



Preston Welker

Form-Context-Material

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Preface

This book is a representation of my graduate work at the University of Illinois - Chicago from Fall 2013 through Fall 2014. Included are projects of varying scales and programs, created through a broad range of unique design strategies and techniques.

The goal of this portfolio is to reveal three aspects that make up a complete design: Form, Context and Material. The projects included are the result of a consideration of at least one of these ideas, and aim to express the possibilities produced through their implementation.

Location, program and scale guide the process and establish a hierarchy of importance between form, context and material. Most projects will emphasize only one of these aspects, but when all are addressed, the architectural potential is expanded creating a complete experience.

Form

A good design does not make a conscience effort to be beautiful; but if the finished design is not beautiful, it is not successful. - Superunion Architects, Norway

My explorations of architectural form have allowed me to understand a variety of design approaches. As a student, it is my goal to understand every approach, in order to advance my understanding of *architecture*, and begin to develop my own ideas within the discipline. It is not my objective to criticize any strategy, but to learn from each, understanding that a successful form can be achieved through the implementation of these strategies as tools and precedents.

As the face of architecture, form communicates the character and personality of a design. Form becomes a key recognizable feature of a building, emulating an aesthetic quality through its silhouette that is either significant or the inverse. It is my belief that architecture is art, but should not be created through the same process as a painting, etc. A good form is achieved through a clear understanding of space, program, interaction and material.



Context

Context is the setting in which a building exists. Through context, a building can begin to situate itself within a narrative, taking cues from specific site conditions such as climate, landscape, and soil type, as well as the cultural aspects of the area. It is important to study and understand the site and community of any given project. A good design will always embrace its surroundings, using every aspect of the landscape as an advantage, and every clue of the local culture as an underlying motive.

Context is a constant. It gives architecture a place to exist and an opportunity to become living. While some programs more directly lend themselves to contextual influence, any architecture formed through contextual consideration becomes a piece of that context: a symbiotic relationship between the building and the site, and the building and its inhabitants becomes reality.

My understanding of this relationship has encouraged me to explore a type of sustainable design that sustains not only the site, but the people who interact with that site. When a building becomes one with its context, and is environmentally responsible, it can not be a burden.



Material

Material is the medium through which design is actualized. There are many significant relationships developed through materiality. The conversation between materiality and form lends itself to the discovery of new combinations and possibilities. Today, material research is a focus in architecture and design. The use of sustainable materials is encouraged and expected, placing a lot of pressure on the architecture community to encourage a healthy planet.

The majority of my material explorations have taken place at the scale of the object. Whether it be through concrete, wood, wax, fabric, or any combination, new material possibilities can be explored. These explorations allow for new discoveries. Beauty is often realized in the non-machine approach to material exploration. Human error is celebrated when a mistake leads to a new discovery.

The material becomes the skin and the tissue of a body of architecture. As new materials are developed, the possibilities in architecture multiply exponentially. Our buildings grow more beautiful as restrictions and limitations start to disappear. We can believe that in time, anything will be possible.



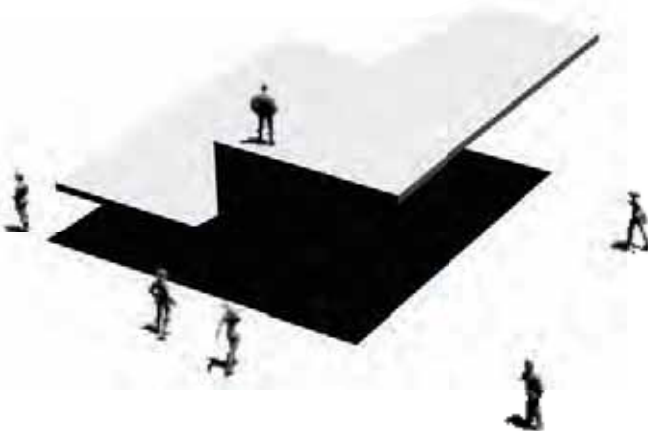
Fundamentals

Chicago Fall 2013
Paul Preissner

The Fundamentals of Architecture



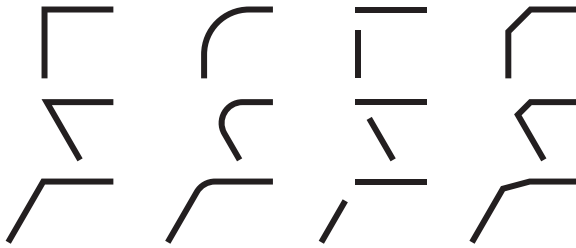
The focus of this studio, and the study of the "Fundamentals of Architecture" originated from the supposition that all architecture can be reduced to a finite catalog of primitive elements. These elements, in their simplest states, can be described as planes, corners and opening. **There are five fundamental plane types:** parallel, half slope, full slope, pitch/inverted-pitch, and offset. **There are four fundamental corner types:** corners formed by a single line, an infinite amount of lines, an implied corner and a corner resulting in a surface. **There are four fundamental openings:** opening intersecting a single edge, no edges, multiple edges and a perforated surface. Furthermore, these elements can be fundamentally "modified" to create stylistic variations. Possible **modifications** include orientation, mass, modularity, scale and twist. As a reduced understanding of architecture, this fundamental exploration is intended to prompt a new understanding of architecture in its simplest form, allowing us to see the beauty in every plane, corner and opening. In keeping with this exploration, it can be believed that every building can be fundamentally reduced to a combination of these elements. Through combining and modifying, over 8,000 fundamental combinations (architectures) are possible.



Planes



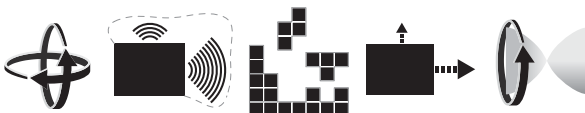
Corners

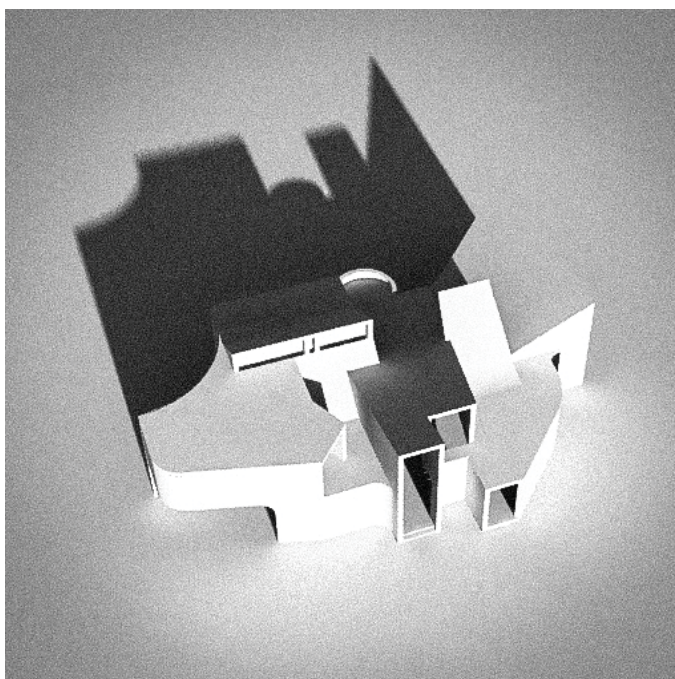


Openings



Modifiers



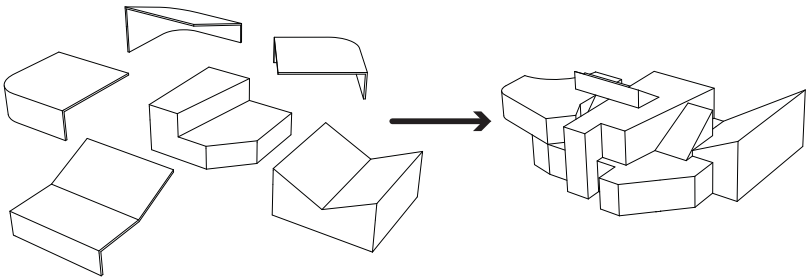
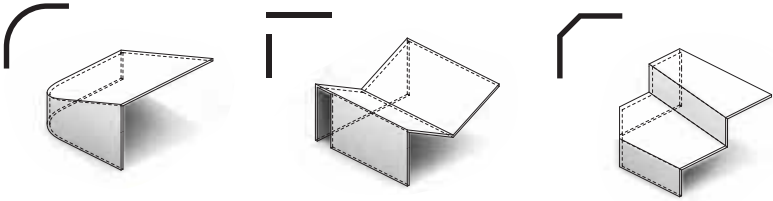
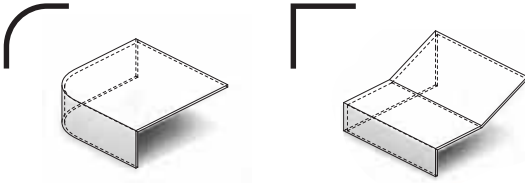
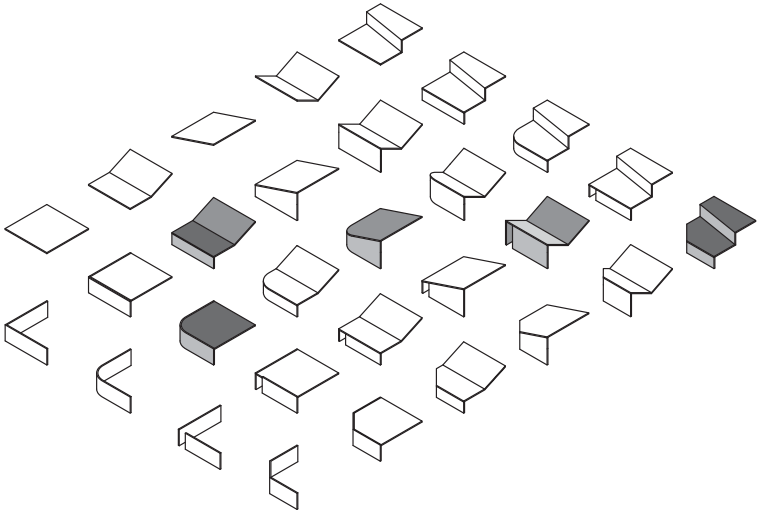


A *Fundamental* House

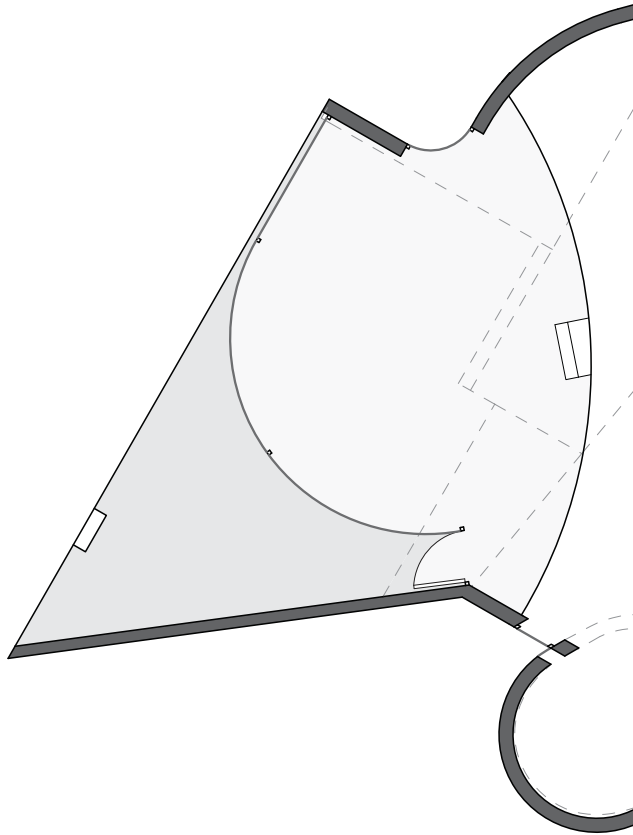
A *Fundamental* House is a project that focuses on the application of the fundamental elements to create a fundamentally irreducible and "ideal" house. Through a very straight-forward approach to shape and form, each program of the house is associated with a particular sectional quality. Using the catalogue of fundamental elements and combinations, each space or pair of spaces is assigned a form. These forms and combinations were then assembled in order to create the *ideal* house.

As a result of the direct application and intersection of the chosen forms, new relationships begin to emerge. The resulting sectional qualities of the combinations create unexpected opportunities. The simplicity of each individual shape allows for a beautiful complexity to result from their merger. The goal was not to develop a fully refined, fully resolved house, but to create a house that is fundamentally *ideal*, formally simplistic, and spatially interesting.

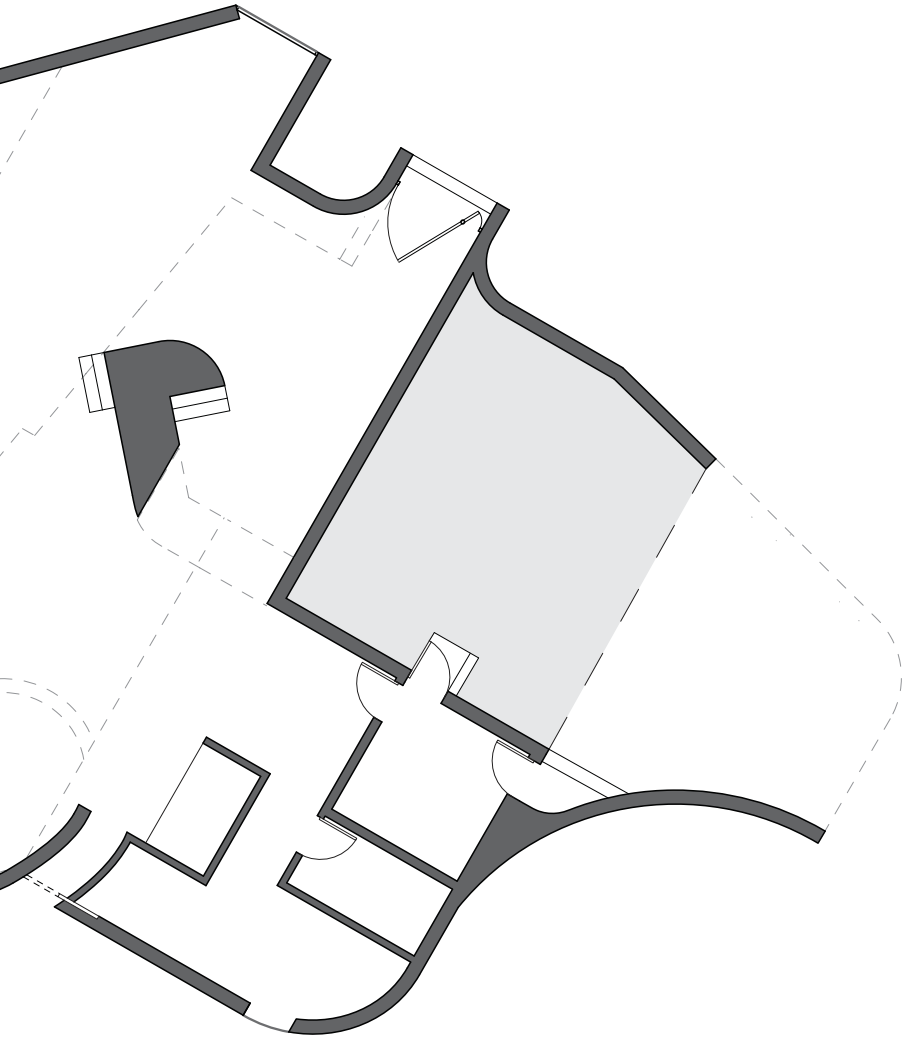
This exercise led to an important discovery in my academic career. I gained a new understanding for architectural composition, realizing that a building does not have to be complex to be beautiful.

