ON TEXTILES + ARCHITECTURE

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I
HYPOTHESIS

Fashion can be defined as a popular trend, especially in styles of dress and ornament or manners of behavior. These trends and styles are ever evolving, changing as rapidly as the weather. With this rapid turnover, fashion is a monumental and dominant industry that no one can truly avoid.

Standing in the all-black uniform of minimalism, architects often scoff at the fashion industry. Fashion itself is temporal, potentially even frivolous with ever changing trends and ideas. But something so "frivolous" as the style of that basic black shirt fuels a $1.2 trillion global industry.[1] Fashion is one of the leading drivers of economy: the reason why labor is outsourced and why some travels thousands of miles for a name brand. With so much money on the line, how can fashion truly be frivolous?

Then there are the architects who embrace the fashion industry: Rem Koolhaas, Frank Ghery, and Zaha Hadid, just to name a few. Instead of seeing the limitations of fashion, they see opportunity in the ability to explore and iterate at a smaller, less expensive, scale. The future of architecture may lie within the one industry that everyone utilizes. The playfulness of fashion and textiles can be translated into sweeping curves and dynamic spaces. These spaces can encourage innovation in modeling and building, using the rapidly advancing technology to build bigger, better and faster than ever before, After all, the foundation of much of human progress has lied in the fun and impulse to delight.

There is also the argument, increasingly popular amongst fashion designers, that states "the viewer makes clothing into fashion."[2] If this statement is true, than the viewer can create fashion from anything, including architecture. In fact, in 2014 illustrator Paul Tuller crafted a series of portraits depicting architects wearing their most iconic buildings as hats.[3] While playful, and wholly theoretical, Tuller shows that the link between fashion and architecture is merely a matter of scale. Changing scales of a pleat could make a facade, while decreasing the size the a steel structure could be compared to the plastic ribbing in the bodice of a dress. This thesis hopes to break down the walls separating fashion and architecture through research, a series of experiments and later physical interventions. Although fashion and architecture are seemingly only connected by an overarching umbrella of "design," the progress of technology has increased the transfer of information and techniques between the two disciplines. The result: a new age of dynamic architecture. If the playful frivolity of fashion can be translated into this new age of architecture, then architecture can be ephemeral and temporal, expanding and changing to meet the desires of consumers and occupants.

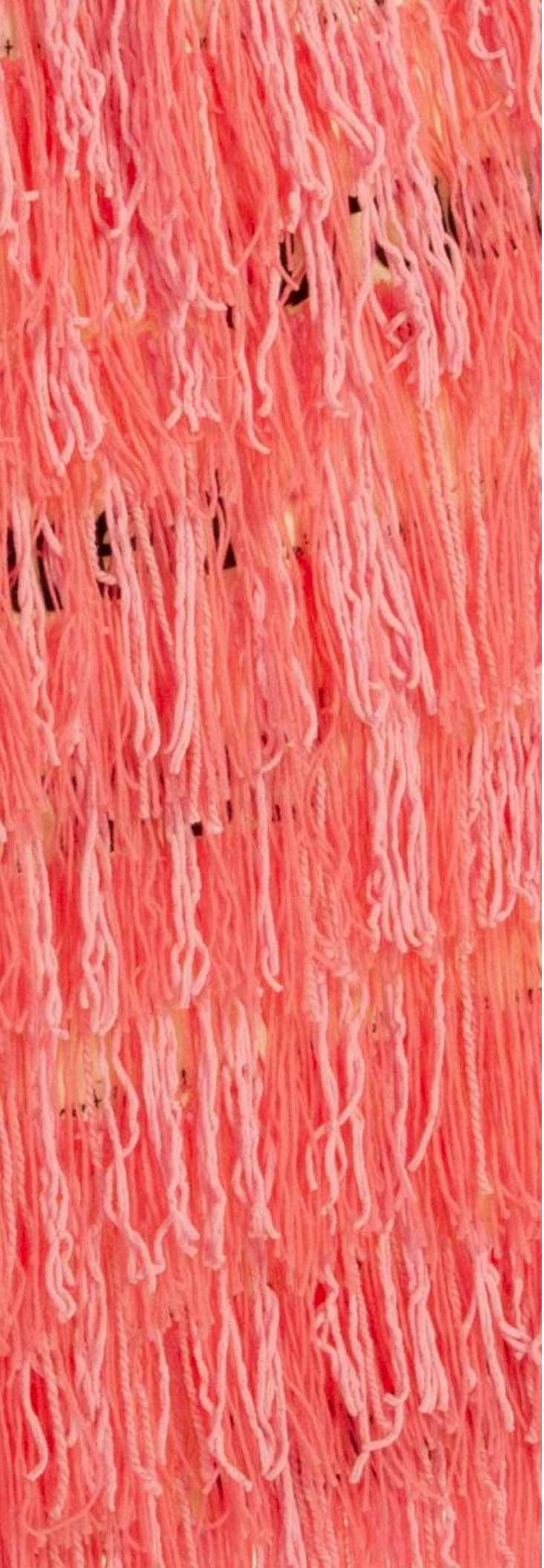
[1] Chung, Shuk-Wah. "Fast Fashion Is 'Drowning' the World. We Need a Fashion Revolution!"

[2] Loschek, Ingrid. *When Clothes Become Fashion Design and Innovation Systems.*

[3] Brownlee, John. "6 Starchitects Wearing Their Most Famous Buildings As Hats."

EXPERIMENTS

Image 2.1



II
FASHION STATEMENTS - A NARRATIVE

The first experiment conducted in this thesis was an examination of comfort. It is human nature to seek comfort in times of stress or trauma. Some find it in buildings, hiding away in bedrooms or libraries. Others find comfort in textiles: cozy clothing and blankets. In traumatic events, it is even common to give victims of shock blankets to help maintain body heat and comfort. Fashion Statements provides comfort in weight, warmth, and distraction. Using doubled white flannel, the blanket traps heat keeping the wearer warm and soothed. Pink fringe, which is sewn to the flannel, adds weight and distraction. Playing with the fringe, words are revealed. This words may cause stress or anxiety, resulting in the need for comfort and support. Inspiration for the narrative and desire for comfort comes from my own life experiences and memories. The narrative is told in two alternating parts. First is the anxiety of a diagnosis while the second is formed from the intense flashbacks of my father's illness and untimely death. Using my own fear and anxiety, I created something I would find comfort wrapped in. The original narrative talks about a pale pink sweater, but ultimately the Fashion Statements manifested itself with the words of fear and happy pink fringe. During both of these times in my life, trapped in the sterile white of hospitals and waiting rooms, I relied on textiles and clothes to provide me comfort. I would hide in my sweaters and coats, finding moments of silence and peace. This intervention is the first of many looking at how fashion and architecture can be fused to provide unique areas of refuge or service to the consumer.

I sit down in a chair, anxious and waiting. I pull you closer around me. Pink, soft, and warm, you are my only comfort in this sterile room. The lights are too bright, the floors too shiny..and no sound except a faint beeping.

They remind me of him. Of the countless hours of waiting. Was he okay? Was he going to get better? Did the doctor's have a successful surgery? No.

I am too warm, but I don't want to loose you. So I pull you even closer and look at my shoes. I am shy. I am scared. What will happen to me? Will I end up the same?

It will be okay. It will get better. That's what they tell me. But how? He is gone and he is never coming back. I am terrified. I wrap my around me and cry. I am alone.

You have an abnormal count of atypical cells they tell me. This must be removed. My head starts to buzz. I want to cry. I can't be afraid. I pull you closer around me. When, I ask. Now, they say.

Is this how he felt? Stranded and alone. We were with him, but he seemed so distant. No one can know how he felt. How I feel.

You're open to talking about this, that's good. No. No I am not. I don't want to talk about it. No one can know he died. So I pull you tighter around me, finding comfort in your silence. You may just be a sweater, but you are the only comfort I know.

