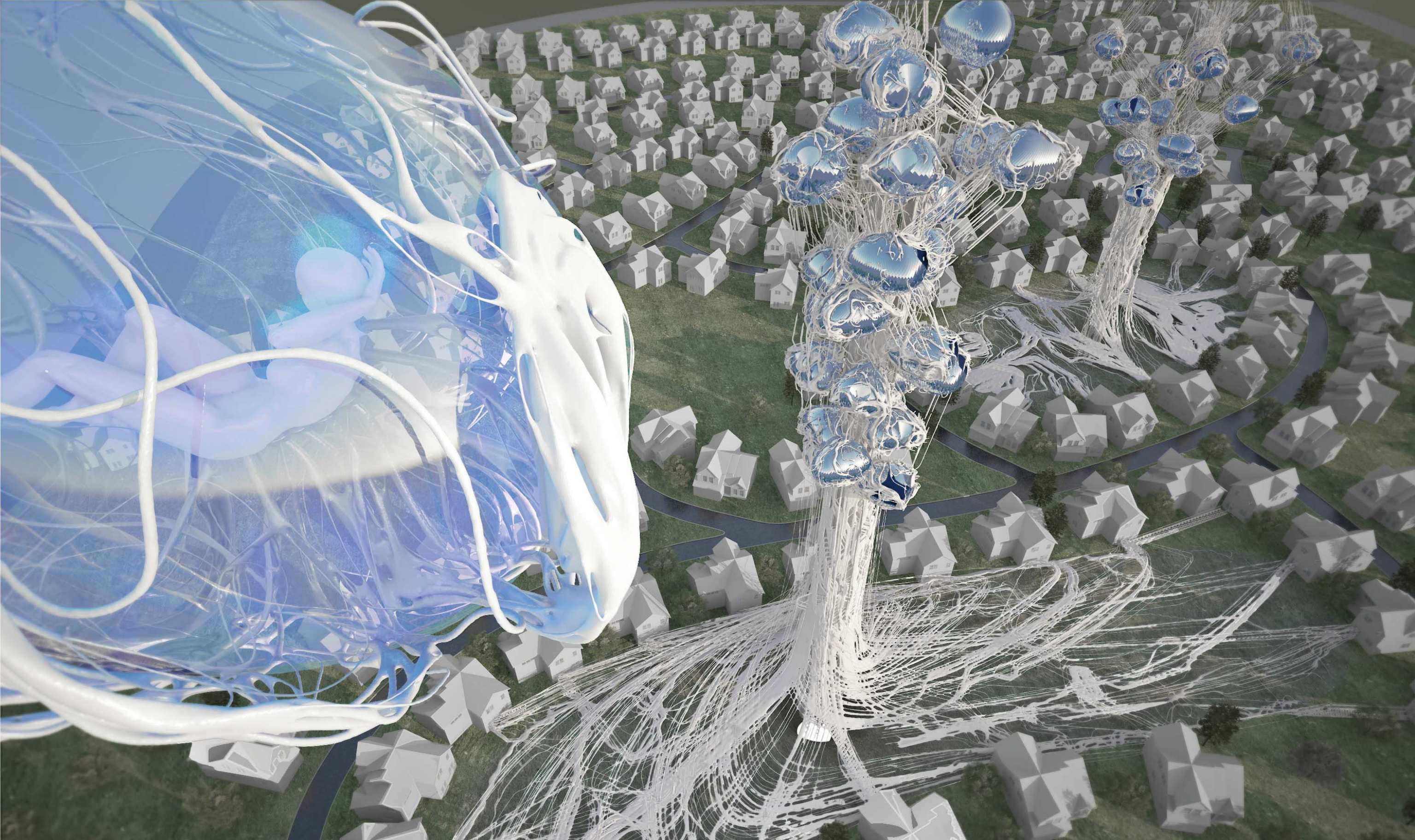




**Douglas Elliman HQ**  
 Location: Los Angeles, CA  
 Status: Under Construction

California Headquarters of Douglas Elliman Real Estate and Development is a 11,000 sq. ft. office project. The program holds office spaces through an open floor plan, emphasizing the connected community. While designing functional spaces, the sculptural staircase and the entrance wall will become architectural elements towards reflecting the national identity of Douglas Elliman. Personal roles include designing a series of screens based on the logo of Douglas Elliman and producing renderings/graphics for presentations. It holds program spaces towards material production, design hub, fabrication units, and storage.