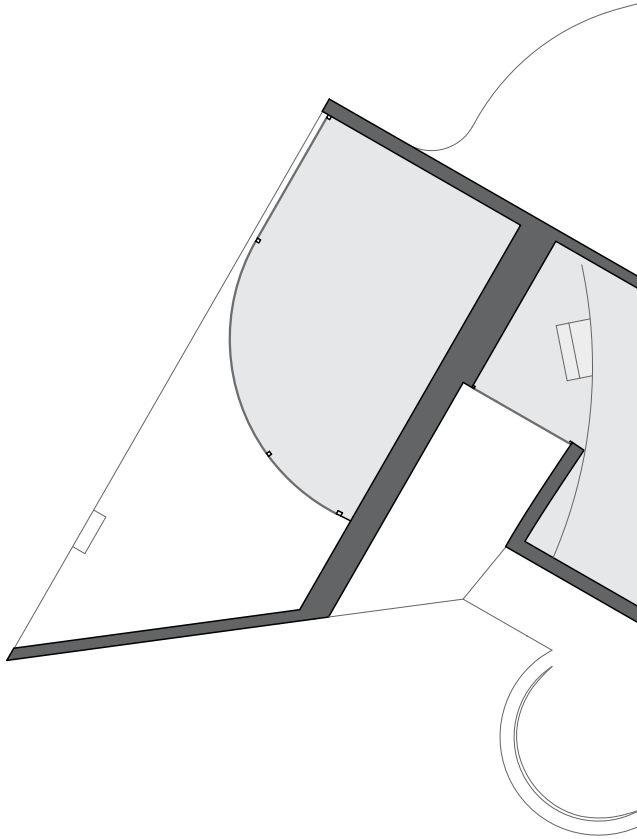




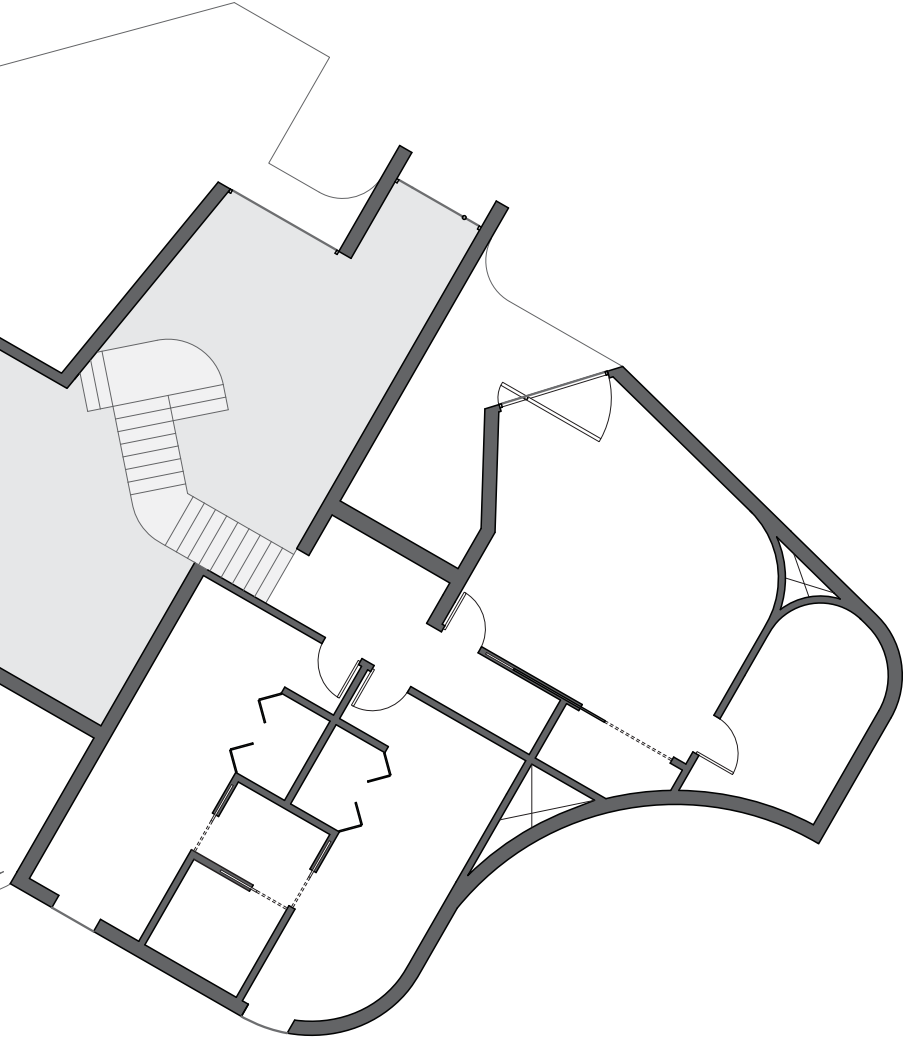


First Floor Plan

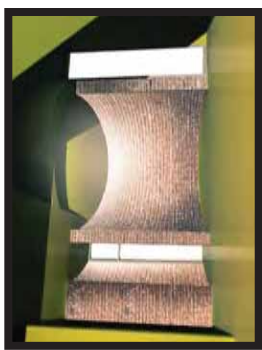
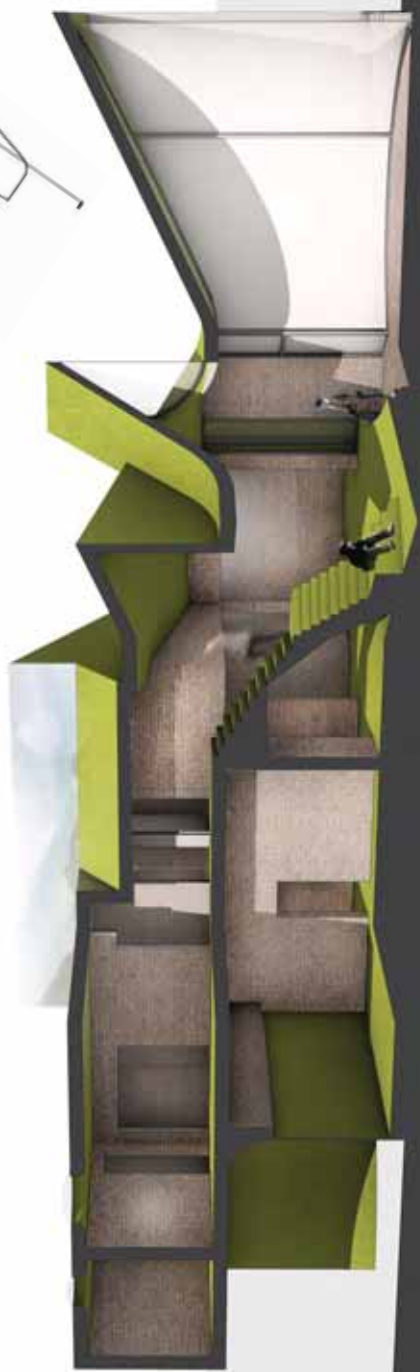




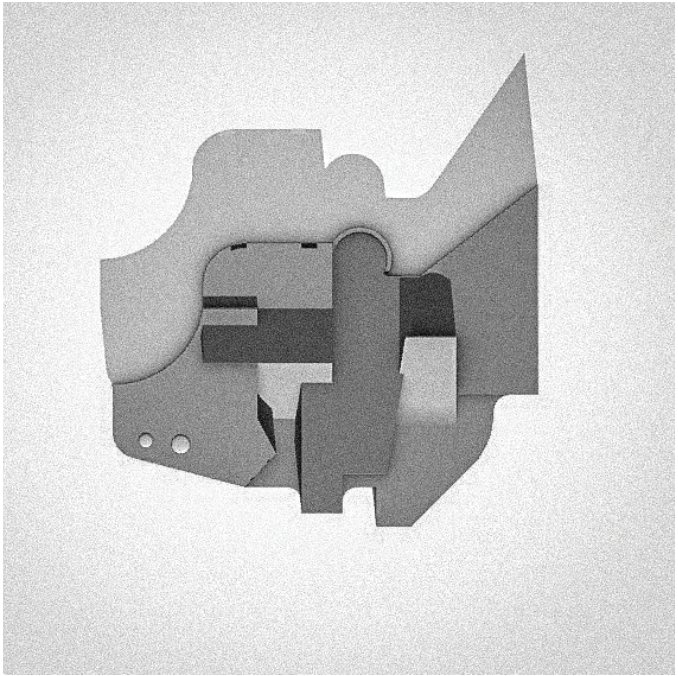
Second Floor Plan









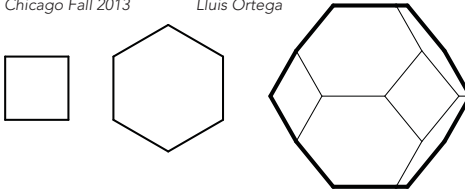


Octahedra

Chicago Fall 2013

Lluis Ortega

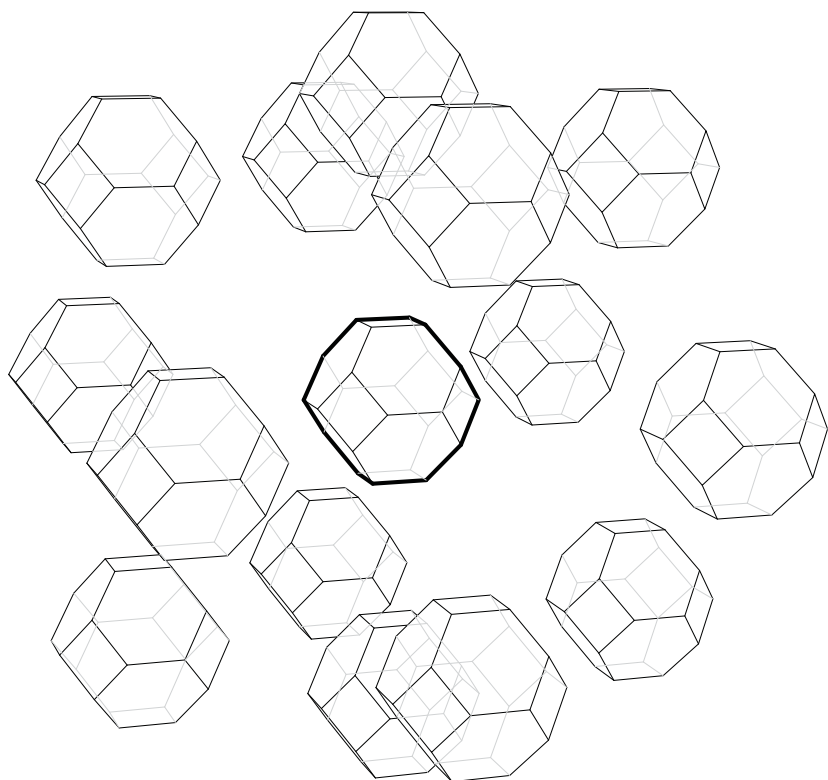
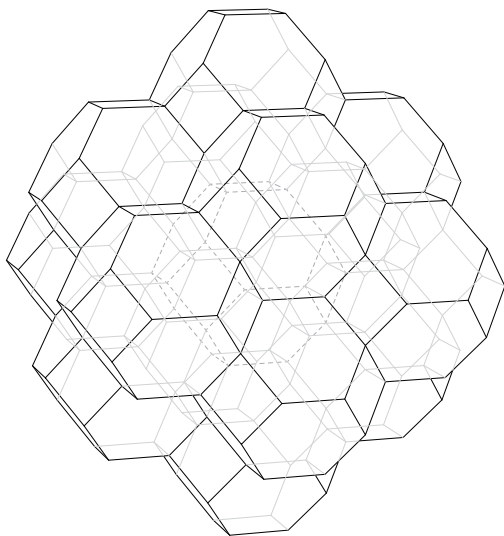
w/ Angela Ngo and Teddie Goldenberg