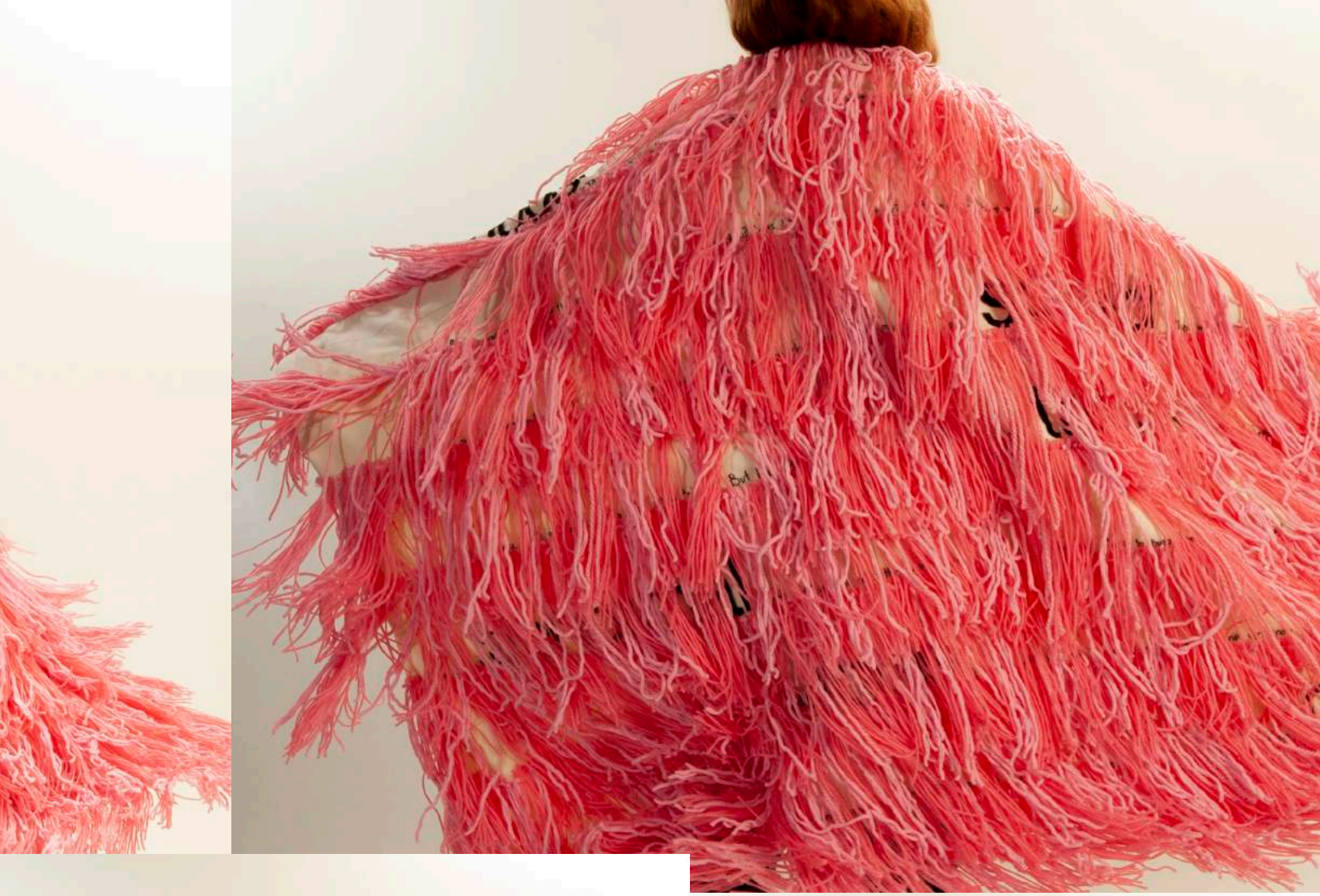


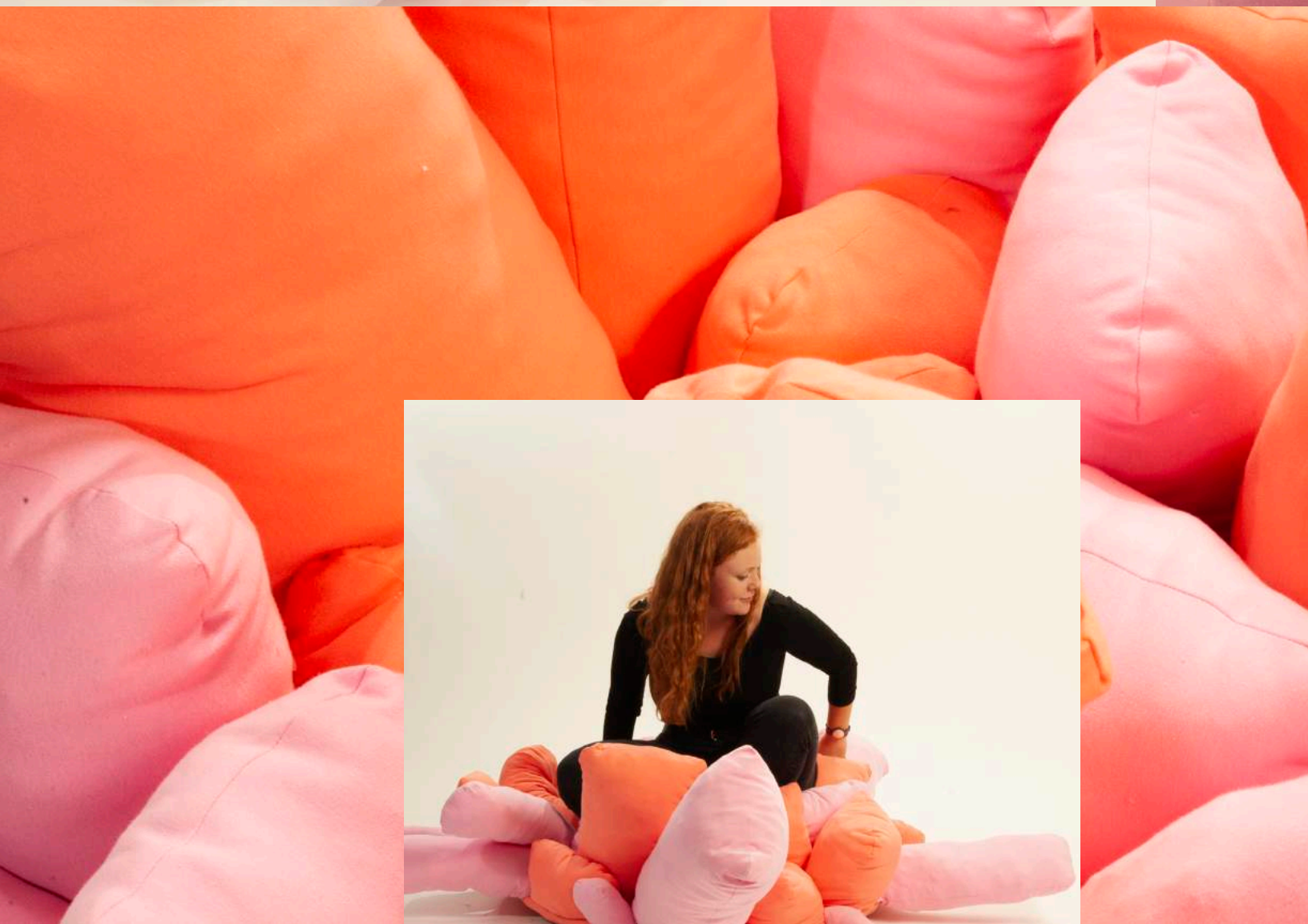
Image 2.2 - 2.6

Image 3.1

III
INTRODUCING: XENIA

The next assessment of fashion and architecture was the examination of play. As Steven Johnson argues in his book *Wonderland,* play and the pursuit of leisure is responsible for human advancement.[1] Xenia works to address the concept of play in both textiles and architecture. Many architects gladly chose to dabble in the human scale of furniture, while some fashion designers choose to craft entire lines and shows around iconic pieces of furniture.[2] Inspired by creatures of the deep and their soft, soothing movements, Xenia combines the world of fashion and architecture into a whimsical plush pouf. Using a simple voronoi sequence, each arm has a unique shape, allowing a variant in thickness. The voronoi bases are then extruded to various heights between six inches and two feet. These extrusions create the arms of Xenia. Each arm is made from a lightweight orange or pink jersey, similar to a t-shirt material. The arms are then lined with medium weight fiber batting and stuffed with locally sourced shredded memory foam.
The result is a plethora of welcoming arms, encouraging every passerby to take a moment and a dive straight to the heart of Xenia. The arms a pliable and allow the user to adjust and reposition for ultimate comfort.

[1] Johnson, Steven. *Wonderland: How Play Made the Modern World.*
[2] Hodge, Brooke, et al. *Skin + Bones: Parallel Practices in Fashion and Architecture.*