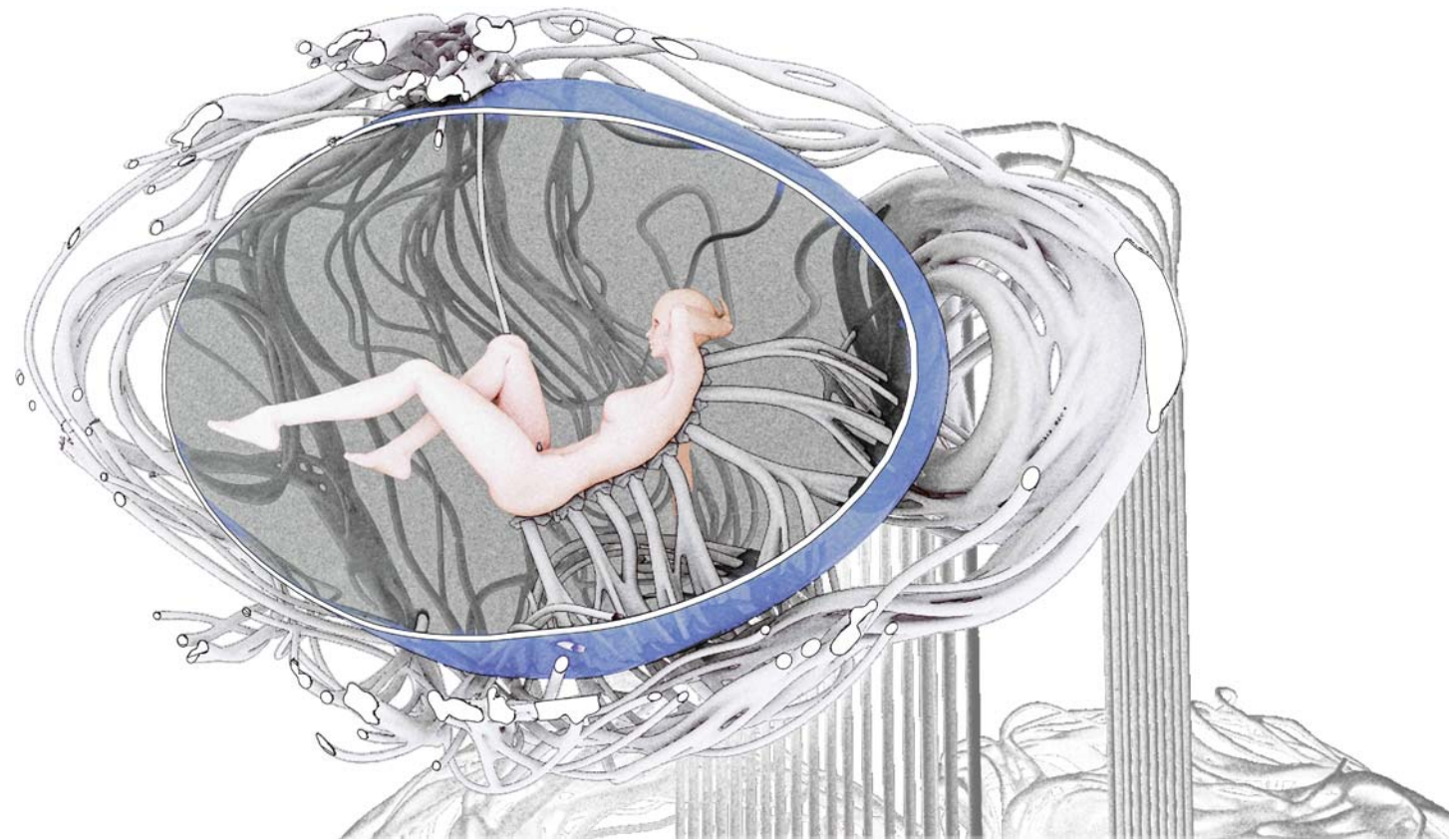