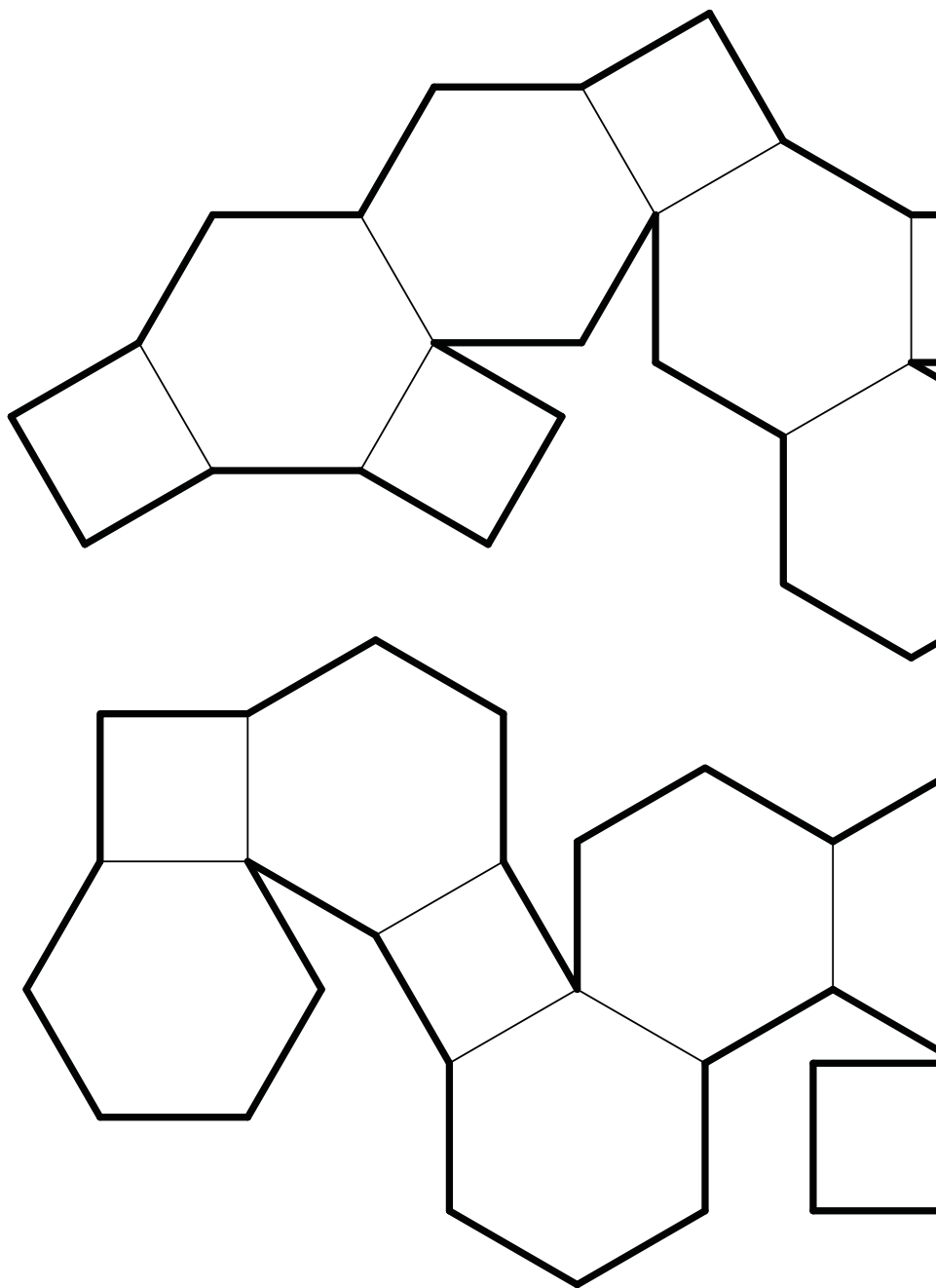


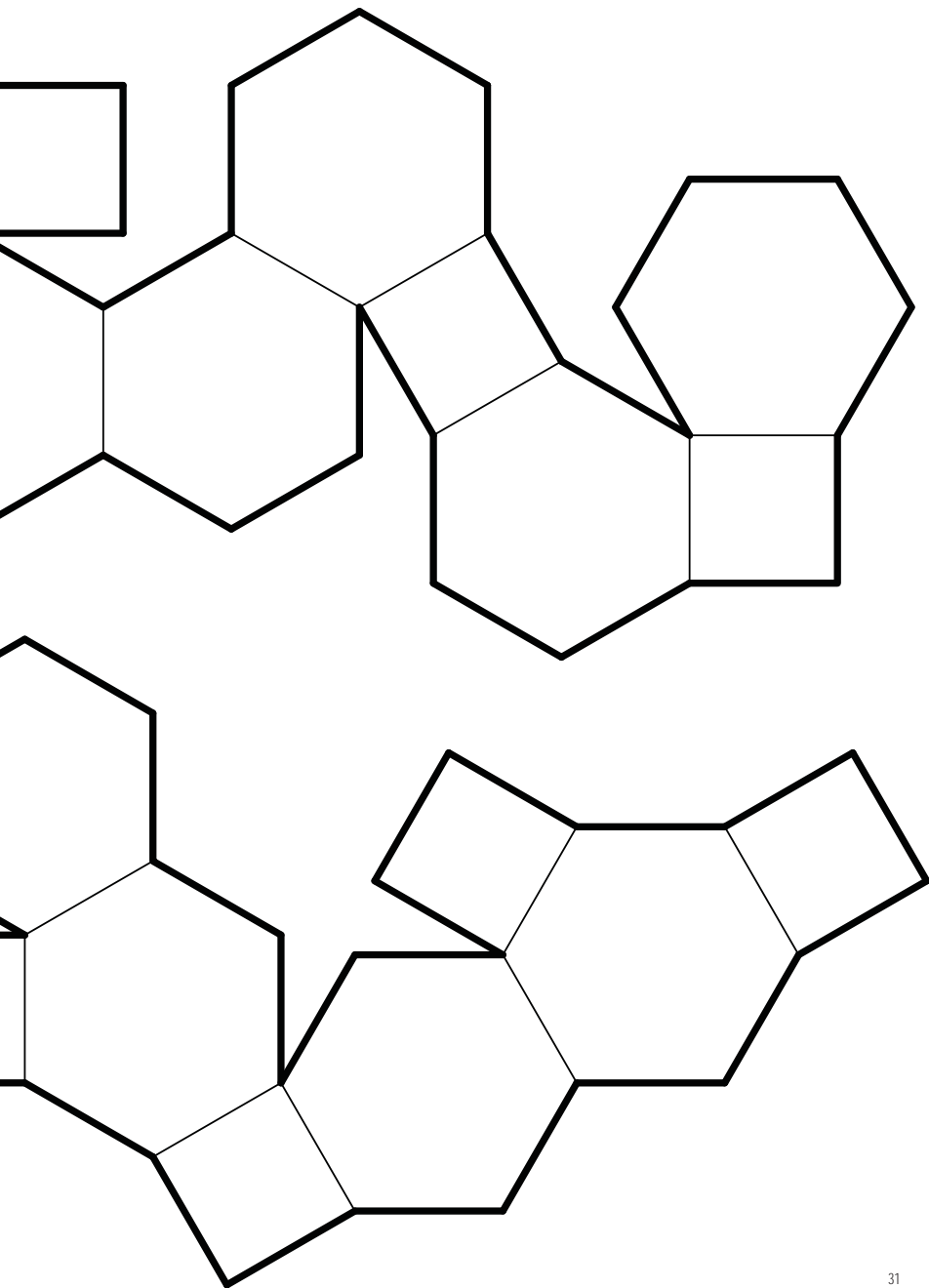
As perhaps the most quintessential architectural unit of construction, the brick can take many forms. Throughout history, many attempts have been made to reinvent the brick, as a structural unit, and as a veneer. One thing that has remained constant is the orthogonal application of the brick. However, inventors like Greg Lynn have since questioned this organization and sought to discover new methods. New forms and materials have also entered the conversation. Although attempts like Lynn's have, in fact, been successful and advantageous to the field of architecture, they lack the simplicity of the standard brick. The easily measured and constructed unit, as well as the versatility of stacking these units has been lost. These new explorations limit the architectural form to a time consuming, pre-designed arrangement. It has been our goal to create a brick that can, like the Blob Wall, create interesting shapes and forms, while maintaining some fundamental characteristics of the typical brick.

This pavilion is an experiment in material expression disciplined through the use of a single geometric constraint: a uniform-edge truncated octahedron. This form tessellates three-dimensionally like conventional bricks, but the irregularities in surface force an expression of texture. Different sizes of the base unit yields abilities unique to certain size ranges, as well as performance. Larger scales allow flat surfaces to be expressed, while smaller scales yield a scale-like quality. Denser materials allow for higher durability yet restrict the units to small scales. This experiment is thus an exploration of the scale and performance capabilities of different materials.









Culture of House

Chicago Spring 2014
Stewart Hicks

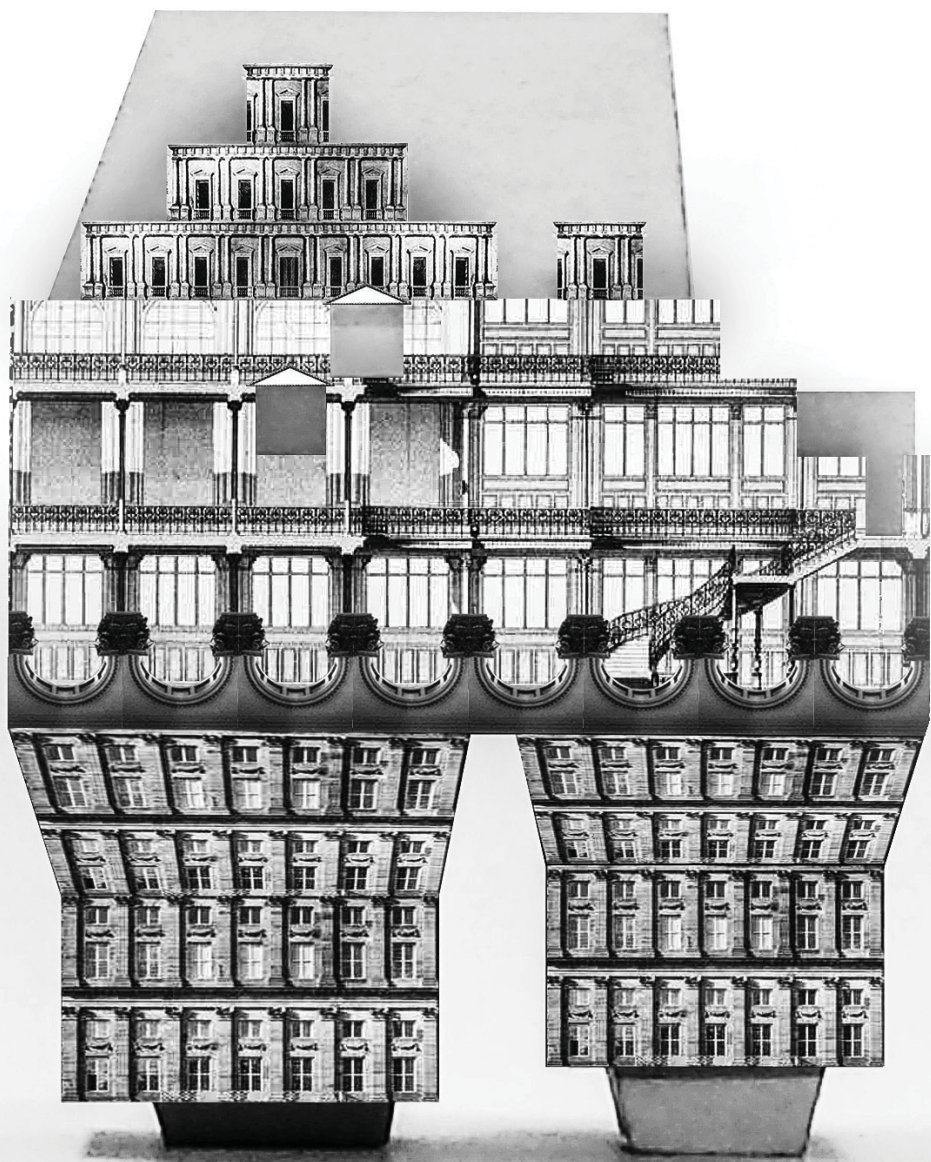


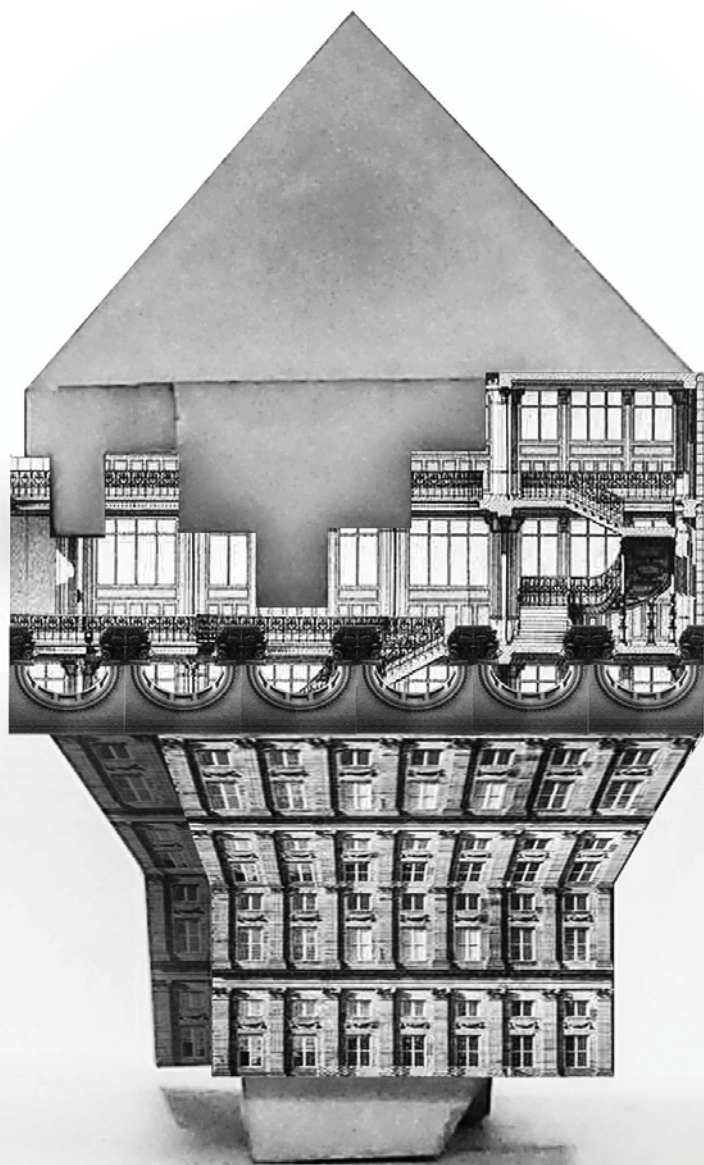
Multi-Cultural Center

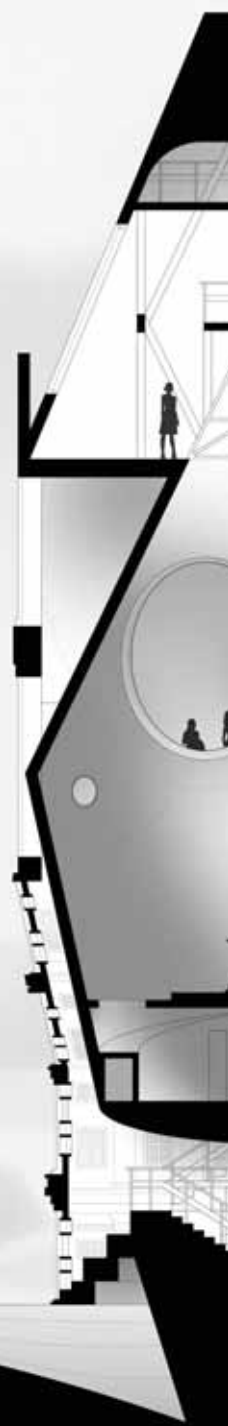
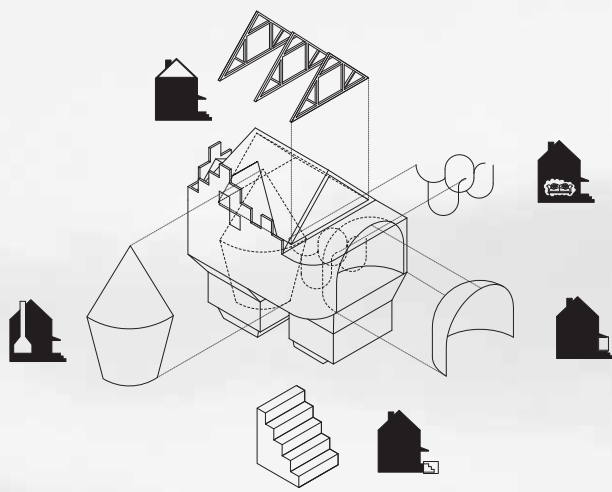
Culture of House is a cultural center that takes the shape of a house with legs. Culture of House used the perception of form and scale to symbolize the congregation of the community and highlight the separation between interior and exterior, as well as provide a link between interior programs. Its overall form suggests a gabled roof home that is scaled up and clad with a 'cozy' representative of three urban facades, which respond to scaling that occurs within the building.