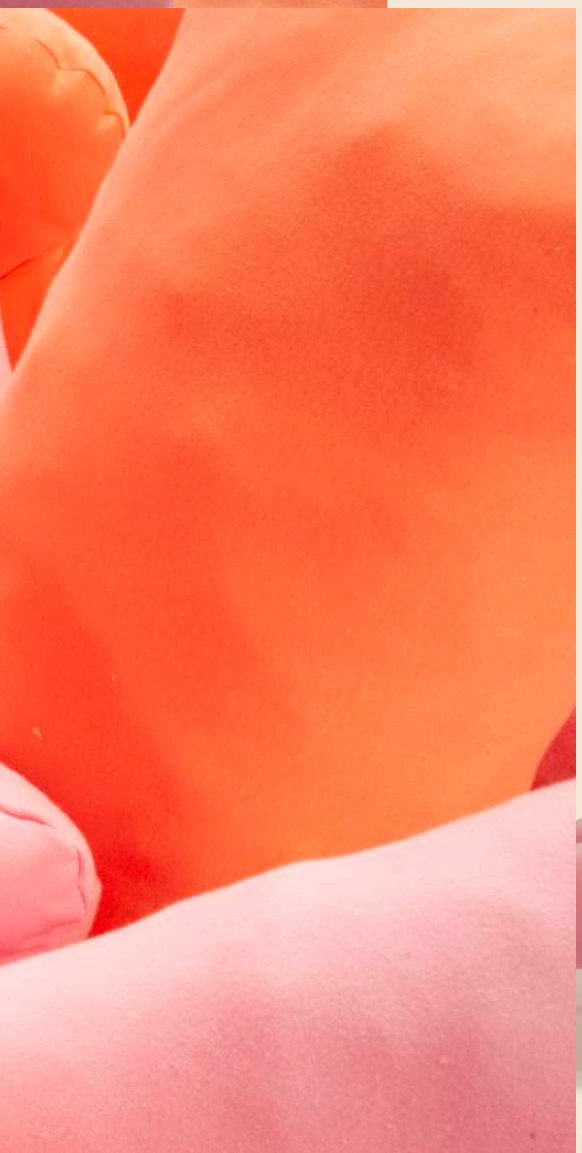


Image 3.2 - 3.7

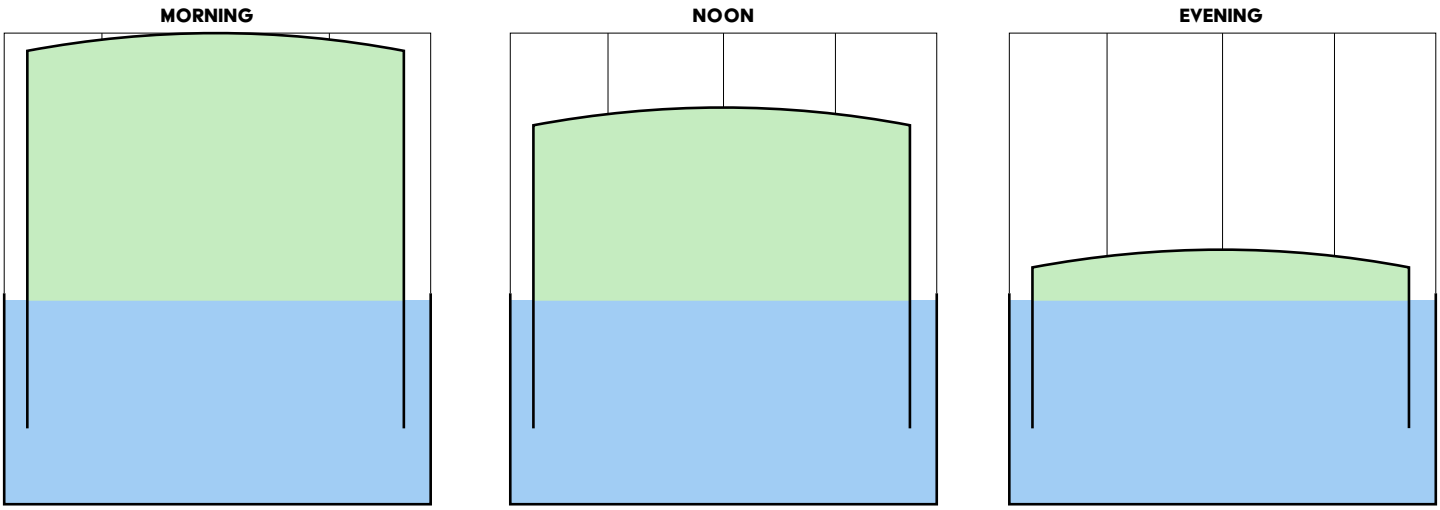


Image 4.1

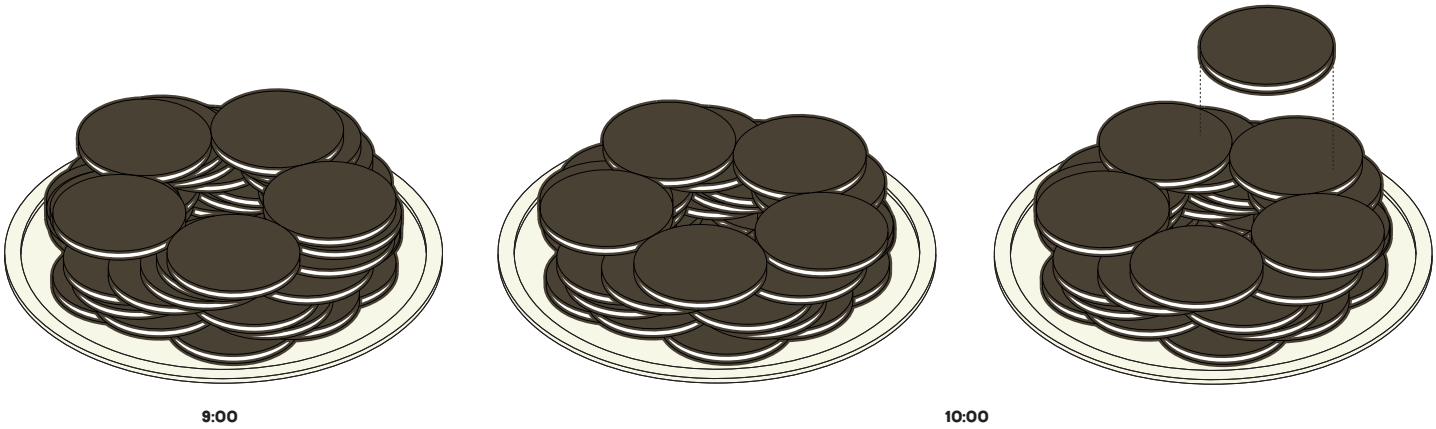


Image 4.2

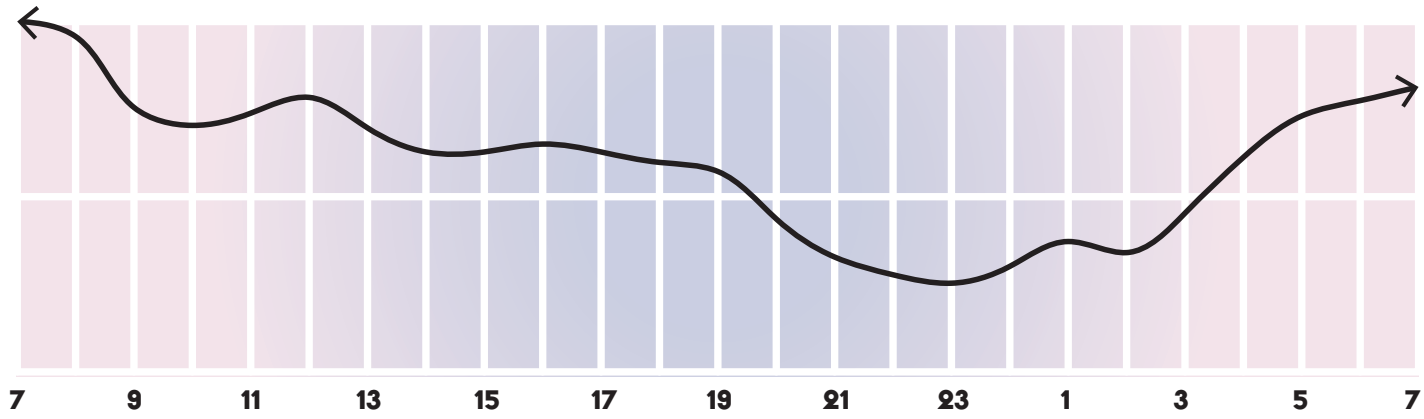


Image 4.3

IV
FEED ME - A 24 HOUR EXPERIMENT

The 24 Hour experiment seeks to examine a key portion of the site and program: consumption. The gasholders were the cornerstone of late 19th century consumerism, rising and falling with the demand for energy. As the demand for gas fell, the gasometers rose with excess gas, storing for future use. Then, when the demand for gas increased, especially around dinner time, the gasholders would fall to maintain a constant pressure and distributing gas to the city. The gasholders would reach capacity again by morning, refilling itself while the city was asleep.
The 24 Hour experiment seeks to do the same and document the increase or decrease in consumption. While gas would be ideal, another fuel will be used: Oreo cookies. The experiment will begin promptly at 7:00, just a mere 10 minutes before the first set of classes at Cal Poly. The gasholder, or in this instance a plate, will start at capacity with 40 Oreos. The will be left in studio for consumption, perhaps with an encouraging note of "eat me." After each hour, the amount of cookies will be documented and an additional cookie or two will be added to the plate to mimic the addition of gas. More cookies will be added during the day to keep up with the demand. The object is to document and understand how a group (approximately 18-20 people) consumes energy in the form of an irresistible cookie.
The consumption of the cookies should follow the consumption of the gas by tracking meal times. Typically, there is a higher demand of gas at standard breakfast, lunch, and dinner hours, resulting in the fall of the gasholder. Theoretically, the cookies should do the same. In the morning, students seeking a sugar rush before class will find it in a few oreos. Again at lunch, when hunger begins to strike the cookies will be consumed at a higher frequency. Finally, at or just before dinner the cookies will face a spike in consumption. Snacking and intermittent consumption should be expected, much as gas would be used to fuel lights or heating. Also different or more erratic schedules will cause off hour eatings. However, the cookies will replenish at night when the experiment space is empty, allowing the cookies to completely be replenished. Ideally, at any point of this experiment, the plate will have enough cookies to satisfy demand. This may be idealistic, but the consumption of cookies will hopefully give insight to the historic consumption of gas.
The above graph is the projected results by hour. The maximum amount of cookies will remain at 40 cookies, the minimum amount at 0 cookies. The center line of the graph indicates the median of 20 cookies. The consumption line fluctuates throughout the day, reaching its lowest point cones at approximately 22:00. The general assumption is that at this point, the consumers go to sleep. An issue with this assumption is that the experiment will be conducted in an architecture studio, and no actually sleeps at normal times when in architecture school. However, the erratic sleep schedules of architecture students will be more informative to the experiment and ultimate goals of Halo.
The goal of this experiment is to better understand the working hours of creative thinkers to develop a program that better caters to habits of active designers. Preliminary program diagrams have been specifically created to examine hours of us and demonstrate the hours of operation. The results will used in conjunction with the program development to expand a contract the usable spaces throughout the day.

RESEARCH

V
INTRODUCTION TO RESEARCH

The correlation between textiles and architecture is hardly a new phenomenon. In fact, when examining the two industries, one can find that textiles, namely fashion, and architecture have established a mutual existence.[1] This existence more recently has resulted in the direct transfer of information and technology between the two industries. With the advent of the computer and form generating technologies, the two industries are closer linked than ever before. However, to understand this long-standing coexistence, one must examine a series of major events and movements that have eased textiles and architecture onto intersecting paths. First, we will examine the nomadic cultures clothing and structures. More specifically the Native American Plain Tribes that dominated the continent until the 19th century. In addition to this, we will examine the influence of artist Piet Mondrain on both the textile and fashion industries. His color blocking has become an obsession for architects and fashion icon of the 1950s. Perhaps most pivotal and influential of the merging of textile design and architecture is the work of Zaha Hadid, both in architecture and fashion. Through her work we can correlate the direct influence of textile design and architecture in her voluptuous curves and high flying heels. Finally we will examine the current discourse between fashion designers and architects. These conversations, better categorized as flirting and mutual admiration, demonstrates where the two industries are headed. Gone are the days where architects scoffed at fashion designers for their frivolous nature, instead opting to embrace their lighthearted nature as a way to research and iterate powerful ideas and movements in modern architecture. Even though the textile and architecture industries have thrived as separate but coexisting trades for centuries, pivotal advancements have made both more susceptible to change and the powerful sharing of information that will change textiles and architecture for generations to come.

[1] Quinn, Bradley. *The Fashion of Architecture.*

V.A | NOMADS

In order to understand the relationship between textiles and architecture, one must first examine nomadic cultures. The beauty of nomadic cultures lies within their clever use of natural materials. Perhaps the most recognizable of these cultures is the indigenous tribes of the North American Plains. The Blackfoot, Cheyenne, Arapahoe, and Crow tribes roamed from Arkansas to Colorado and from Texas to Montana in constant pursuit of the American Bison.[2]

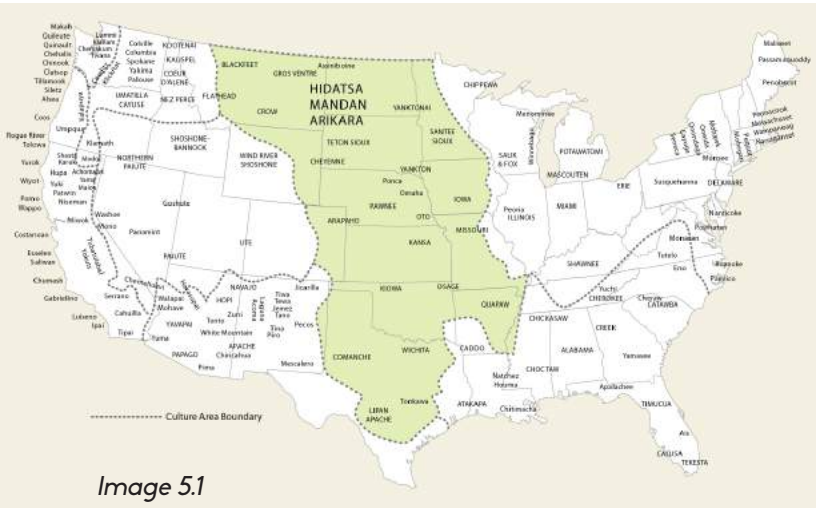


Image 5.1

This beautiful 1000+ lb creature was not merely a source of food for Native Americans. Bison hide provided an even more important resource for native peoples: shelter. Bison hide would be dried and tanned and used for two main purposes: clothing and shelter. The first was potentially far more important than the later. Bison leather shielded one against the nasty weather of a Plain winter and offered protection from the blistering sun during the summers. Clothing could be used for special events or to show status within a tribe.