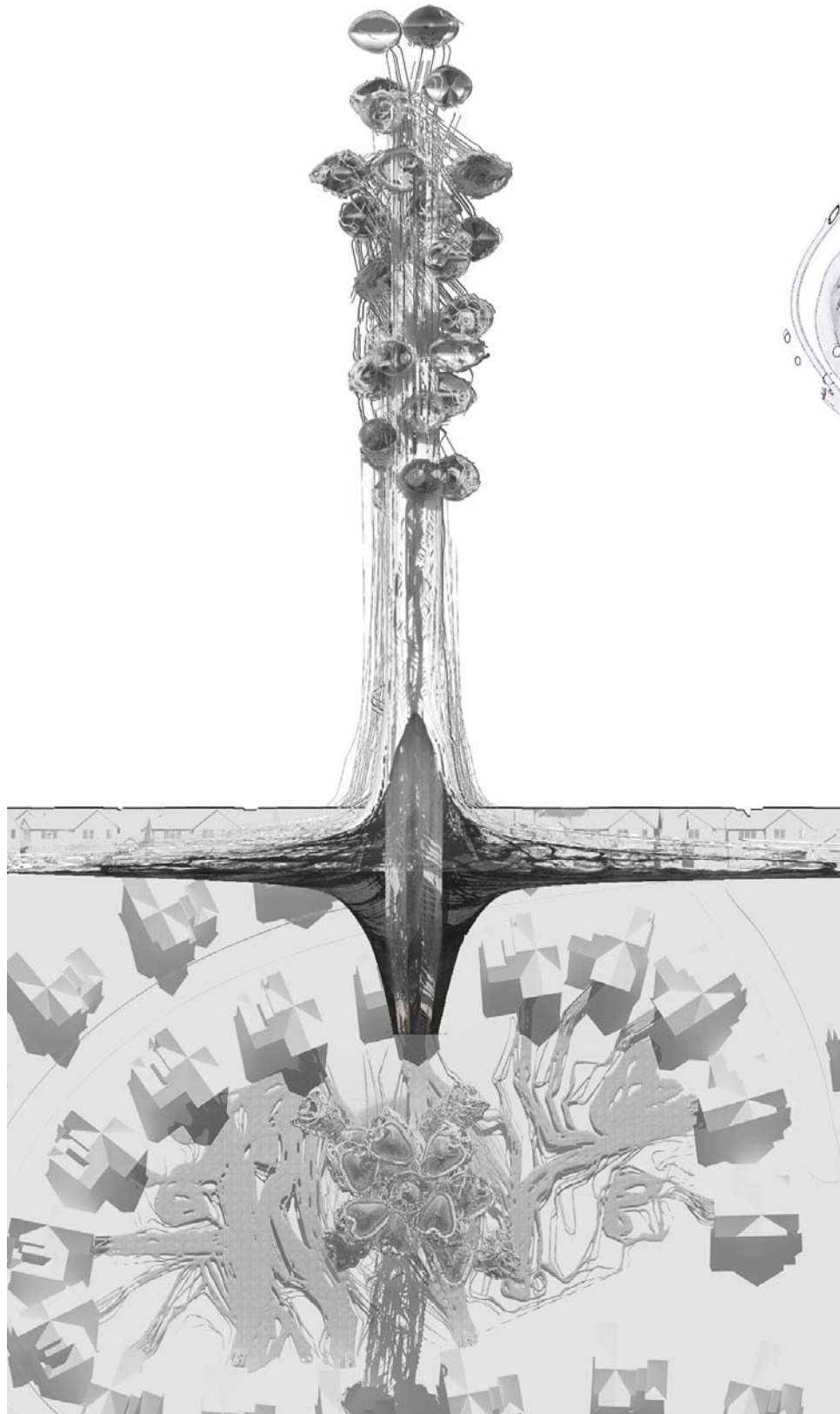
## Death by Virtual Intimacy