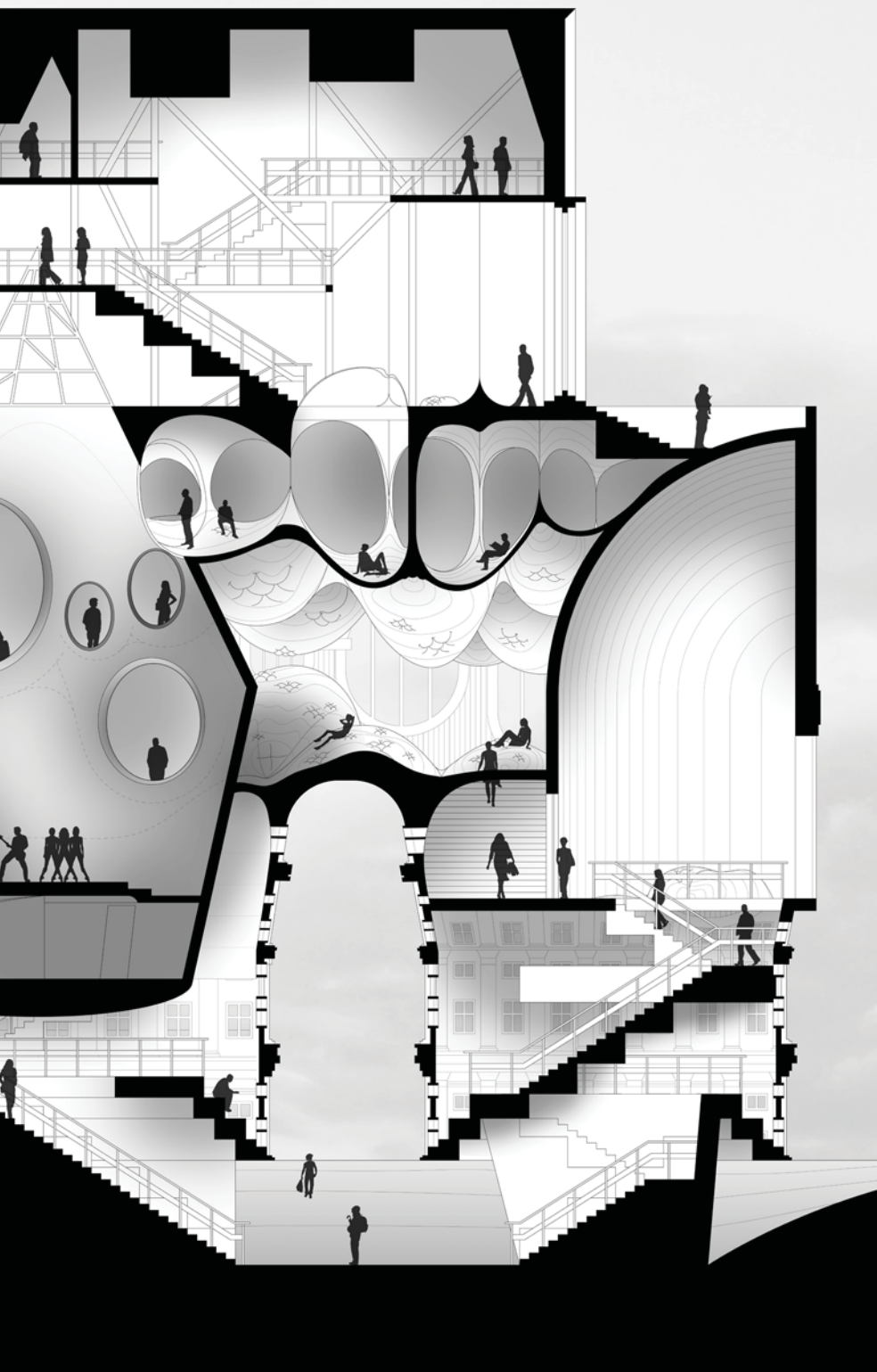
These Interactions introduce a collision between Urban scale and Domestic, designed to invite people into a world where familiar becomes unfamiliar. 'House appears to float above the site, allowing access by way of large front steps leading to performance and exhibition spaces. The library creates an inverted atmosphere that allows a person to find their own place within its tufts. The attic of the house becomes a place of wonder and discovery, where things once forgotten find new life.

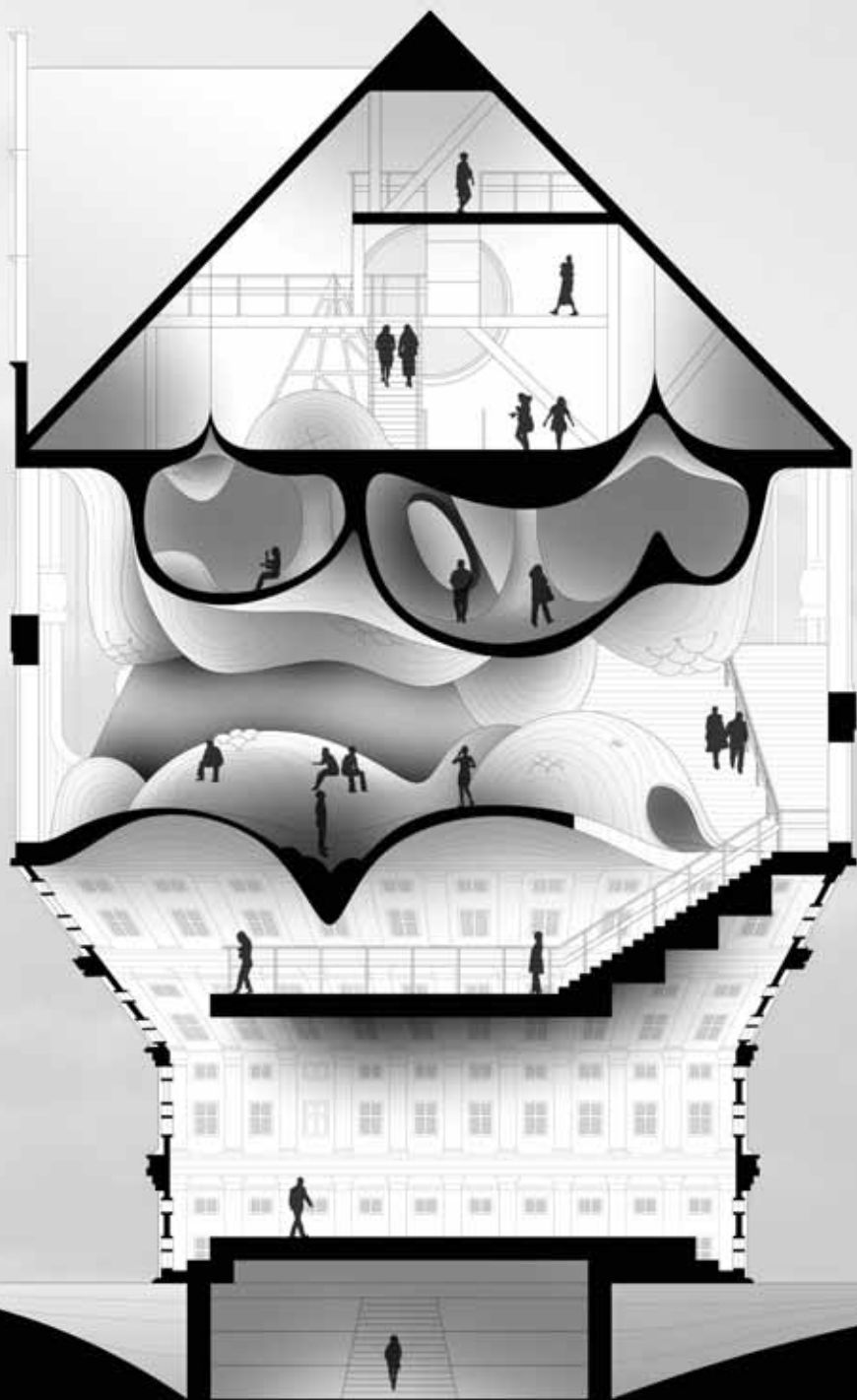
Culture of House provides an environment for community interaction and the opportunity for self-discovery through a staggered hierarchy of personalized spaces; the objects within a house.

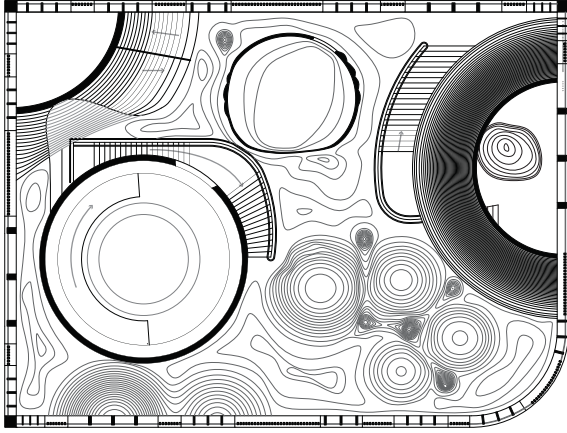




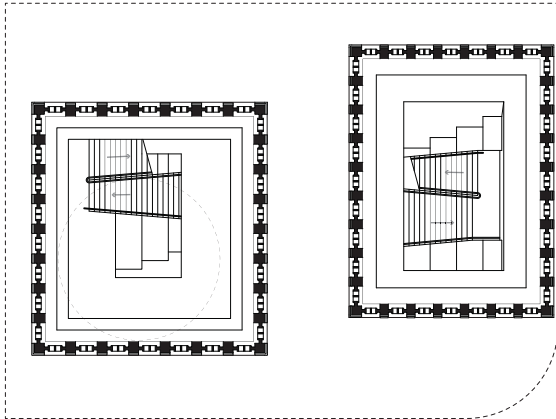




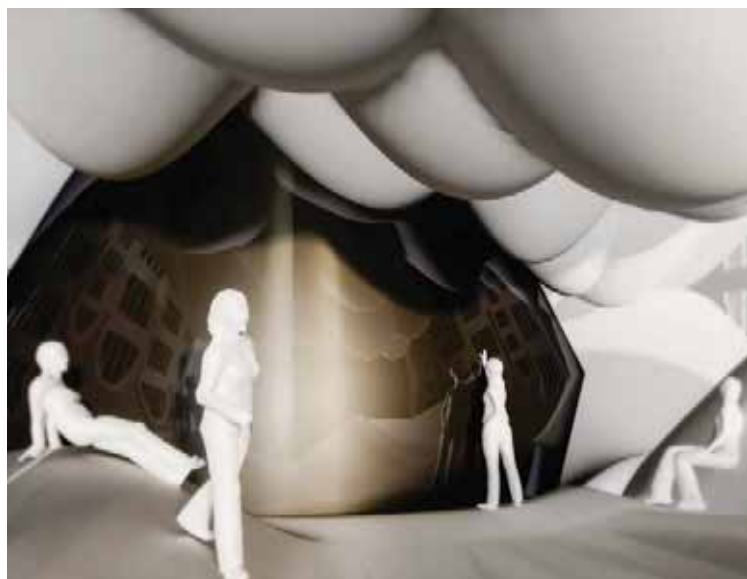


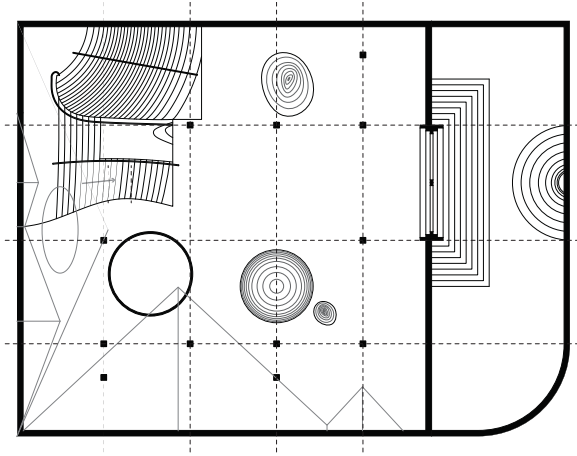


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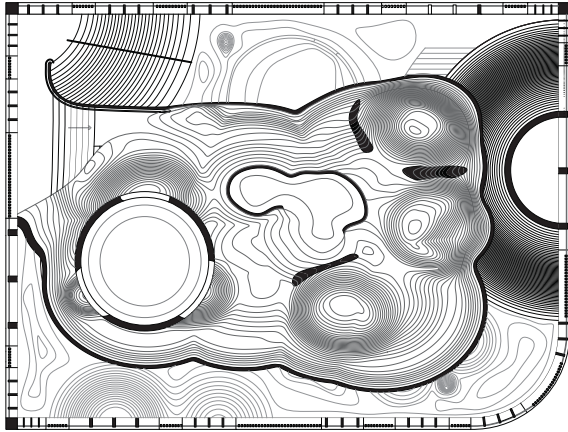


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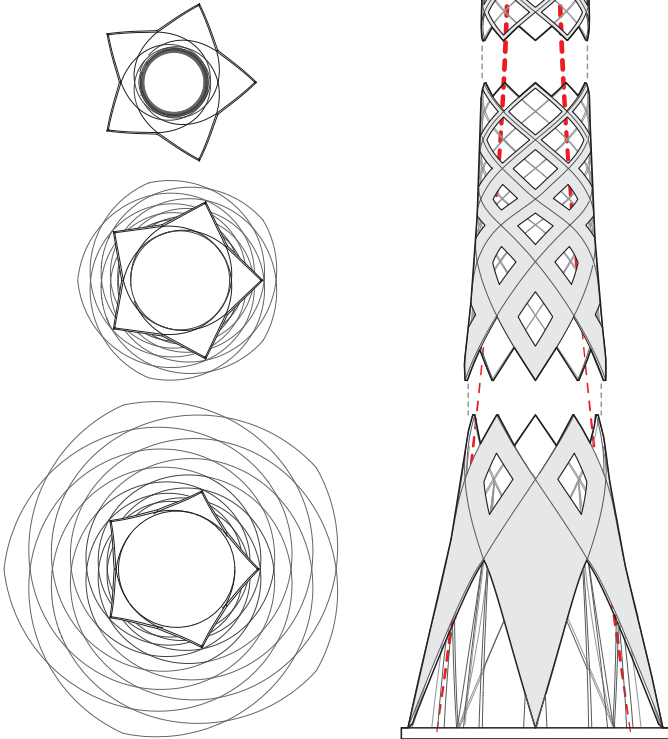
SkyTree