Image 5.2

Without this protective layer, many activities necessary for a nomadic tribe would be near impossible. But textiles have rarely been limited to a single use. While clothing was pivotal, shelter was a lifeline. Shelter had the power to trap heat and provide a better line of defense between the elements and the body. In the example of the Plain Indigenous Tribes, shelter had to be dynamic, light, and flexible. The source and design for such a shelter lied within the clothes they wore: bison skin. Bison skin, once stretched and tanned, is a pliable material, readily bending to any shape or compacting into smaller sizes.

Image 5.3

This material allowed for the ease of travel, a life or death necessity for a tribe who depended on migrating herds as a lifeline. The sharing of textiles was pivotal for survival for the nomadic tribes. While the example seems antiquated, and nearly irrelevant after the systemic cultural annihilation of Native American peoples after 1851[3], modern artists and designers have adopted these ideas for modern use. Perhaps most recognizable of these is the work designed by Lucy Orta. Orta's work broke down the barriers between clothing and architecture, blending the two together to address social issues that many chose to ignore.[4] Orta's work addresses social crises, typically looking at homelessness and refugees and designing innovative "clothing" to aid the wearers. In her Shelter Series (including Refuge Wear, Body

Architecture and Fabulae Romanae) Orta addresses the relationship of clothing and architecture, binding them into a single piece. Perhaps the most famous of these pieces is HABITENT (1992-1993).[5]

Image 5.4

This article provides a jacket and a tent, giving temporary shelter to those in need. While the designer does not explicitly state her inspiration, the HABITENT seems to be drawn from the nomadic cultures of times past. This beautiful adaptation continues the precedent of using like-minded materials for both clothing and shelter.

[2] "Map of the Plains Indians" *National Museum of American History*
[3] Indian Appropriations Act, 1851.
[4] Quinn, Bradley. *The Fashion of Architecture.*
[5] Orta, Lucy. "HABITENT." *Studio Orta.*

V.B | THE MONDRIAN AFFECT

Piet Mondrain is a Dutch painter, best know for his niche painting style. Mondrain may be considered a household name for some maybe a celebrity of others, but one may fail to recognize his early work as an impressionist. Instead, five colors come to mind: red, yellow, blue, black and white. These colors provided a series of his best-known works, playing with the ideas of abstraction and cubism.[6] But Mondrain had a style all his own: De Stijil. Also know as Neoplasticism, De Stijil was a movement that embraced abstraction and used basic elements and primary colors to evoke emotion and expression.[7]

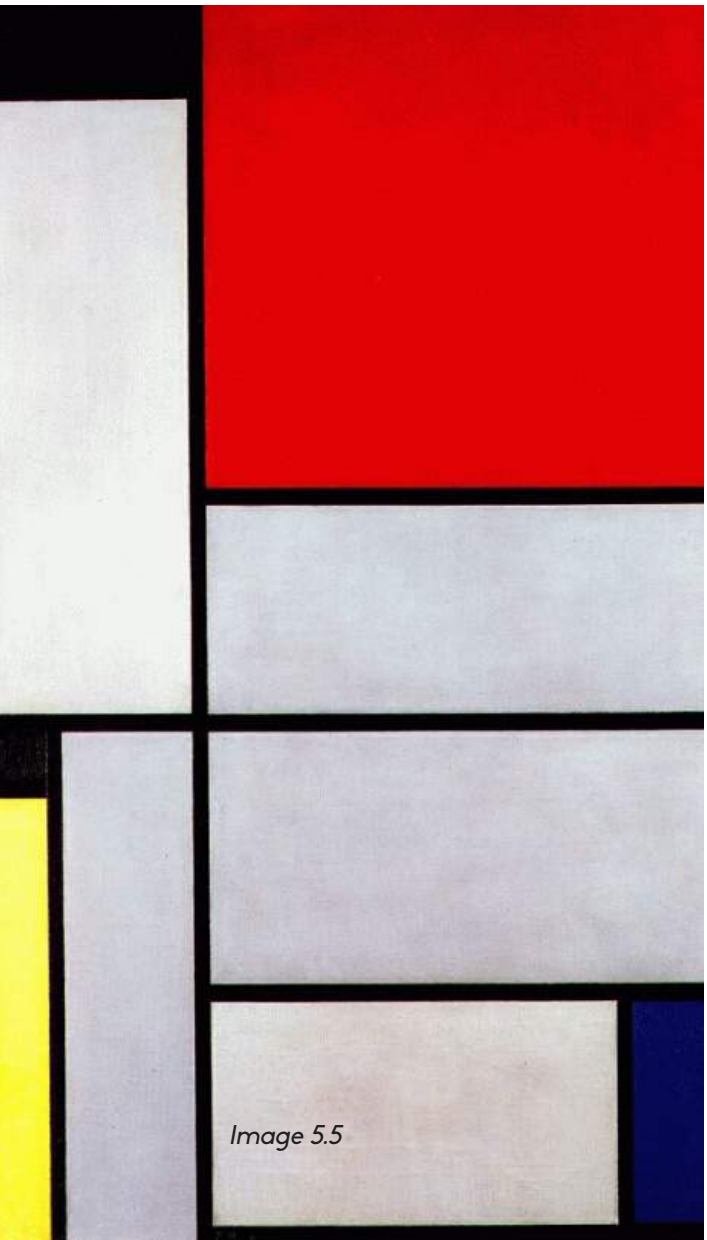


Image 5.5

Like many other movements after World War I, De Stijil was a utopian style that ultimately failed. However, Mondrain's work has managed to adapt itself and remain timeless. Perhaps Modrain and the De Stijil movement have been solidified in history because of the influence on architecture and furniture. The most iconic example of this is the Rietveld Schroder House in Utrecht, Netherlands. Built in 1925 , the Rietveld Schroder House was designed for a single mother.[8] Its walls and windows adapted to create idealized sightlines and tailored privacy for each space. While rather eccentric, the house uses a rater simple grid plan and colors to define space. The plan lacks hierarchy, but it creates a dynamic and fluid space.

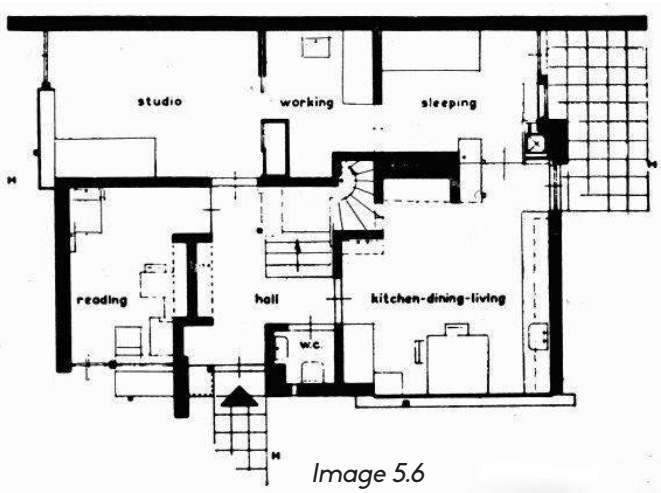


Image 5.6

While its usefulness as an actual house is often debated, Modrain solidified himself as an obsession in the field of architecture. But his grid and primary color designs were not confined to the modern architecture movements of the 20th century. Another great designer fell in love with Modrain and his De Stijil masterpieces. Piet Mondrain's work once again captured the eyes of the public when Yves Saint Laurent sent the now iconic Mondrain Dress down the runway for the Autumn-Winter Collection of 1965.[9]

Image 5.7

Using wool jersey and fabric inlays, YSL created a seamless textile inspired by the work of Mondrain. And the world was dazzled by the walking pieces of art. Cut in the highly fashionable A-line, the dresses became an international sensation, one that is still powerful and sought after today. The color blocking and cut were visually appealing and bold for women's wear.

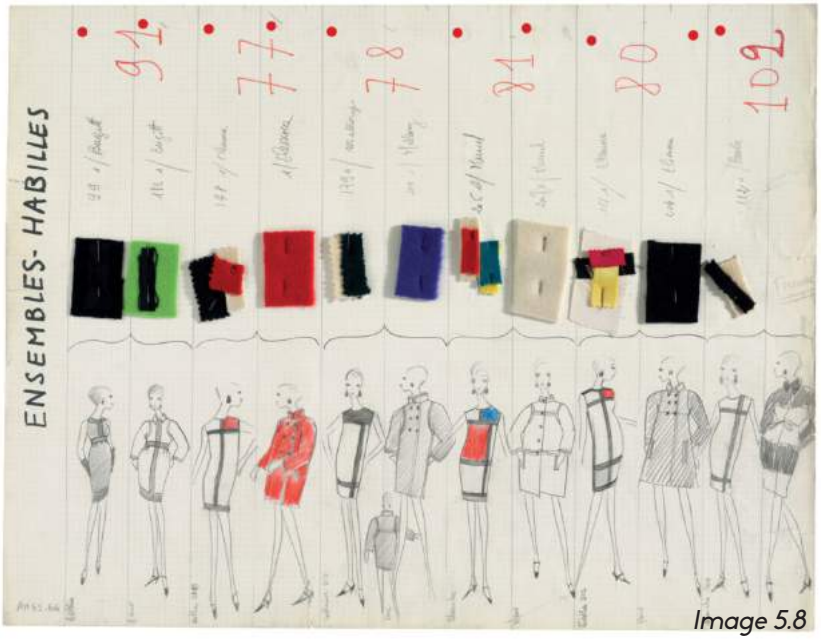


Image 5.8

Within 50 years, Mondrain transformed the art world and solidified his name into the hearts of every fashionista and architect. While Tolstoy and other may argue the counterfeit nature of Rietveld and Saint Laurent's work dimension the original Mondrain paintings,[10] the iconography of the De Stijil movement would have been lost to the dark storage rooms of art museums. Mondrain's work became so iconic and prolific that even artists such as Roy Liechtenstein recreated his works during the Pop Art movement.

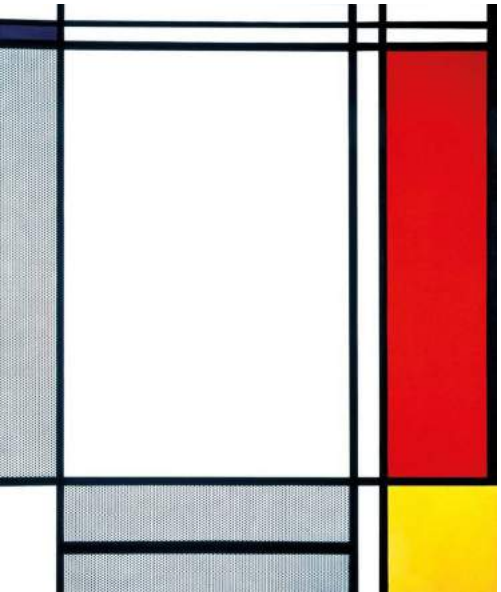


Image 5.9

The geometric patterns of Mondrain's iconic pieces were replicated as parti diagrams by modernist icon Mies Van der Rohe.