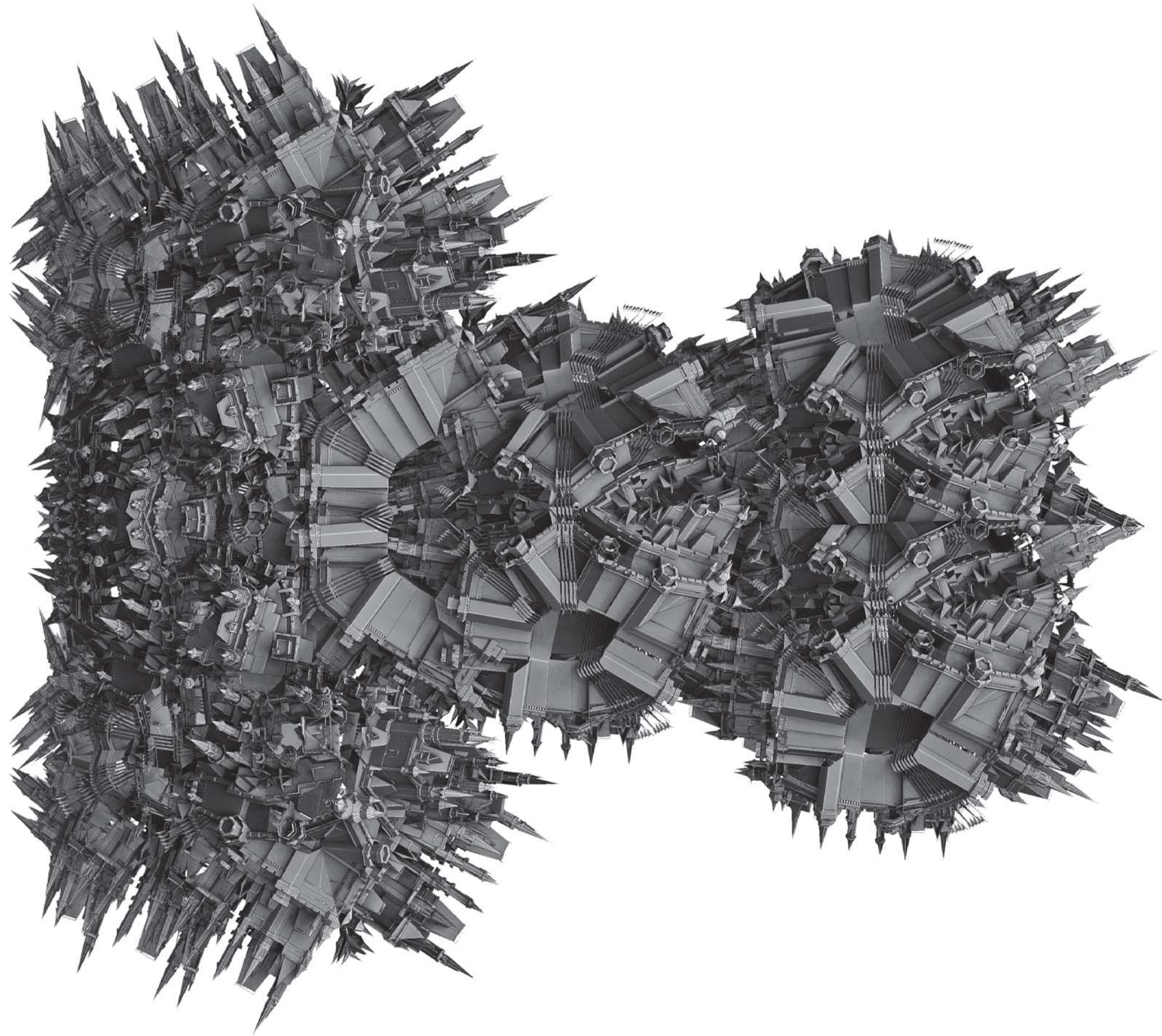
Type: Next 7 Competition 2015

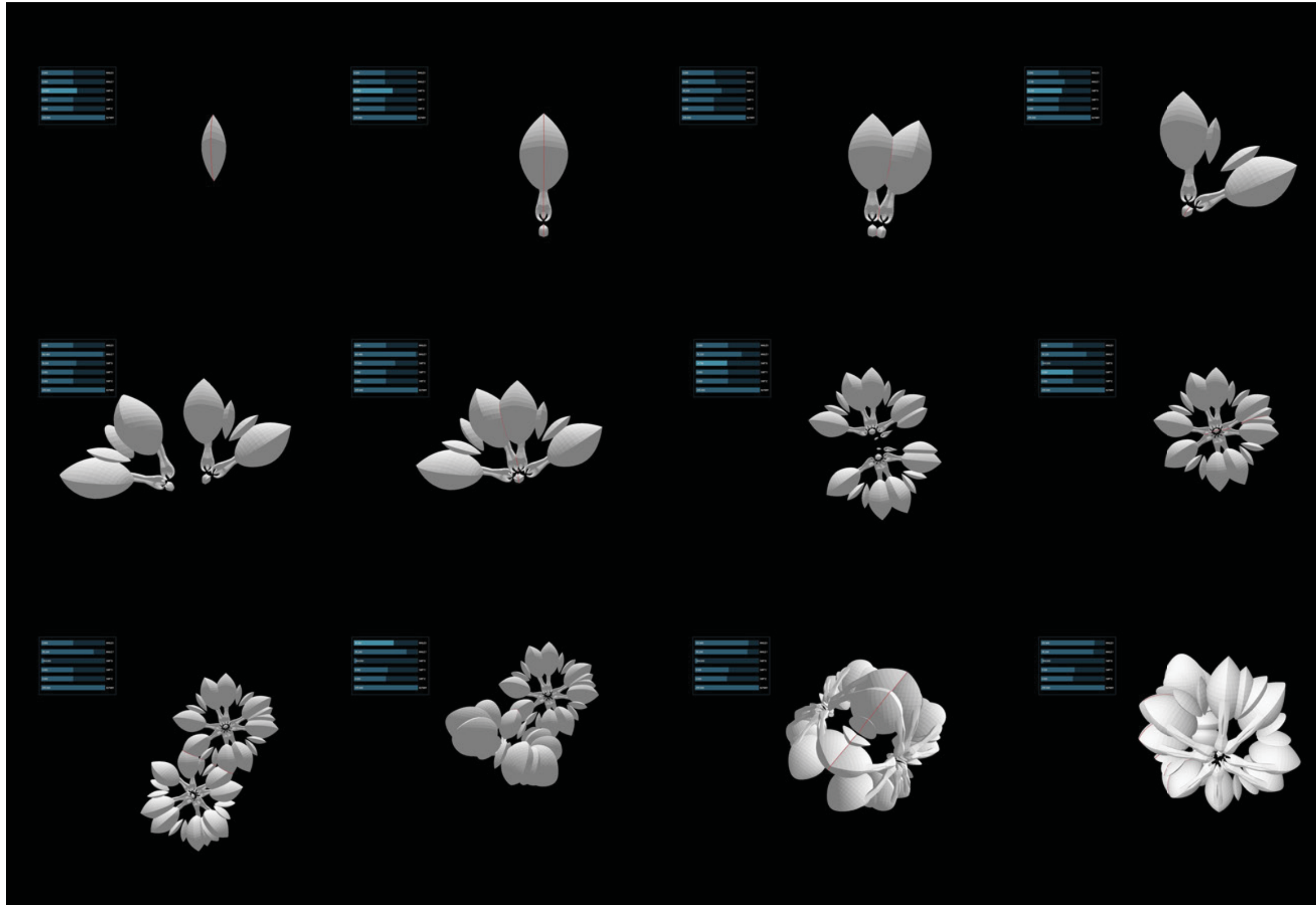
Team: Danila Babko-Malyi

In this near future of a consumerist society, the excess of personalized goods takes a turn into a dystopian world of dissatisfied individuals that exile into virtual lives with the promise of “no strings attached” experiences. This project presents a suburban scenario of virtual habitation with the goals of virtual intimacy. Individuals release reality to enter a virtual reality of social profiles. These profiles are the new identity of human existence and are advertisements for seeking virtual intimacy. The reality of personal identities is standardized into variables that emerge from the success of virtual popularity. The success of profile popularity becomes a game of misguidance and exaggeration.

The architectural consequence of this has resulted in suburban cemeteries disintegrating with the ongoing growth of the virtual cities. Transportation channels that extend from each neighborhood grid into the virtual reality. Every individual now has a pod that allow their existence in the virtual world for the time of their escape from reality. The pods are made of the carbon remains after an individual's chemical reaction to dissatisfaction, lust, and greediness. Each pods structure goes through a morphogenesis relative to the changes in their social status; such as, virtual performance, change in popularity, and proportion of seeking versus being sought. The resulting system presents an ever-growing cityscape both in macro and micro scale. Micro scale changes are the formal transformation of individual pods based on a citizen's virtual data. The collective formal and data changes of the pods dynamically affects the total data, which determines the overall configuration.