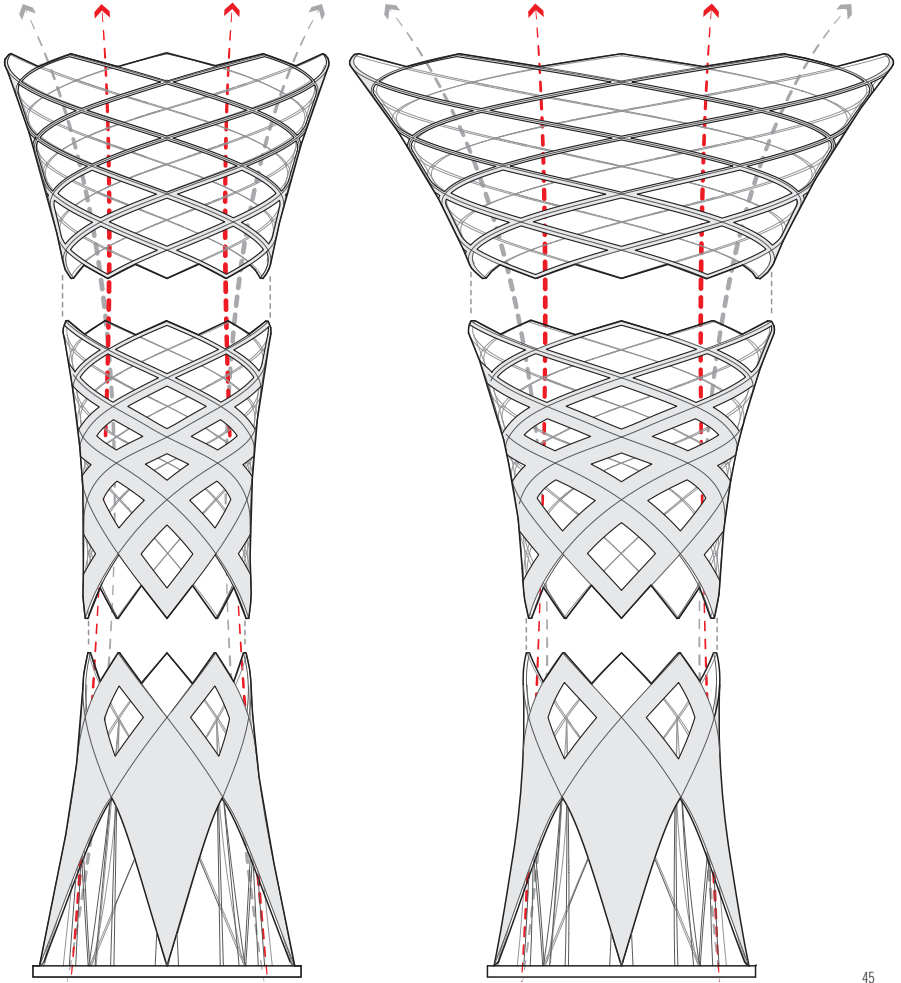
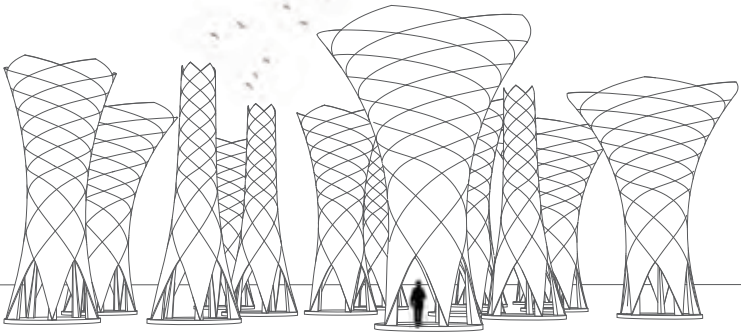
Chicago Fall 2013

Lluís Ortega

w/ Anthony Prom

In the skyTree Pavilion, one has the ability and freedom to experience a connection with the sky. Similar to the Gothic Cathedrals of the 16th century, the careful use of proportion and scale allow a person to feel fully engulfed in light and warmth. The unique shape and varied perforation of each prefabricated piece creates a different combined experience. The creation of these vertical environments act in several different scales while appearing to support the sky above. At the ground level, one experiences a threshold from darkness, created by the canopy of several skyTrees overhead, into lightness observed within the pavilion. Upon moving through these masses to the center of the pavilion, the boundaries of earth and sky become blurred. The boundary between natural and man-made disappear. Large amounts of natural light are channeled into the hollow center, creating an overwhelming experience unforeseen from the exterior. Through the implementation of form, perforation, and materiality, each skyTree represents a completely unique interaction with the sky. The assortment of several structures allows one to move freely about the site, carefree and unaware, of the magnificence that lies within each individual skyTree.





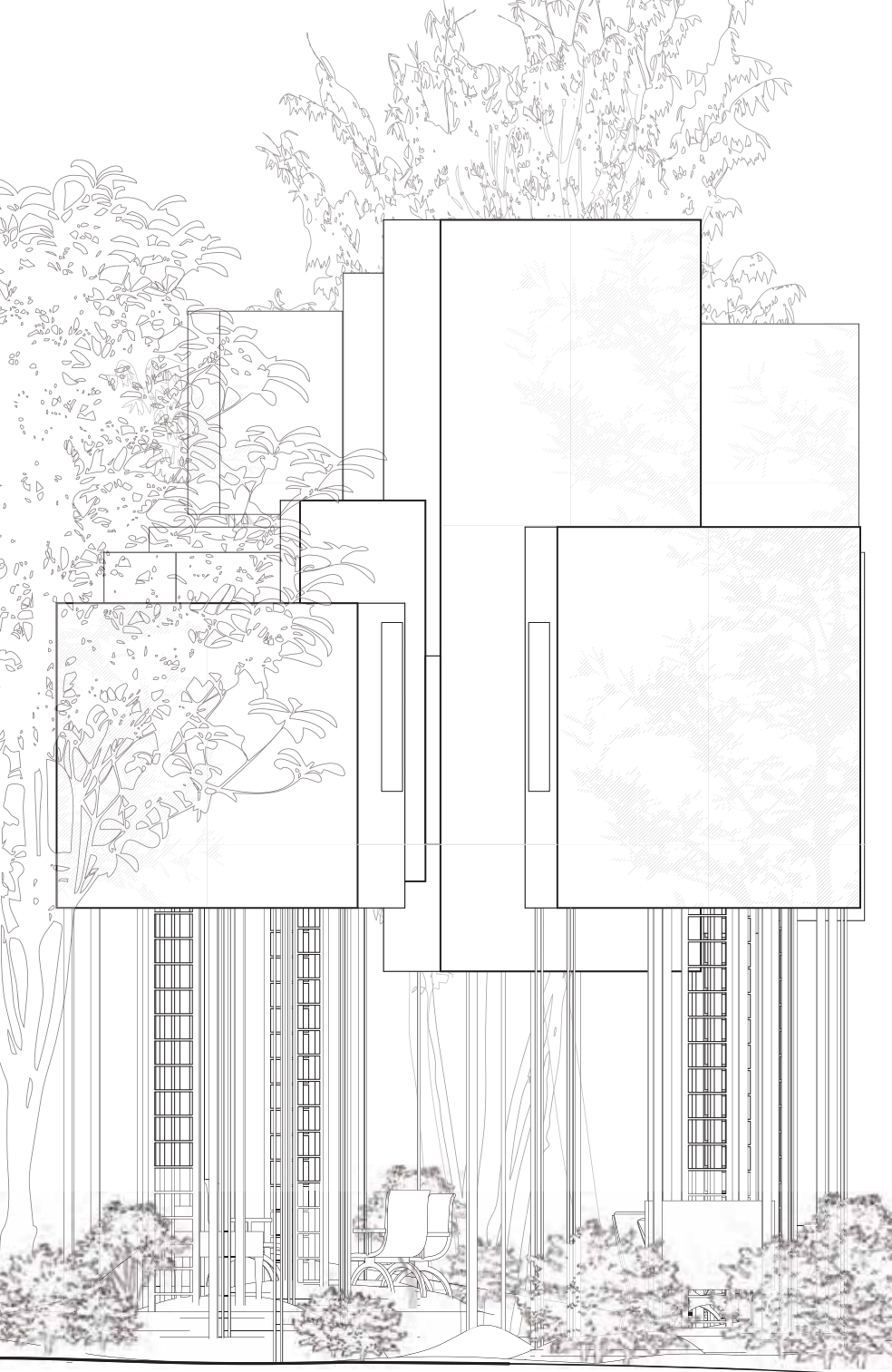
Tree's Company

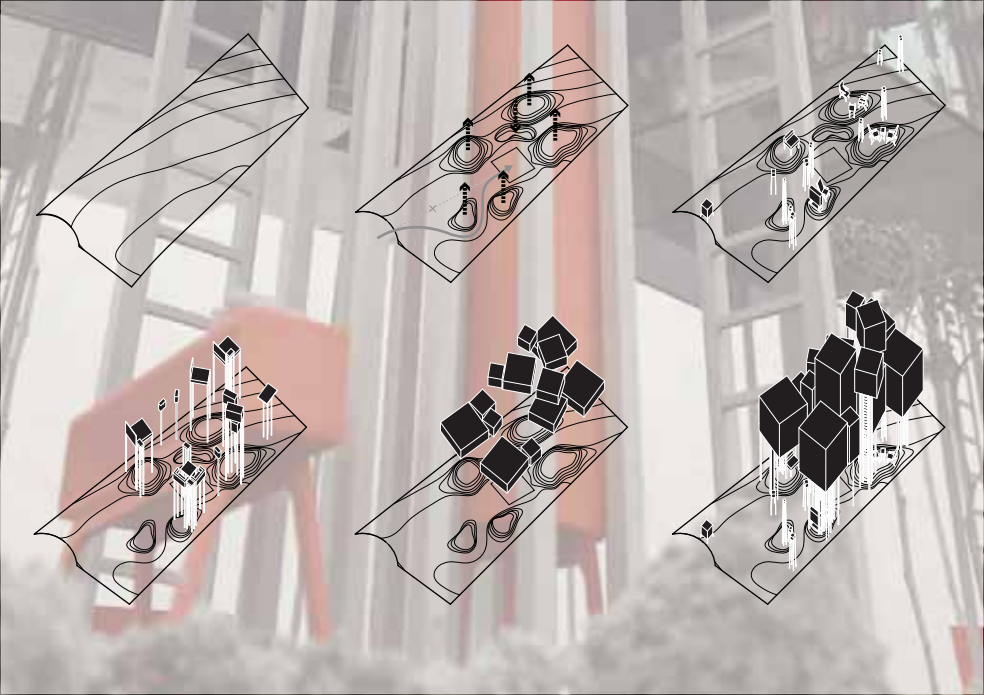
Chicago Fall 2014
Grant Gibson and Penelope Dean