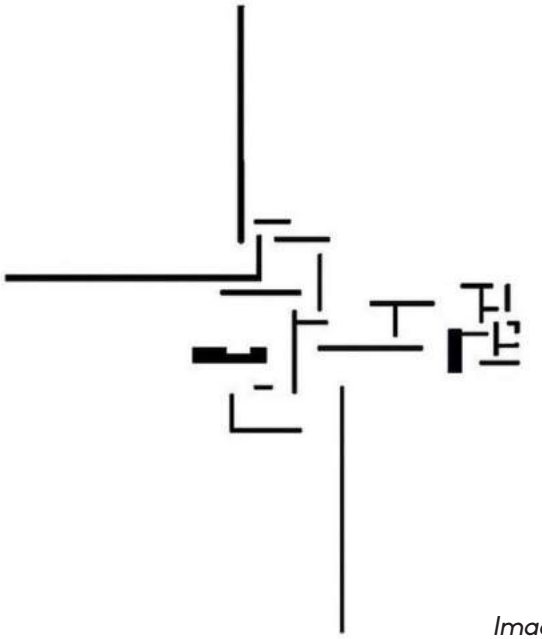


Image 5.10

Mondrain served as a great translator, blending the worlds of art, fashion, and architecture into a modernist's dreamscape. The works of Rietveld and Saint Laurent are only the beginning of a long lasting dialogue between designers and architects, even if the conversation is not direct.

[6] "Piet Mondrian and His Paintings."
[7] "De Stijl Movement, Artists and Major Works." *The Art Story*
[8] Sveiven, Megan. "AD Classics: Rietveld Schroder House / Gerrit Rietveld."
[9] "Homage to Piet Mondrian." *Musée Yves Saint Laurent Paris*
[10] Tolstoy, Leo, et al. *What Is Art?*

V.C | ZAHA: FUSING DESIGN

Perhaps most pivotal and influential of the merging of textile design and architecture is the work of Zaha Hadid. For decades, the pioneer was written off as nothing more than a paper architect. Her designs were too grand, too "out there" to ever be truly realized. And then the game changed. Suddenly Hadid's designs were not pipe dreams. They were possible, with the help of a computer and 3D design software. Grandiose structures, defined by stunning curves, took center stage, and Hadid began to flourish. Hadid became the leading figure in the next generation of design and architecture, ushering in the 21st century with excitement and grandeur. Yet Hadid did not limit her influence to stuffy architects resisting change. Her work with fashion and couture remain the awe and envy of aspiring designers and so-called shoe fanatics. Considered a "must-see" by Vogue Paris, Zaha Hadid's collaboration with shoe designer melissa transcends the barriers of fashion and architecture.[11] In a capsule collection from 2008, melissa + Zaha Hadid crafted a futuristic shoe, creating an unusual structure for the street.[12]

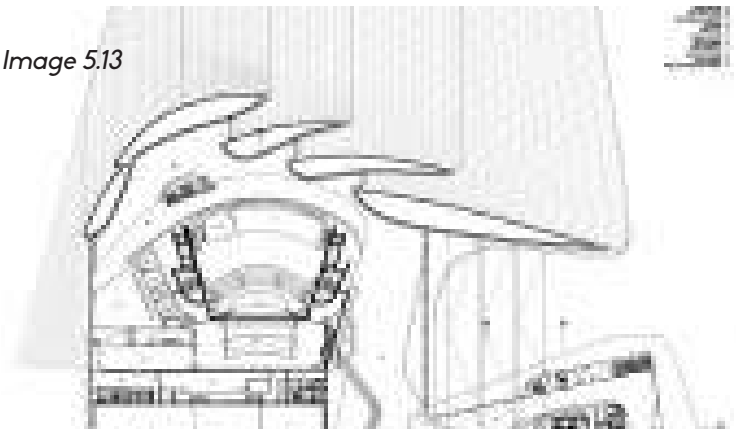
Image 5.11

Like the wearable art of Yves Saint Laurent's 1965 collection, Hadid designed an asymmetrical pair of shoes that were as dynamic and unique as her architecture. Hadid had several powerful collaborations with fashion brands, opting for the use of textiles and plastics to create stunning futuristic pieces. Her brand of architecture influenced her design decisions, and she allowed the long history of textiles to enrich her architectural designs. Zaha Hadid is perhaps best know for her voluptuous curves, seen in the Heydar Aliyev Center in Baku, Azerbaijan.[13]

Image 5.12

But the craft of the curve is not possible without structure, even in clothing. The translation of information to create a massive curve comes from an unlikely source: a pleat. In clothing design, a pleat adds structure, depth, and extra layers. In architecture it become a way to conceal structure and provide lighting. The pleating method, although subtle in section, can be seen it the ground floor plan. In this instance, the pleats provide entry but also the foundation of Hadid's iconic curves.

Image 5.13



A mere and simple pleat, the foundation of clothing assembly, has become an integral piece of architecture. While pleats in plan and section may be subtle or unintentional design methods, the emerging power of parametric design incorporates this textile element into facades. A more recent example of this relay of design information comes from a Tom Ford store in Miami by Aranda\Lasch.[14] Inspired by the bold geometric designs from the Art Deco era in Miami, Aranda\Lasch designed a dynamic concrete pleated façade.

Image 5.14

Through the system of pleats and pre-engineered GFRC panels, Aranda\Lasch created a geometric pattern within the pleats. Visually dynamic, the façade shows how textile construction is beginning to infiltrate architectural design beyond the work of futuristic architects. The fusion of the two industries brings forth new ideas and a unique courtship for future designers.

[11] Périer, Marie, and Nicole Rayment. "Fashion and Architecture: 8 Must-See Zaha Hadid Collaborations."
[12] "Zaha Hadid." *Melissa*
[13] "Heydar Aliyev Center" *Zaha Hadid Architects*
[14] "Work - Art Deco Project." *Aranda\Lasch*

V.D | COURTSHIP + ADMIRATION

Zaha Hadid is not the only architect to dabble and adore high fashion and the dynamism of textiles. In fact, her relationship with both industries may be another dime-a-dozen interactions. In fact, the Museum of Contemporary Art (MOCA) hosted an entire exhibition on the blurring boundary between clothing and architecture. Curated by Brooke Hodge, Patricia Mears, and Susan Sidlauskas, SKIN + BONES closely examines the parallel practices in fashion and architecture through a wide variety of case studies. By focusing on the time period of 1980 to present, the exhibition was able to compare the techniques in tailoring widely used in the textile industry to developing design and construction methods within architecture.[15] When merely looking at the technical aspects of the two industries, the differences between clothing and architecture remain in scale and their respective definitions of skin and bones. As a result, clothing and textiles are merely intimate architecture. Clothing becomes a skin, with the human form as the structural form while in architecture the skin is recognized as the façade or enclosure, relying on steel, concrete, or wood, for structure.[16] A simple variant in scale links the two polarizing worlds into one design movement.

Of course this conclusion and commentary are met by harsh criticism. A simple change of definition does not mean a coat can become an office building, nor is that necessarily the argument intended. "Fashion is thought as ephemeral and superficial, using soft, sometimes fragile, materials, whereas architecture is consider monumental and permanent, using rigid, highly durable materials." [17] This is not necessarily being challenged, unless the next wave of fashion involves concrete, but merely a comparison. Architecture can use these lightweight materials more readily, perhaps best demonstrated in Shigeru Ban's Curtain Wall House (Toyko, Japan, 1995).[18]

In this example, Ban foregoes the classic glass façade for one made of fabric. The result is a stunning space that blurs the line between

Image 5.15

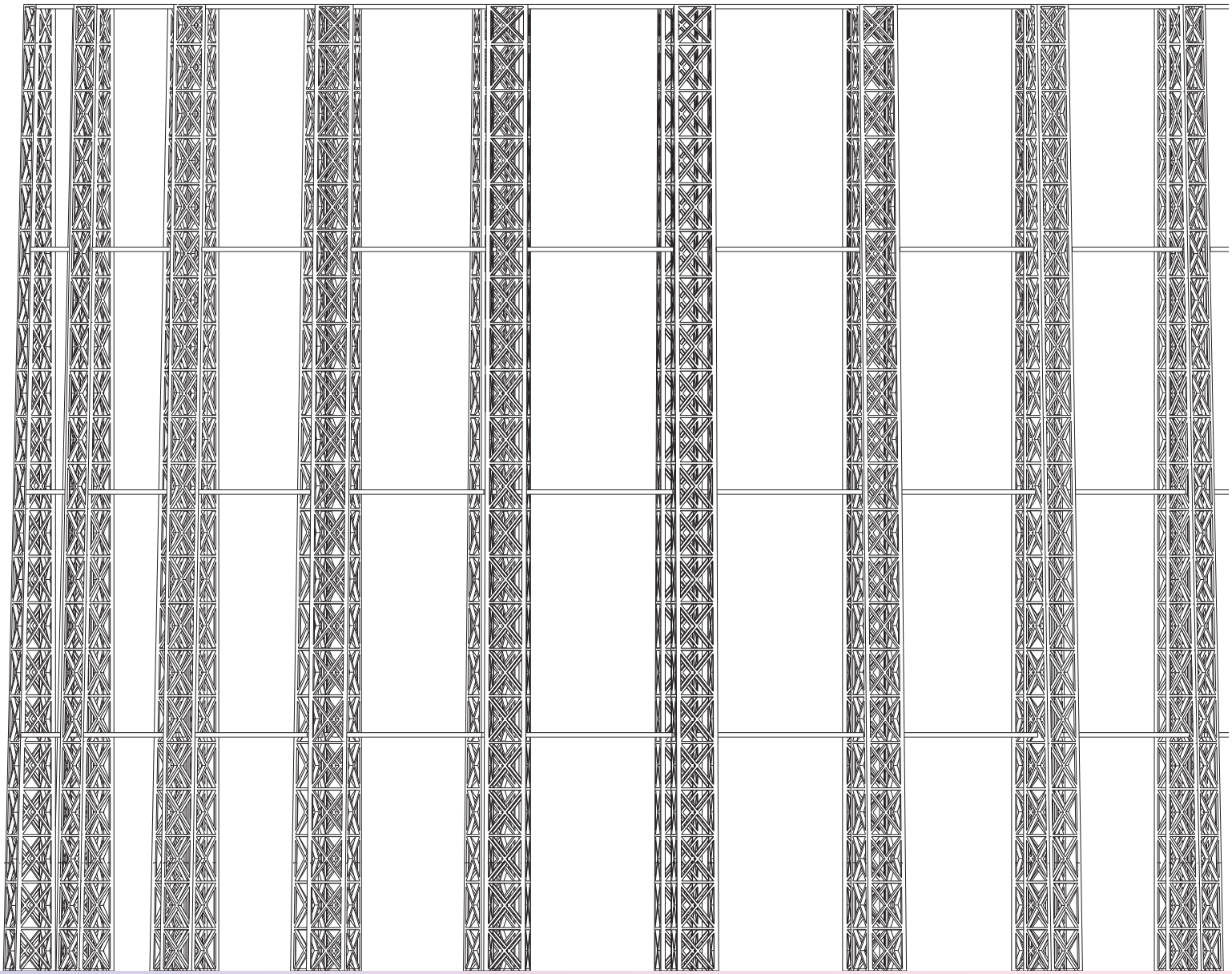
exterior and interior. This case study is a flirtation with textiles, but a powerful example of the dynamism that can be achieved by the use of ephemeral materials. In addition to the contrasting aesthetics and materials, fashion is often seen as frivolous consumerist materialism. It is quick to form and easily produced. The media is a machine fueling the consumption and waste of textiles by defining seasonal trends. But this definition is superficial and lacks understanding of the process of design itself. "The beauty of fashion, on the contrary, is that. You make something sublime. If it's successful you repeat it and it becomes a kind of model that's endlessly reproduced. And that aspect of fashion is of course deeply impressive and serious" (Rem Koolhaas).[19] The reality is that architects have a secretive love affair with the textile industry. It is fast, easy to iterate, and produces monumental designs. Writing off the entirety of textiles is negligent. Instead, architects and designers can view textiles as a method of play, of research, of interventions. As Steven Johnson argues in his book Wonderland, "play is about... experimentation with new conventions, it turns out to be seedbed for many innovations that ultimately develop into much sturdier and more significant forms."[20] Textiles can be the source of play and innovation for architecture, if it can be accepted by the traditional and stoic industry.