## Mickey Tech

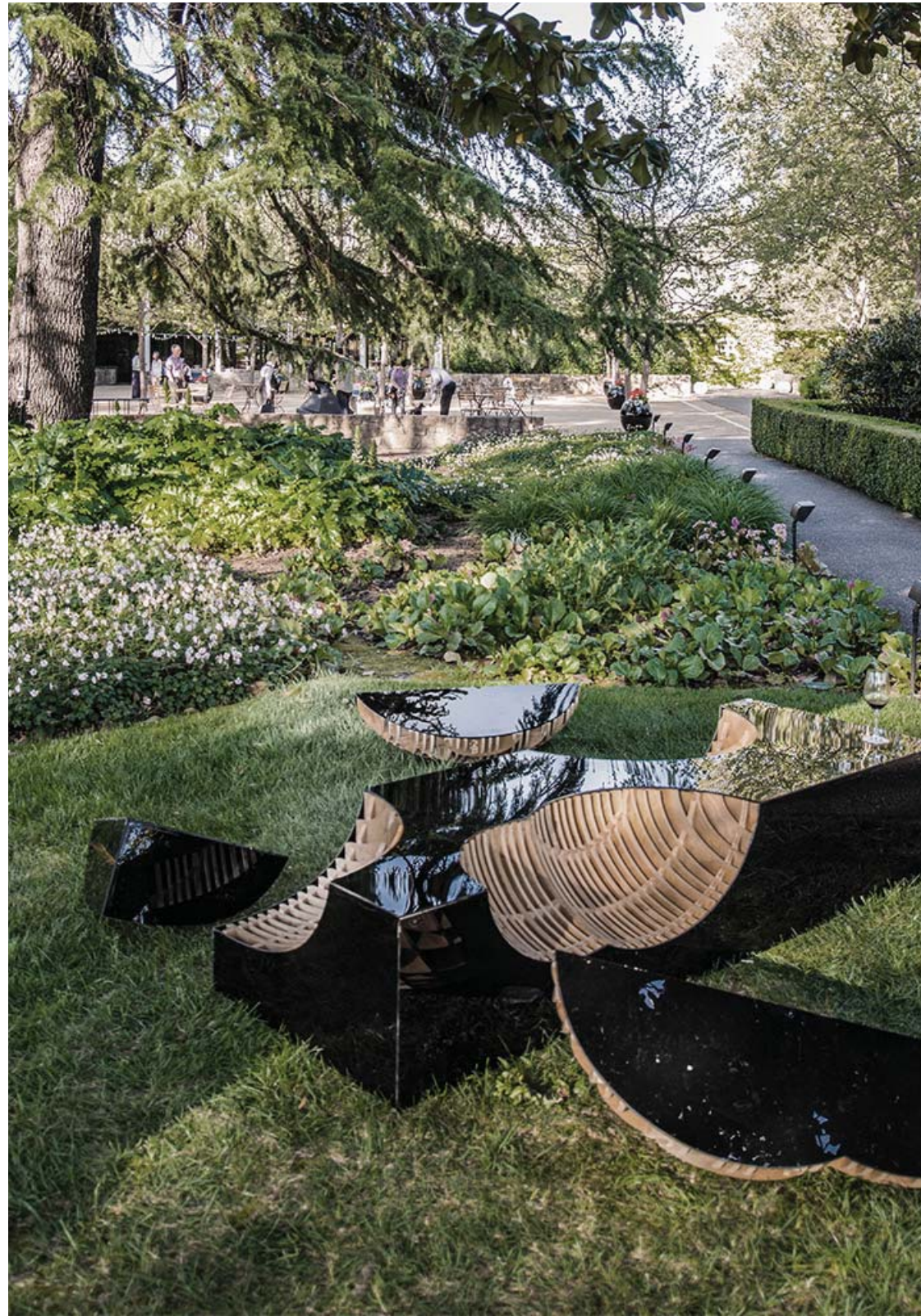
Type: Collaboration-Competition

Honors: ACADIA Hackathon 2014-2nd Place

Team: Gilles Retsin, Manuel Jimenez, Curime Batliner, Knut Brunier, Katarina Richter and Emmauel Osorno

MickeyTech is a generative tool for creating and investigating complex geometries through the application of local symmetry and sequential booleaning, juxtaposing it to an analog drawing resembling the inkblots of Rorschach test. Starting with a simple mesh figure, MickeyTech builds upon the original geometry through iterative cloning and mirroring, adjusting the position and rotation of each consequent piece. As an additive process, the generated form is a collage that retains small details from the original, yet it is a unique spatial composition. In this context, MickeyTech was used to formulate a critic of the way in which Los Angeles is perceived, merging cultural identity and common stereotypes with well-known local visuals. It does so by creating artifacts that emerge from Disney characters; transforming Mickey Mouse, Donald Duck, and an army of Minions, among others, repetitively to raise tension between cultural excess and provocative forms.





**S\_it\_EAT**

**Location:** Napa, CA

**Year:** 2016

**Exhibited:** St. Supery Winery

**Owners:** Edmonds and Lee Architects

**Sponsors:** Topher Delaney and Calvin Chin

**Team:** Robert Edmonds, Eddy Joaquim and Max Warman

S\_it\_EAT is an abstraction and physical representation of void and solid geometries. The project was exhibited at the St. Supery Estate Vineyards & Winery alongside 30 Bay Area artists. As a consultant I design, fabricate, and assembled the project on site. Fabrication materials included CNC plywood and acrylic parts.





## Ghosted Chair

Advisor: Casey Rehm, Jake Newsum

Team: Arsenios Zachariadis, Jose Morales, Zihua Cheng, Soham Doshi, Yen Tin

Series of investigations on the idea of transforming given idealised pieces of furniture to new forms. Using the outline of significant furniture in realtime 3D nylon printing with Staubli Robot Arms, these process challenges the idea of 1:1 printing daily equipments.

The final product introduces a new kind of understanding the way a furniture is constructed in a more innovative and provocative way, making use of real-time 3D scanning techniques for multiple layers of printing leading to a new aesthetics of what a furniture might be.