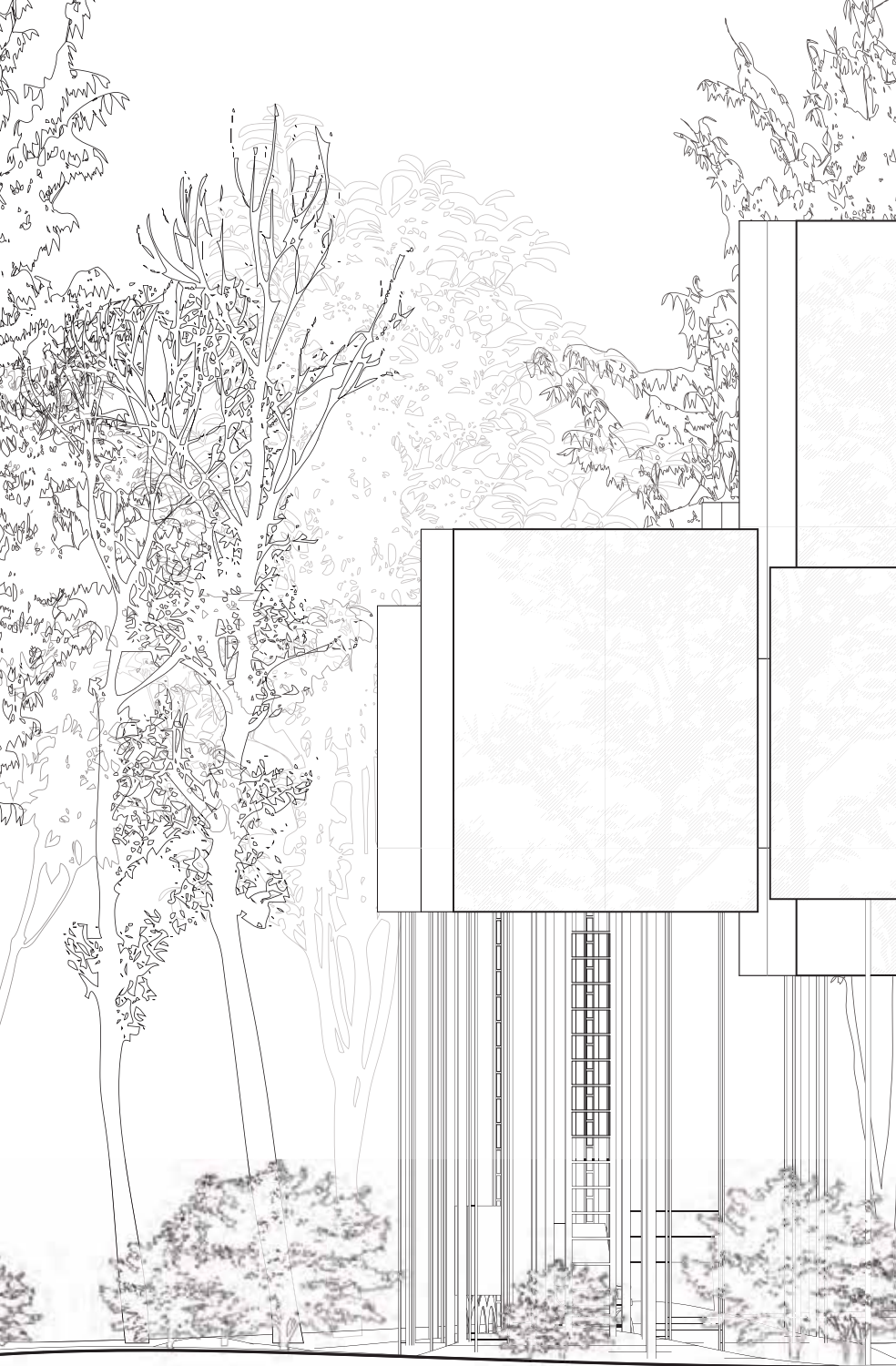


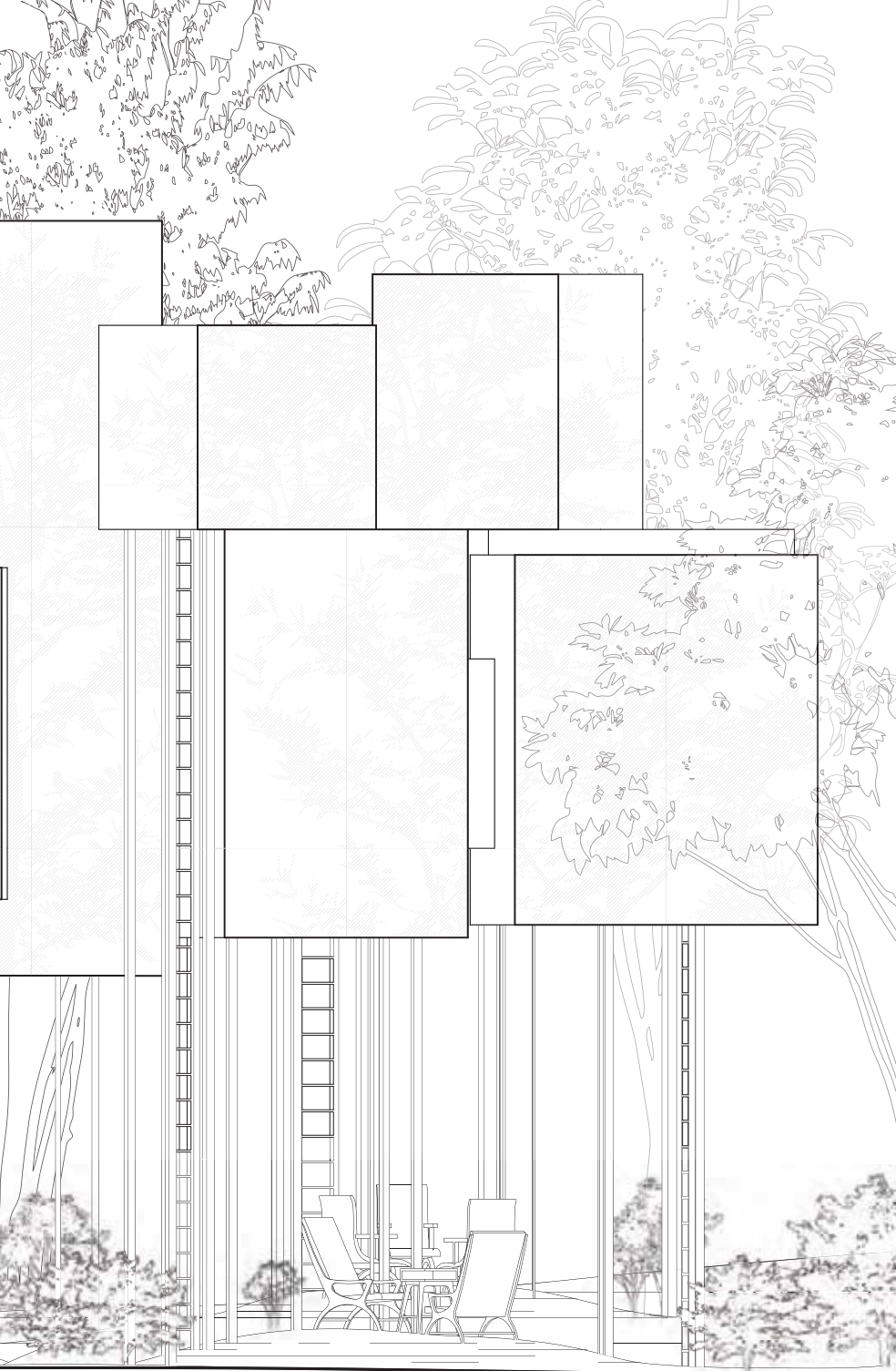
House

This project explores the potential of an exaggerated sub-scape below furniture that focuses on the relationship between furniture and ground. This exploration, when placed in the context of the site, allows for a seemingly untouched landscape. By lifting the furniture into the canopy and extruding the furniture legs to meet the forest floor, a new volume below the furniture is created, revealing a typically unseen feature of the furniture, the underside, as a new type of ceiling. Approaching the house, one moves through a hybrid forest of existing trees and furniture legs. Among the forest floor, in spaces created by the legs of standing furniture, artificial ground cover interrupt the natural undergrowth, becoming a type of décor, and creating pockets of activity inhabited by creature-like furniture pieces. Through this series of simple moves, two worlds are established within the site; the forest floor and the canopy. The canopy, created initially by a field of tall standing furniture, becomes an array of highly reflective cubes that blur the boundary between artificial and natural enclosure. Although they serve as enclosure, the cubes allow the furniture to break through the floor, revealing their undersides to the forest floor. The cubic volumes appear as a mirage in the canopy, solely supported by the furniture (legs) they enclose. The floor of the cubes serve as built-in storage, as well as house specific amenities, freeing vertical surfaces for panoramic viewing. This new approach to housing design aims to create a sense of escape from the everyday world. The canopy provides privacy and a level intimacy within a naturalistic setting.

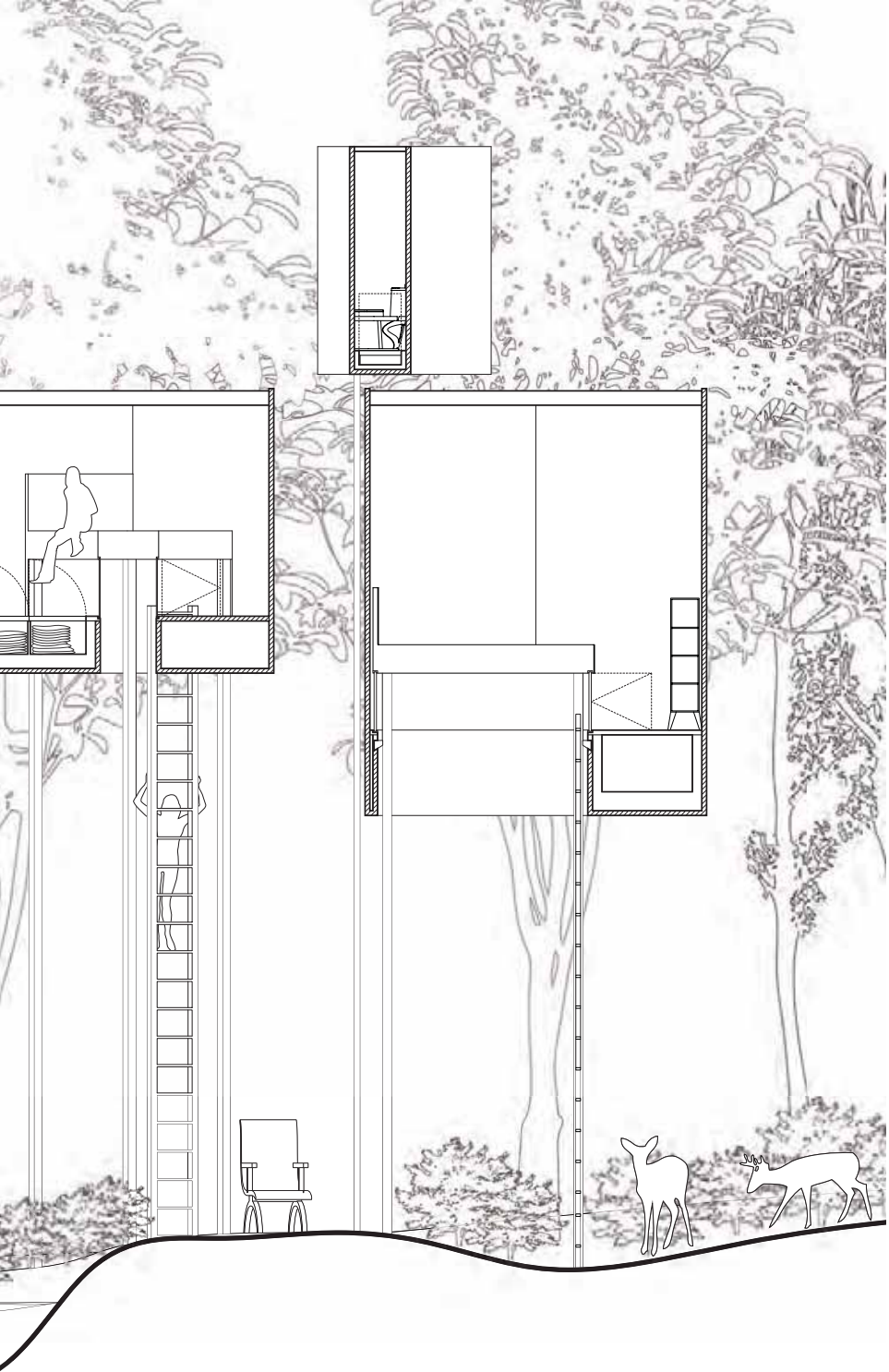






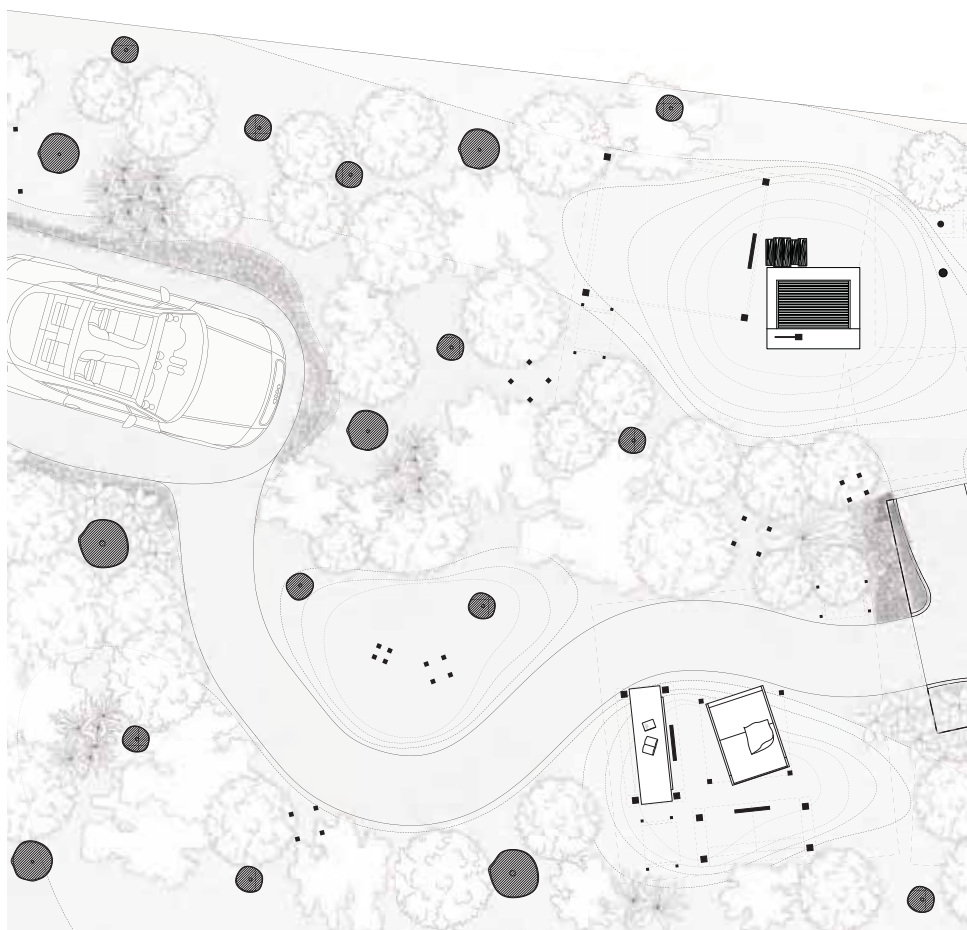




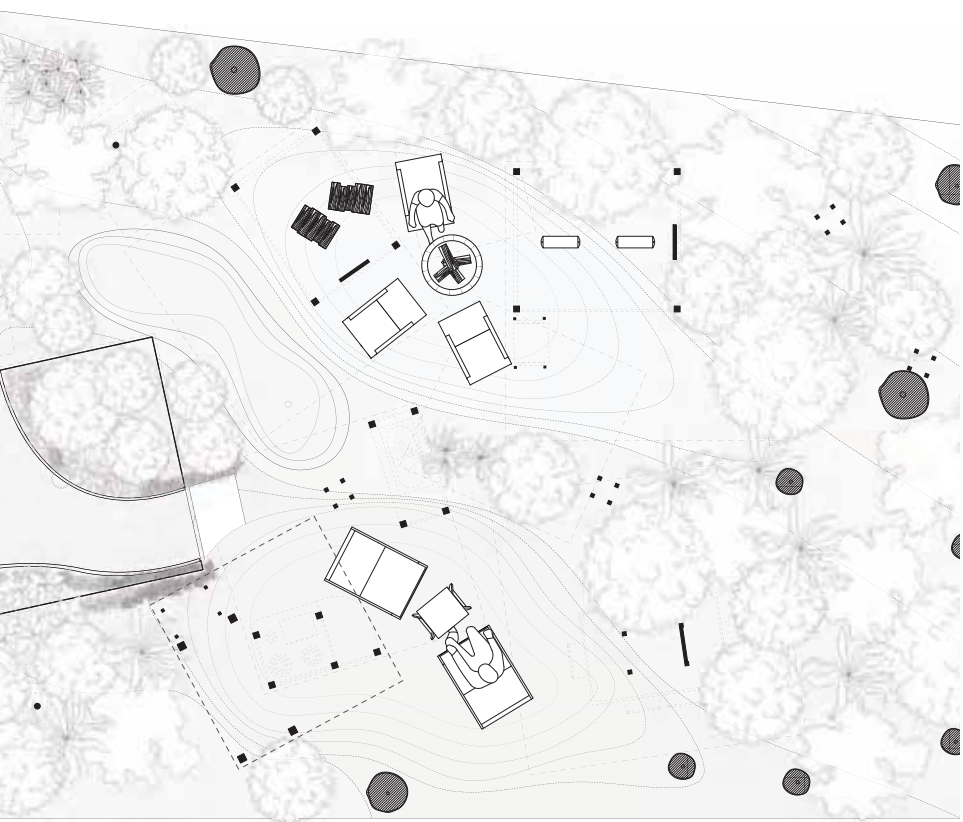






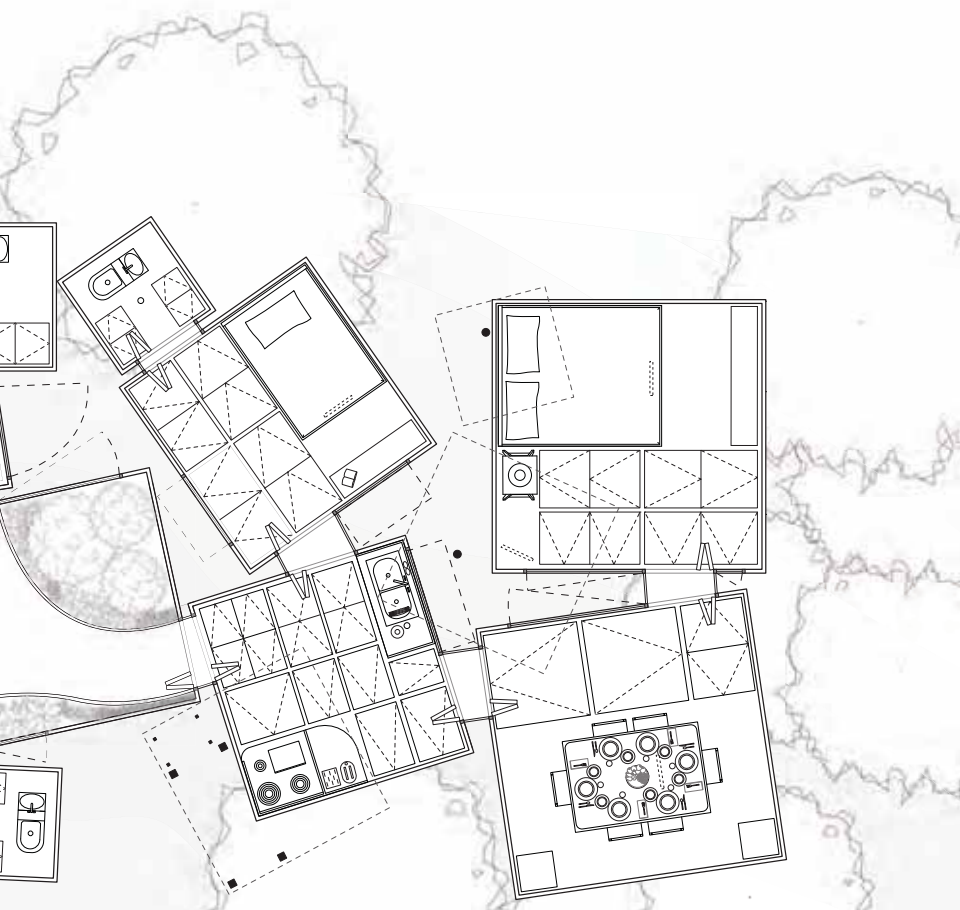


Ground Floor Plan





First Floor Plan







Pouf

Chicago Fall 2013

Molly Hunker

Pouf focuses on the implication of softness. Through the use of fabric as a formwork, the cast materials take on certain characteristics like texture and folds found in their textile molds. The fabric allows cast materials like plaster to form freely, allowing gravity to take control, eliminating many of the parameters of normal casting. In this process, error becomes beautiful.