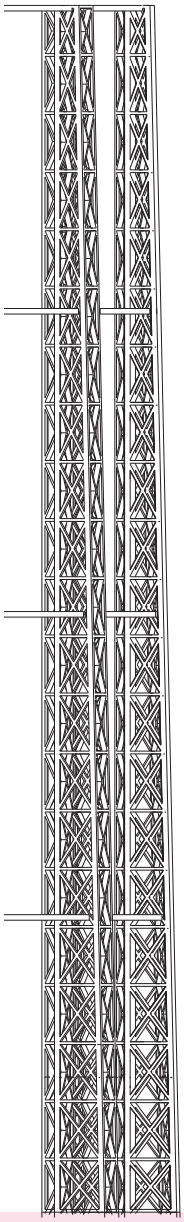
V.E | CONCLUSION

Textiles and architecture may have one of the greatest love affairs in history. While they are not separated by time or distance, the polarizing nature of the two industries seems to leave them on opposite ends of the design spectrum. Only in the briefest of moments do they come together to create great design, only to be pulled apart by practicality and angst. Technology may be changing these fleeting moments, increasing their frequency and power. So maybe there is a happy ending in this never-ending courtship. After all, one of the best fashion designers was initially trained as architects. Tom Ford studied architecture in Paris, before becoming frustrated with the process and changing his major to fashion. While he is the most famous example, there are ten other major designers that started their careers as architects. The arguments for the transition vary, but most have a similar underlying argument: architecture is limiting the creative process. This leads to the question: what if architecture was not a limiting factor? The solution may be found in the perceived frivolousness of textiles, and the encouraging process of play for astounding innovation.

[15] Hodge, Brooke, et al. *Skin + Bones: Parallel Practices in Fashion and Architecture.*
[16] Loschek, Ingrid. *When Clothes Become Fashion Design and Innovation Systems*
[17] Hodge, Brooke, et al. *Skin + Bones: Parallel Practices in Fashion and Architecture.*
[18] "Curtain Wall House - Tokyo, Japan." *Works | Shigeru Ban Architects,* 1995
[19] "'There's Nothing Frivolous about Fashion'." *CNN*
[20] Johnson, Steven. *Wonderland: How Play Made the Modern World.*

SITE

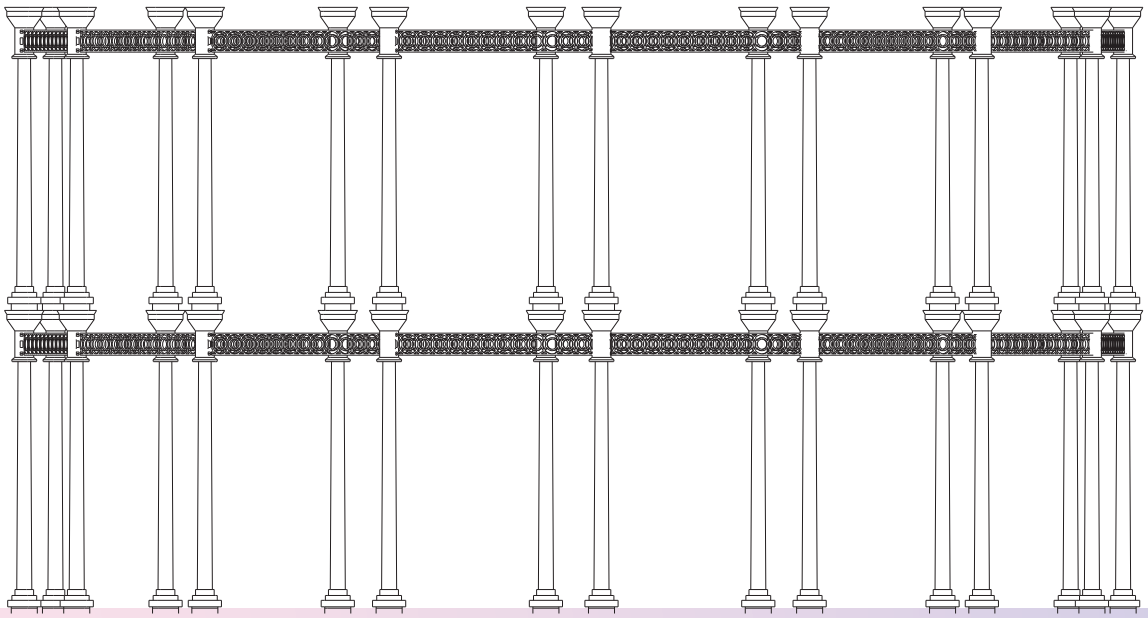




VI
THE NO. 2 AND NO.5 GASHOLDERS OF BETHNAL GREEN

The No. 5 gasholder was designed by George Trewby, and was completed in 1889. The frame has of 22 steel box-lattice columns on a circular in ground concrete tank 200 feet in diameter and 50 feet in depth. Each column is tapered and joined by are four rings with lattice detailing.

Joseph Clark, a Shoreditch Gaswork engineer, designed the No. 2 gasholder in December 1866. Its frame consists of 16 cast-iron columns on a circular in-ground brick tank, 134 feet in diameter. Standing at 73 feet tall, the structure is delicate with its steel latticework and Doric columns.



Situated in the Tower Hamlets Borough of London, Bethnal Green is a neighborhood in transit. Once an area notorious for crime and home to several gangs, the majority of crime in the Tower Hamlets, which accounts for approximately 20 square kilometers and 30 unique neighborhoods, occurred in this area. In recent years, the area has seen a shift. Once crime ridden, Bethnal Green is now hailed as an up-and-coming neighborhood, just a mere three miles north of Charing Cross and other trendy areas. Home and Property UK calls the area a hotspot in waiting, siting Bethnal Green's resistance to gentrification as its saving grace. But the "authentic" East End neighborhood is far more interesting a dynamic than a few new shopping malls and a decrease in crime rates.
Bethnal Green lies within the historic Essex county, just north of London.[2] Its placement was key to the county's survival. As a predominately agricultural community, Essex was dependent on the city of London. Essex supplied crops, livestock, and building materials to the City, as well as provided recreational areas for Londoners.
The area experienced a radical change starting with the building of railways to and from the City of London. A railway to Windsor, stopping in Essex, was completed in 1848. This changed the county's industry from predominantly agricultural to suburbs and large scale housing. But Essex did not become a mere destination of a commute. With a shift in population, Essex and other outlying counties of Greater London became areas for new industries.[3]
Bethnal Green was no different than the rest of Essex county. By the 18th century the community boasted a thriving cotton manufacturing industry. According to the 1851 census of England and Wales, approximately 21.5% of Bethnal Green's population worked in the silk and cotton manufacturing industries. But it wasn't until the construction of the gasometers that truly changed Bethnal Green's skyline and industry.[4]