Creteur

Chicago Fall 2013
Molly Hunker

w/ Danny Travis



Fabric Formed Concrete

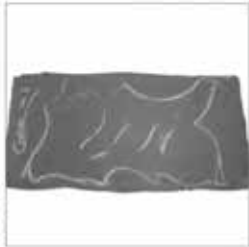
Creteur is an exploration of animate form through the manipulation of fabric-form casted concrete. Each Creteur is designed independently to portray a desired personality through its animal-like posture and through the use of particular fabrics to achieve a desired texture. The material contrast and fabric-textured concrete create a unique juxtaposition between implied and literal softness. Creteur is beautiful and grotesque, animate while static, projecting character throughout its environment. This prototypical study envisions these Creteurs as furniture/functional art, but the concept encompasses many more possibilities.

The combination of grotesque and cute are prevalent in this exploration. The animal-like forms paired with the soft tumors are both inviting and suspicious. The resulting "creteurs" are a new species that allow us to imagine a world in which they might exist.

While this project was imagined as part of a class project, it is our intention to continue exploring the possibilities of fabric formed concrete as it relates to industrial design, as well as its architectural significance.



Process



1. The Matri form was drawn up with chalk.



2. Multiple layers were sewn together for strength. The two fabric layers were attached to one another.



3. Precut fabric was sewn into the outside edge of the Matri to use as support and for connecting the two forms of new Cytex.



4. Frame assembled at the shop.



5. Heavy-duty fabric, using the cord along multiple joints within the frame.



6. The form is then slowly filled with numerous amounts of fibrous material.



7. After where form is completed for patterns will be stepped off during the process of removing the fabric as they are removed and filled with pattern.



8. Prepared areas are then painted accordingly.



9. Fabric is cut to size and placed into the spaces in the structure form. The fabric is then added with the needed for the size of the part.



10. Straps have been are pulled until tightened and then more fabric is added, including covering for other.







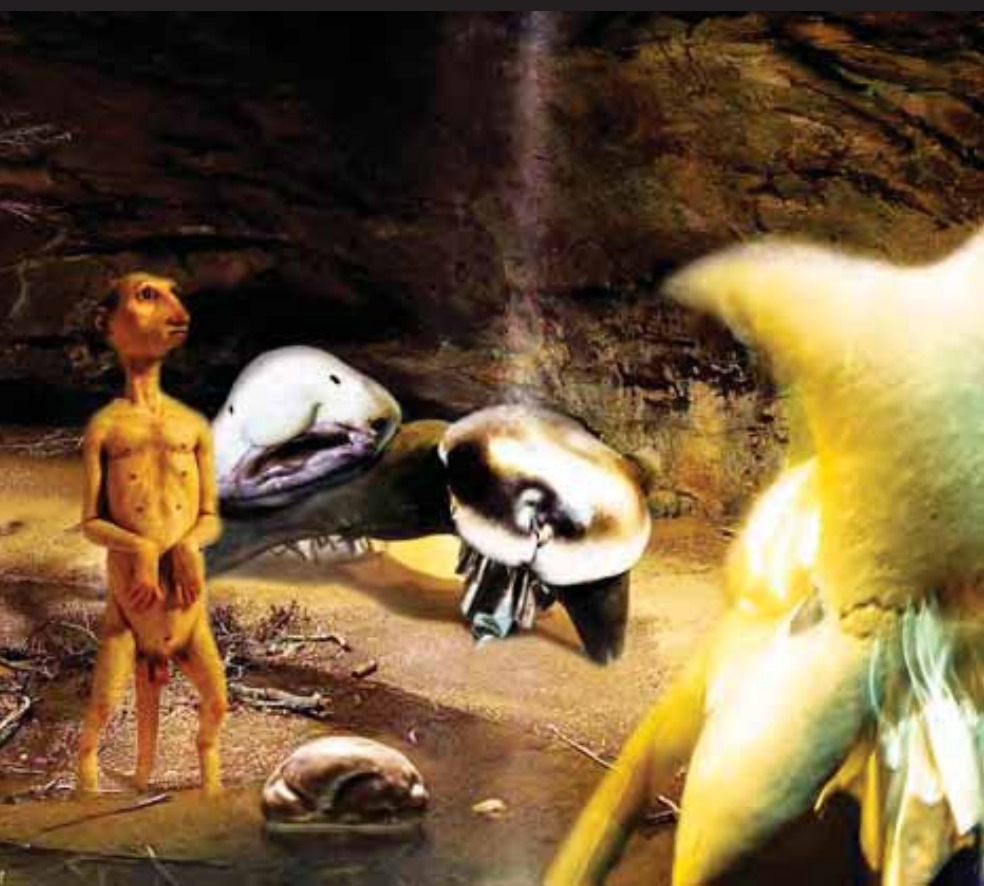
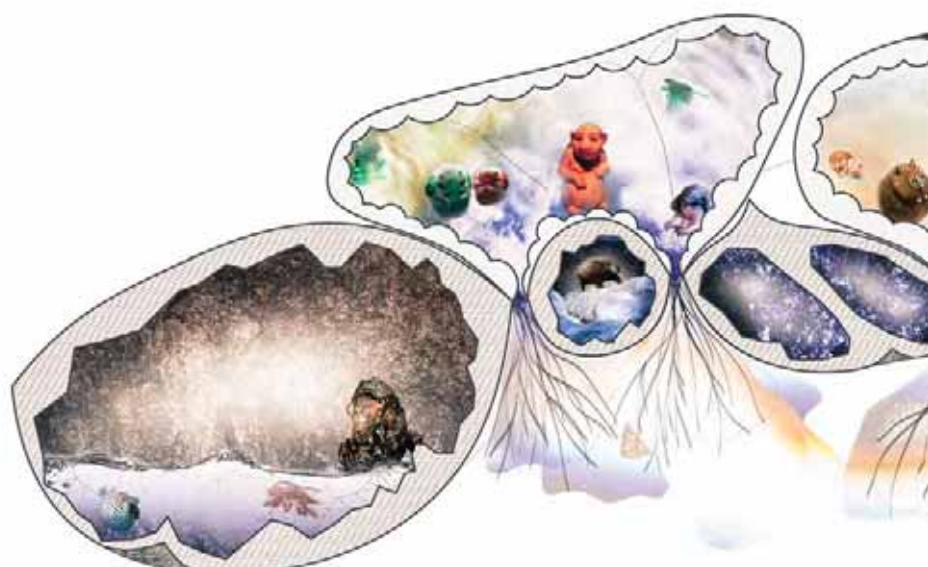






















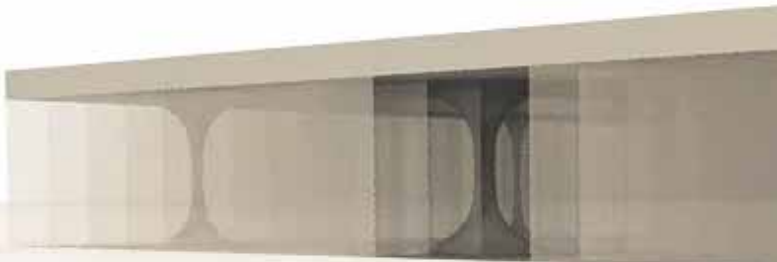
Transglass

Chicago Fall 2013

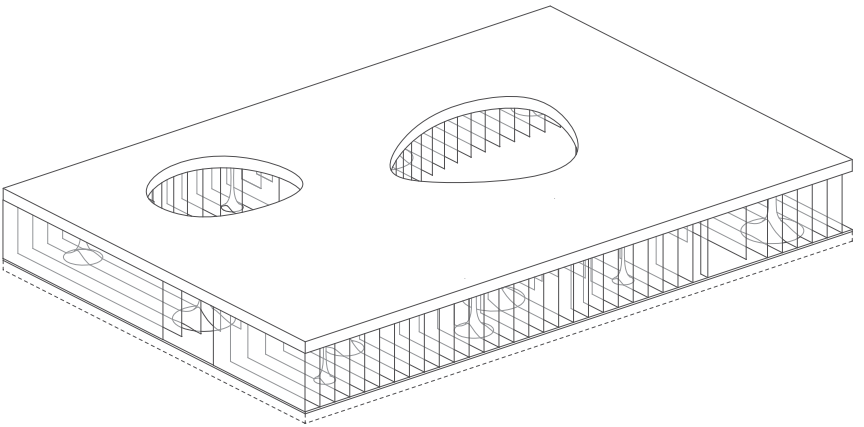
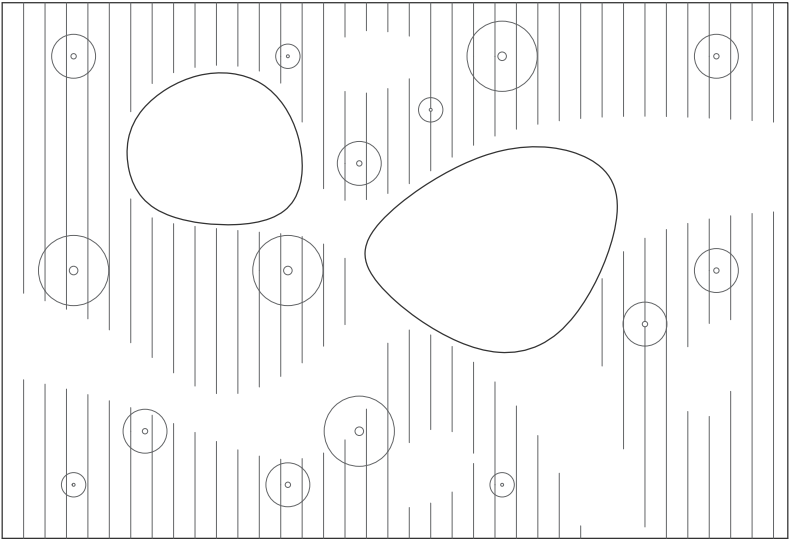
Lluis Ortega

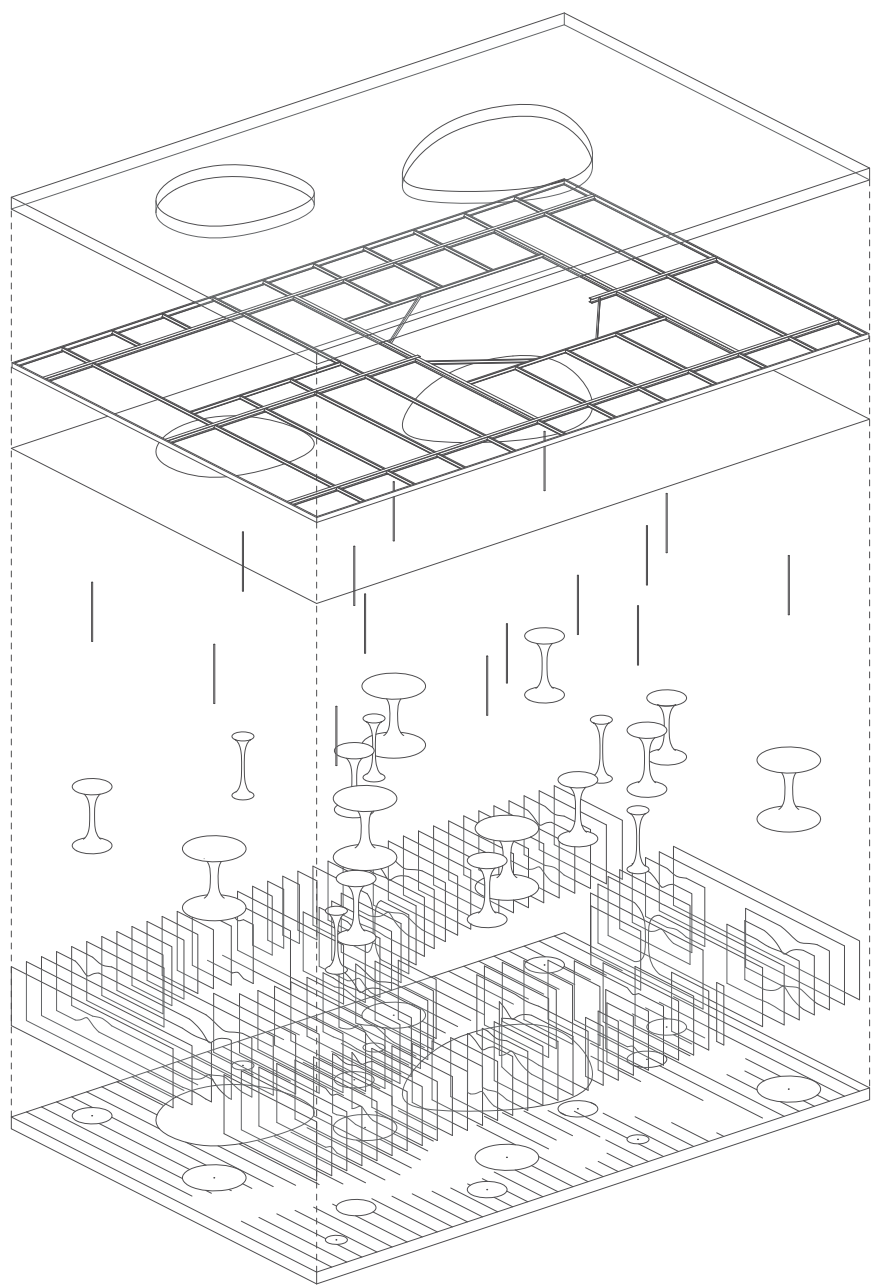
w/ Danny Travis and Rachel Schenk

The Transglass pavilion was influenced by the works of SANAA, specifically the Toledo Glass Museum. Similar to the Glass Museum, this pavilion incorporates floor to ceiling glass walls that create a semi transparent layering effect. Between each layer of seamless, solid glass panels is a three foot gap that allows people to move through the building in one direction while following the cutout circulation in the other direction. The offset panels also create two different visual experiences depending on the viewer location. The structural make up of the pavilion is very similar to that of the Glass Pavilion. The vertical supports are circular steel tubes that are covered by prefabricated GFRC shells. The shells provided a visual connection between the floor plate and the ceiling. This allows the two individual planes to appear as a continuous surface in an array of glass planes.