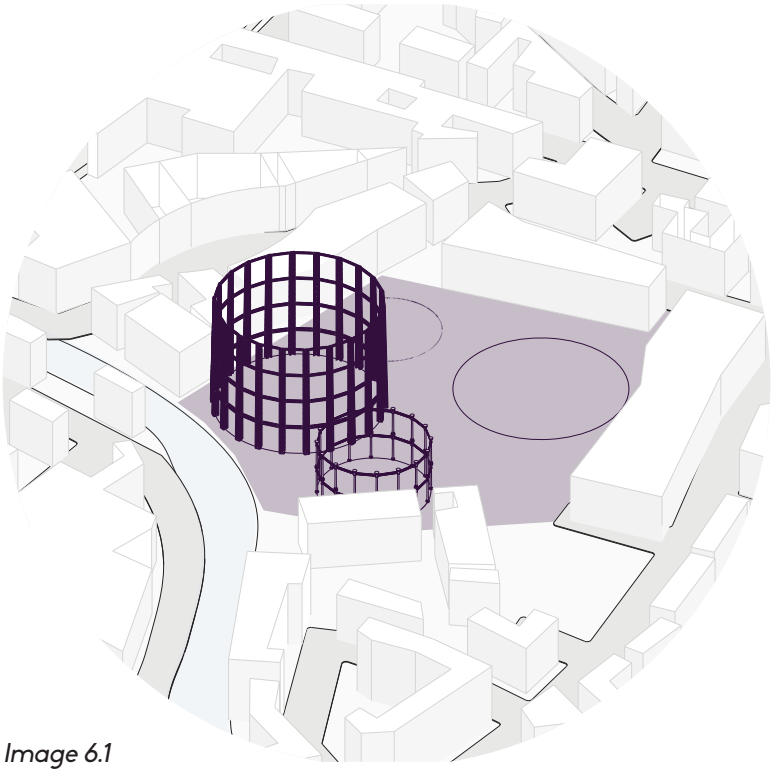


Image 6.1

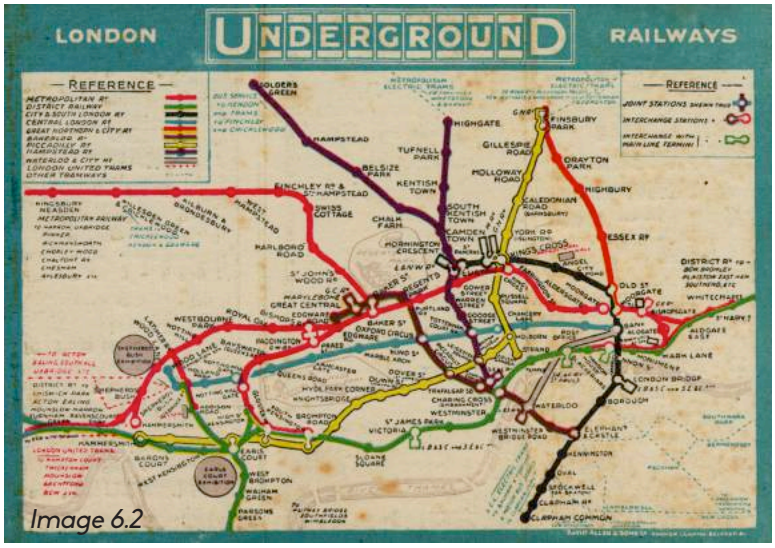


Image 6.2

The *Spitalfields* silk manufacturing district is comprised in the registration districts of Bethnal Green and Whitechapel. The latter includes the parish of Spitalfields; but no doubt the remaining portions of it are but little concerned in the silk manufacture. However, we can only deal with entire registration districts, and consequently must regard these two as constituting the silk manufacturing district in question. It contained, then, 5529 men, and 5801 women, employed in the silk manufacture.

Registration Districts.	Area, Square miles.	Silk manufacturers.		Total number of manufacturers of textile fabrics.		Number per square mile.		Number per cent. on population.	
		Men.	Women.	Men.	Women.	Men.	Women.	Men.	Wom.
Bethnal Green	1 3/16	4356	4538	5115	5111	4307·4	4304·0	22·5	20·5
Whitechapel...	6/10	1173	1263	1499	1420	2498·3	2366·7	6·4	6·3

F 2

Image 6.3

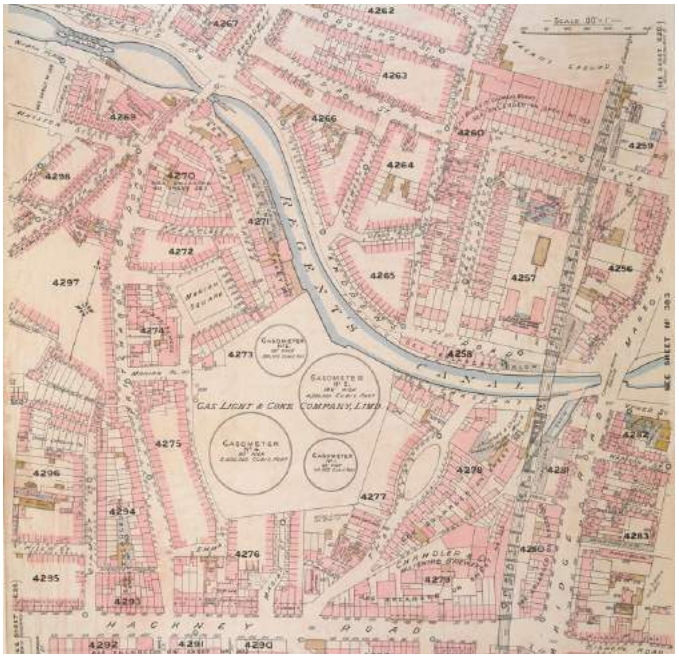


Image 6.4

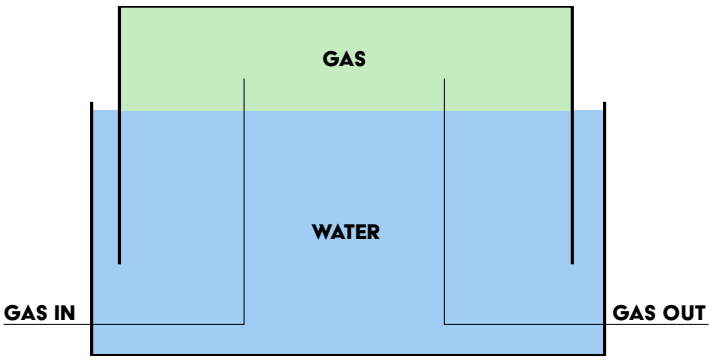


Image 6.5

The first gasometer was constructed in 1798.[5] The original design and use was to hold the gas produced by burning coal. This gas could then be distributed and used for heating and lighting. By the 1850s, small gasometers were being constructed to provide street lighting. As the demand for gas grew, so did the gasometers. More were constructed all over Europe, providing heat and light to homes and factories. The economic implications of this invention were incredible. Manufacturing and work hours were extended into the night. The "night-shift" became possible, and heating for home provided more comfortable living situations. Perhaps most affected by the gasometers was the textile industry. No longer limited by daylight, textile workers and manufacturers could spin, weave, and sew late into the night. This increased the production of textiles, making the industry swell with success.

There are two types of gasometers that were used between their invention in the late 18th century until the 1960s and 70s (although some were used until the early 2000s). The first kind is the Water-Sealed Gas Holder. The tank was above ground and used a series of pulleys and weights to regulate the gas pressure inside the tank. The holder was a telescoping one; expanding and contracting with the amount of gas present in order to regulate the gas pressure. The gas was kept at an air temperature which also helped regulate pressure. There are two types of telescoping gas holders. The first, which was predominantly designed and used until 1890 consisted of a fixed guide frame. The frame consisted of heavy columns and horizontal girders. The structures sometimes required lateral bracing, depending on the height and capacity of the gas holder.

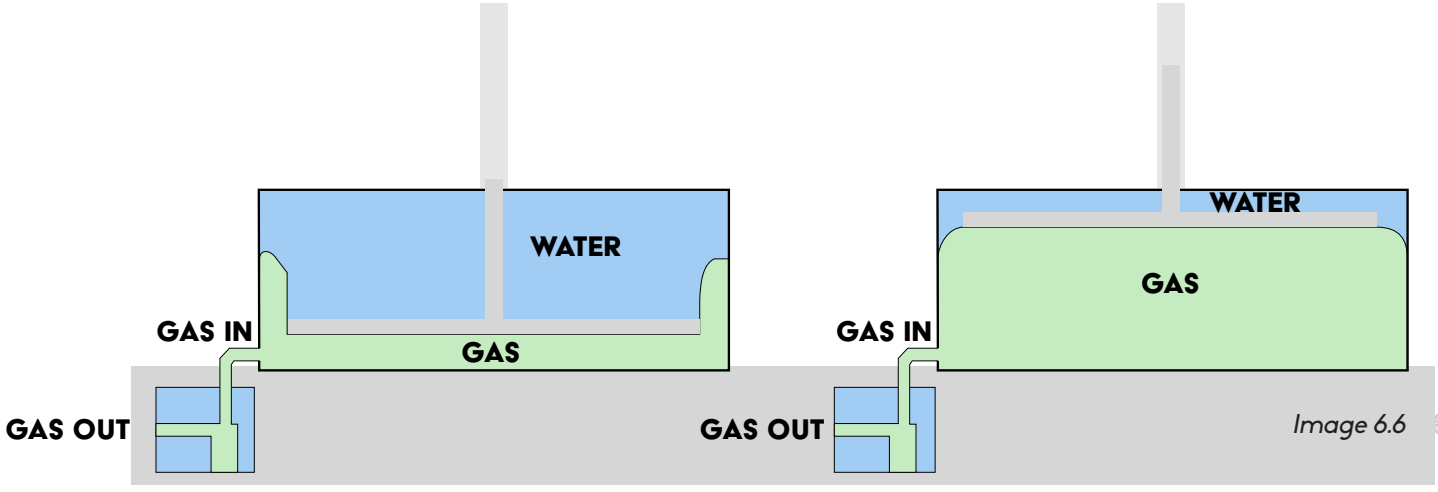


Image 6.6

The second type of telescoping gas holder was implemented in 1890. This type did not require a frame that had become synonymous with the gas holder. Instead, the telescoping holder was spiral-guided, each level was guided and built on the previous layer. However, both systems used water to seal the gas from leaks. The remaining gasometers in Bethnal Green are examples of Water-Sealed gas holders with a lift-style telescoping holder.

The second type of gas holder was the Dry-Seal-Type Gas Holder. This type of gas holder was inside a fixed frame. It instead relied on a piston to maintain the gas pressure, and was able to house the gas at a lower pressure. This type of gas holder was first introduced in 1915, and was used more predominately in the United States.

In Bethnal Green, the advent of gasometers meant an opportunity for a production boom. Within 30 years the small neighborhood in the Tower Hamlets constructed five gasometers. Gasometer No. 1, in Shoreditch, was built in 1823.[6] This gasometer set off a chain reaction, ultimately resulting in the construction of four additional gasometers situated on the Reagent's Canal. The canal provided a more advantageous location for the production of gas. Reagent's Canal was designed and constructed with the specific use of barges and the transport of goods in mind. With this canal, the transport of coal became easier, and ultimately serviced the gasometers near King's Cross Station (which were actively used until 2001). Of the four constructed, only two survive on the site today. The No. 2 (1866) and the No. 5 (1889) still mark the neighborhood's skyline.[7]

Image 6.7

Image 6.8

The gasometers were well used until about the mid-20th century. The fall of the monumental gas holders is the result of a new development in gas production: a new safer way to transport natural gas from holding stations to consumers. This transport was cleaner and safer than the now seemingly archaic gasholders. Slowly, the once numerous gasholders that provided hundreds of jobs to communities were phased out of service. Left behind were mere shells and structure that denoted a significant leap in human progress. The No. 3 and No. 4 Gasholders of Bethnal Green were dismantled and destroyed, leaving two giants to fight off age and rust alone. Even the site itself is completely blocked off to the public, labeling the area as dangerous.