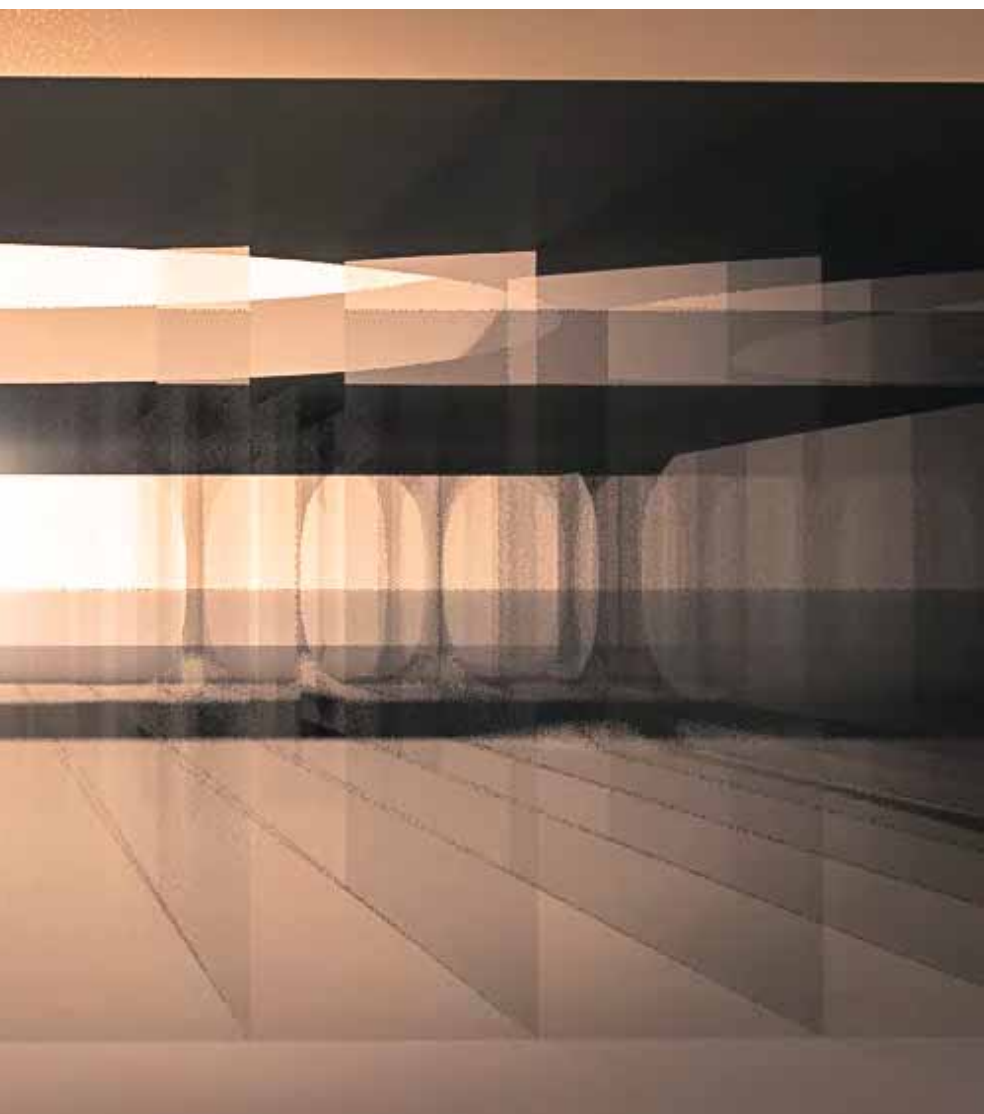












FiberDuck

Chicago Fall 2013

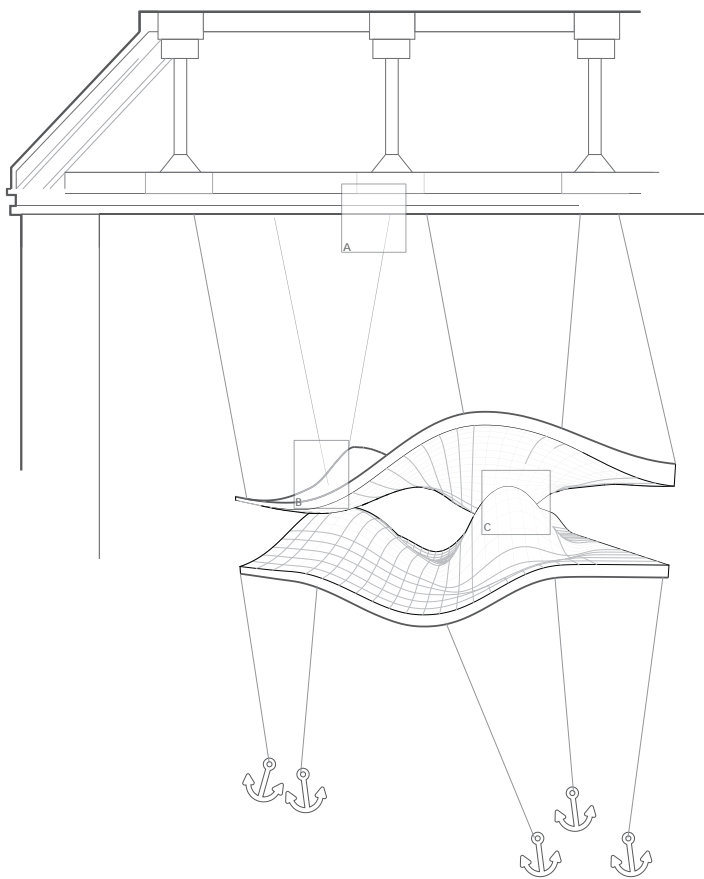
Lluís Ortega

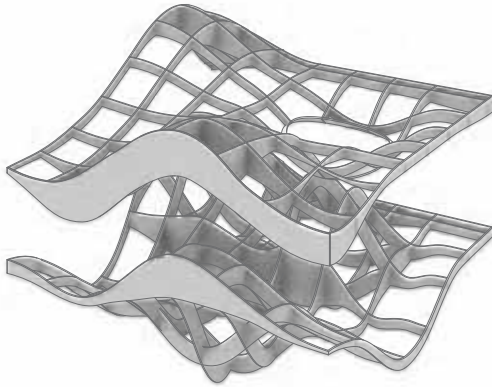
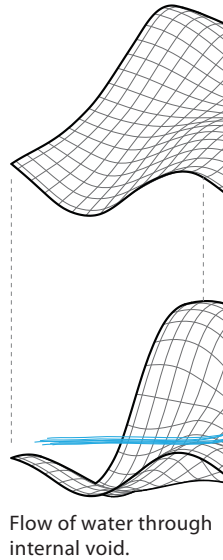
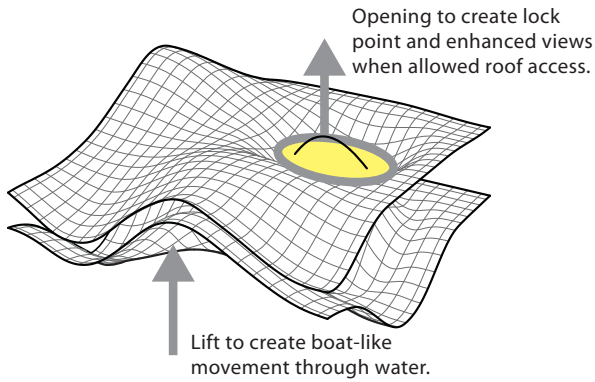
w/ Alexander Culler

The FiberDuck is designed with the capability to be moved long distances on water. The two, interlocking forms were developed, first as a single form or mass, and second as independent parts to the whole. After forming initial moves to create and limit movement through the void, the parts were split to concentrate on their individual purposes. The lower object is designed directionally to allow movement of water and boats through the space. It is also formed to create a boat-like relationship to the water, accounting for movement and providing maximum space for foam filled voids. The top mass is designed to rest on and interlock with the lower mass in "Boat Mode." It is also designed to provide a series of focused views, depending on orientation designated by the site in which it is placed. The structure is made up of a light steel contour grid filled with foam and coated in a layer of Fiberglass & rubber slip resistant coating.

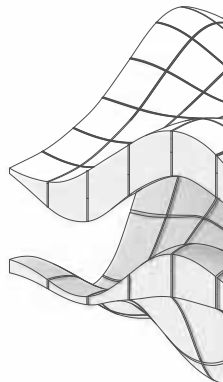
The pavilion structure is comprised of two separate, detached surfaces. The two surfaces are configured by the same technique of hanging structure, but deployed against two very different physical conditions. Firstly, the structure of the top surface hangs down via steel cables to an existing bridge structure, dangling close to the lower surface without contacting it. The top surface is subjected to wind forces which will cause it to sway slightly laterally. The bottom surface is also tethered by cables to a surface, but instead of hanging from a bridge it is floating on the river surface while being anchored to the ground surface below it. The lower surface is subjected to vertical forces of the moving water current, causing it to bob up and down. The swaying of the top surface due to wind forces and the bobbing of the bottom surface due to current creates a unique architectural condition made possible only to this unique site condition.

FiberDuck, being made of two surfaces of which connection is merely implied and not literal, is adaptable to a variety of four specific orientations. The base plane always points with its openings down river stream, to allow the natural current of river water to flow through and allow an easy access port for docking boats and water craft. The top, however, can be rotated to four distinct configurations to accomplish different functions of the site the pavilion is deployed in. The first orientation allows maximum open space in the central area between the two surfaces. The second allows the roof opening to situate itself in a position for people to climb through and access the top surface. The third opens up the greatest amount of space on an edge condition, while allowing ample light to spill through the portal opening. The fourth allows the hole in the top surface to dock on the lower surface, making it a floating boat structures that can move down river to a new bridge site for deployment.

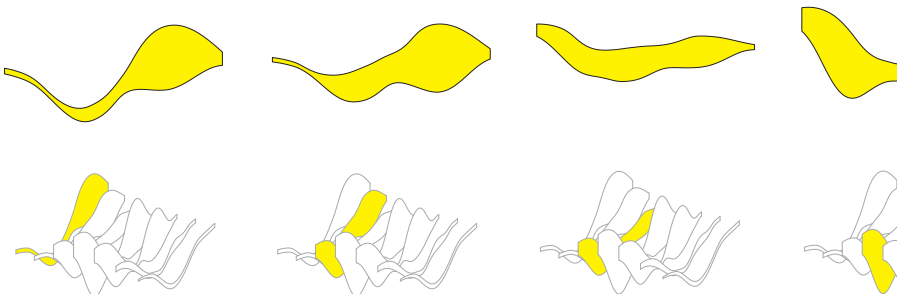


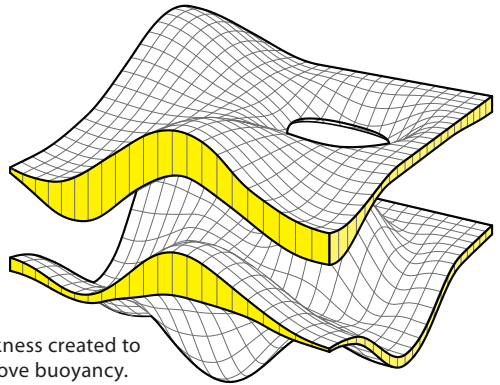
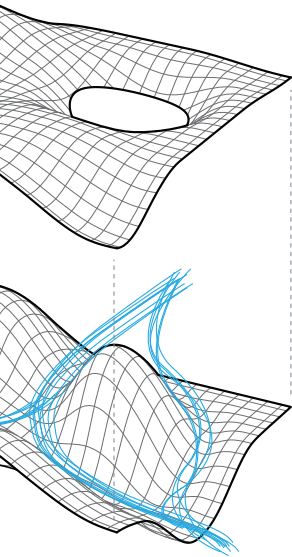


STEEL STRUCTURE

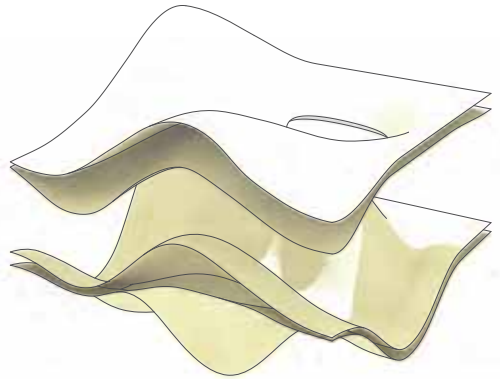
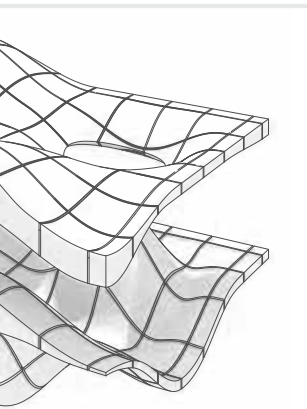


FOAM FILL

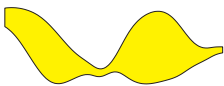
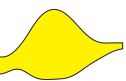




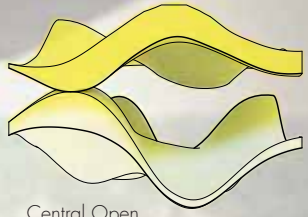
Thickness created to improve buoyancy.



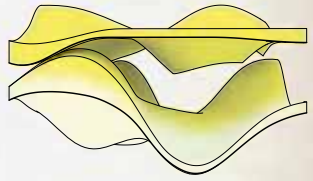
FIBERGLASS & YELLOW RUBBER COATING



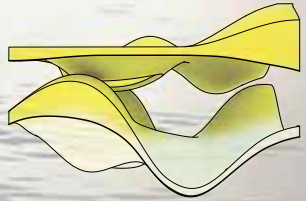




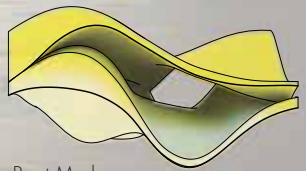
Central Open



Edge Open



Roof Access



Boat Mode

Myth

*Chicago Spring 2014
Molly Hunker, 2013-2014 Douglas A. Garofalo Fellow
with Danny Travis, Samra Pecanin, Max Jarosz
Nichole Tortorici, Jacob Comerci*



Re-Imagining the Home Shrine

Molly Hunker's fellowship research during the 2013–2014 academic year has centered on kitsch artifacts and their potential to recalibrate contemporary notions of atmosphere and engagement. Hunker's culminating fellowship project, *Myth*, focuses specifically on the religious genre of the home shrine, re-imagining the richly decorative and kitsch assembly through the lens of the architectural installation.

Myth uses the decorative prayer candle as the primary object-tradition through which to explore how home shrines may provoke new understandings of visual and atmospheric opulence in the architectural interior. Made with traditional candle-making techniques, hundreds of handmade wax candles are suspended on embedded cotton wicks, accumulating to create a semi-enclosed chromaphilic space. While the overhead candles are geometrically simple and clean, the candles closer to the ground are increasingly articulated with a grotesque rustication captured during the transformation of the material from its liquid state to its solid state. This rustication technique partners with a gradient of increasing color saturation to engage with the traditional shrine organization that establishes a narrative describing the change between heaven and earth.

Contemporary expressions of religious architecture tend to reinforce a clean, open-minded spatial construct that leaves the spiritual narrative to be defined by each visitor's imagination and beliefs (however rich or bland those may be). Instead, *Myth* aims to establish a space of greater emotional and spiritual resonance by employing familiar materials, crafts and even smells present in more common devotional spaces.









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