Bethnal Green's monuments to times gone by is not alone. The gasholders around England and the rest of Europe became synonymous with industry and development. But human progress is marked by our abandoned relics. The gasholder frames remain, even if they are no longer useful. Some became iconic, such as the one standing in South London near a cricket stadium, while others became just another site on a running route.

[1] Bloomfield, Ruth. "Move over Shoreditch, This Is the New East End Hotspot to Watch." *Homes and Property.*
[2] Daniel Lysons, 'Bethnal Green', in *The Environs of London: Volume 2, County of Middlesex* (London, 1795),
[3] Higginbotham, Peter. "Bethnal Green (Parish of St Matthew), Middlesex, London." *The New Poor Law.*
[4] Welton, Thomas A. *Statistical Papers Based on the Census of England and Wales, 1851*
[5] Johnson, Daniel. "Gasometers: a Brief History." *The Telegraph*
[6] Qiu, Yu, et al. "The Fight to Save Bethnal Green's Historic Gas Holders." *Eastlondonlines,*
[7] Ridge, Thomas. "No. 2 and No. 5 Gasholders at the Bethnal Green." *Residents First*

CASE STUDIES

VII.A | OMA + PRADA

Fondazione Prada was completed in 2018 by OMA. La Fondazione, which was designed a built in retired gin distillery near Milan Italy, is a new museum and gallery for the celebrated high-fashion brand Prada.[1] The brand was founded in 1913 by Mario Prada in Milan, so it is only fitting that la Fondazione was placed nearby. The site itself, a gin distillery dating from the early 20th century, became a brilliant location for design. Original buildings, such as warehouses and brewing silos, were reused for museum and exhibition space, while OMA designed a new tower for offices and additional programming. All of this is centered around a central interior courtyard, connecting program to outdoor spaces.

OMA, specifically founder Rem Koolhaas, has a deep admiration for fashion and textiles. In an interview with CNN, Koolhaas calls fashion "sublime," hailing its ability to rapidly iterate and integrate with our everyday lives.[2] La Fondazione is not the first example of Koolhaas's courtship with Prada. In fact, OMA has been designing Prada fashion shows since 2007.[3] The shows are temporary installations that capture the attention of any critic or fashion aficionado. It takes approximately nine months to design and produce a show that lasts less than two hours, only to have the process repeated again for future shows. The results are amazing and memorable, and the envy of other high end brands.

OMA is certainly not exclusive with Prada. In recent years the firm has also worked with MIU MIU and designed an exhibition for Dior. *Dior: From Paris to the World* is currently on display at the Denver Art Museum in Denver, Colorado.[4] This exhibition highlights some of the most iconic Dior gowns and designs. The collaborations with OMA is only a handful of examples of the partnership between architecture and fashion. Other examples range from the storefront designs of Ghery and Zaha to Calvin Klein's discourse on architecture.[5]

Image 7.1

Image 7.2

Image 7.3

Image 7.4

VII.B | LA NUVOLA

If architects aren't working side by side with textile designers, then they are trying to mimic them. From the voluptuous curves of Zaha Hadid to the prefabricated GRC panels of the Tom Ford Miami store, one way or another architects are becoming increasing infatuated with textiles and their mobility. La Nuvola (the Cloud in English) was completed in 2016 by Studio Fuksas. Built in one of the "rationalist neighborhoods" of Rome, La Nuvola is in stark contrast to the remaining monuments to Mussolini built in the 1920s and 1930s.[6]
The building itself is highly controversial. Considered too costly and unnecessary, La Nuvola took nearly 20 years to come to fruition. The design was first proposed in 1998 and cost an estimated €353 million to build. While both the time line and price tag of the project are daunting, the irony of the convention center is there is another, less than a kilometer away. However, La Nuvola was built and stands out from its conservative counterparts. The exterior is simple: an all glass box it fits uniformly into the surrounding neighborhood. Once inside the glass box, the time consuming marvel is revealed. A cloud, suspended into space, dominates the glass box. It is dynamic and ephemeral, with sweeping contours and powerful punctures. The structure itself has a steel rib cage to maintain the shape. Perhaps most the most eye catching is the material that covers the metal structure. At first glance, it appears to be fabric meticulously stretched into place, creating the perfect tensioning. However, the material is actually a semi-translucent fiber glass panel. A milky computer fabricated panel, expertly positioned on the exterior of a dynamic metal frame gives the illusion of a floating cloud trapped in a glass box.
Within la Nuvola itself houses spaces that every convention center needs: meeting halls, auditoriums, bathrooms, etc. The exterior is left for circulation, allowing light penetration and a beautiful floating effect from within.

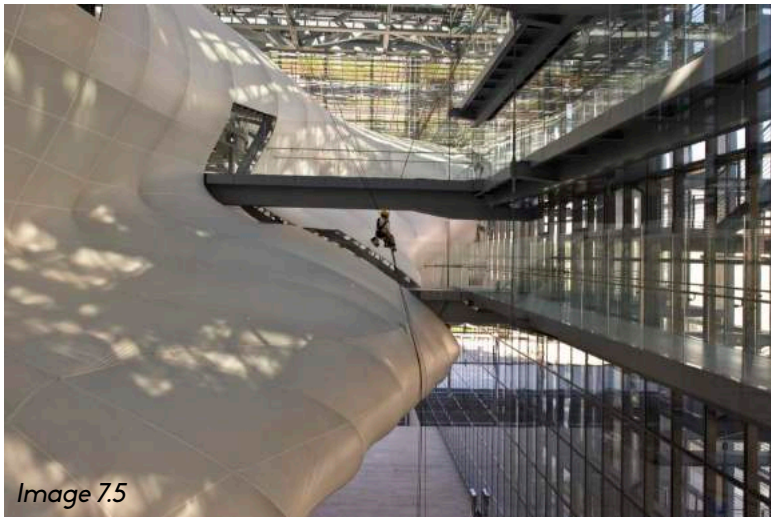


Image 7.5

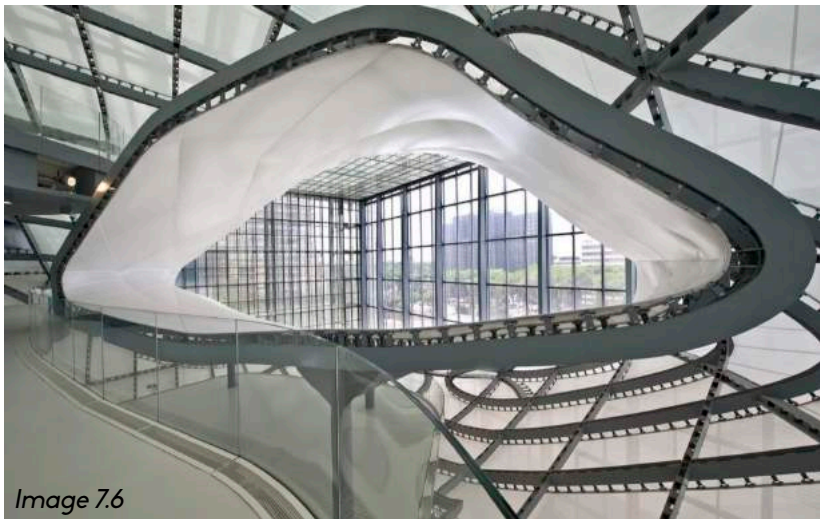


Image 7.6

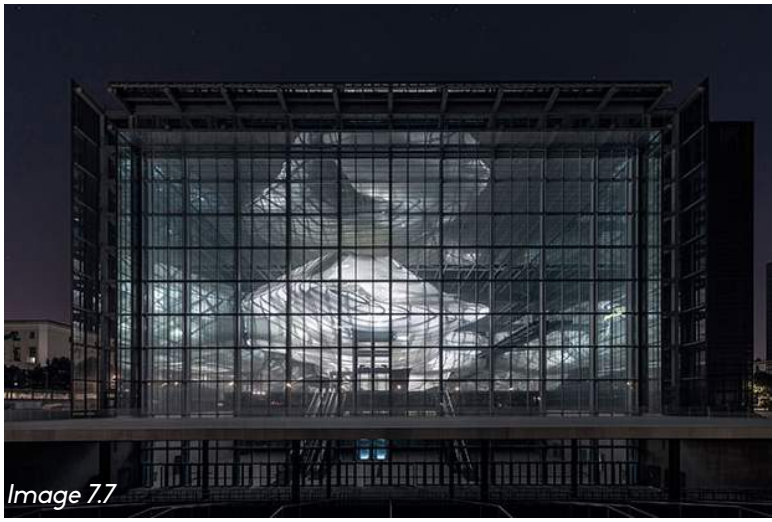


Image 7.7

[1] "Fondazione Prada." *OMA*
[2] "'There's Nothing Frivolous about Fashion'." *CNN*
[3] "OMA Projects." *OMA*
[4] "Dior: From Paris to the World." *OMA*
[5] Lynch, Patrick. "Calvin Klein Lectures on the Role of Architecture in Fashion." *ArchDaily*
[6] Mattioli, Guglielmo. "'The Cloud' by Studio Fuksas Brings a Touch of Modern Baroque to Rome's Rationalist EUR Neighborhood." *ArchDaily*

VII.C | GASHOLDERS OF KINGS CROSS

Like many things in our modern world, there are only two options: adapt or be destroyed. The monumental gasholders of Europe are no different. Some have risen to the challenge, while others have been torn to the ground. Approximately 180 gasholders are scheduled for demolition in the United Kingdom alone.[1] While it is often easier to destroy and rebuild, especially with the increasing costs of cities and high demand for viable land, other solutions have been put forward to maintain the iconic skylines of cities and outlying neighborhoods.

Image 7.8

The most prolific example is the Vienna Gaswerk, which developed a multi-use community from four abandoned gas holders. There is a mall, housing, and small public areas sprinkled throughout. The renovations were completed in 2001 by four different architects.[2] The result was inspiration to save instead of destroy. But these are only four of the thousands

Image 7.9

Image 7.10

of gasholders constructed in the 19th and 20th centuries that now have been abandoned. Much of the proposed work provides housing for the dense urban areas of major cities. By re-purposing old industrial areas, the renovated gasholders are breathing new life into desolate areas. The examples includes Mecanoo's new housing developments in the city of Hilversum, Netherlands[3] to the proposed public park by Herzog & de Meuron in Stockholm.[4]
Perhaps even more relevant is the trio of gasholders transformed near Kings Cross Station in London. Less than four miles (about 45 minutes on public transit) from the Bethnal Green Gasholders, the upcycled gasholders of King's Cross were transformed into luxury apartments. Designed by Wilkninson Eyre and completed in early 2018, the apartments breathe new life into a once heavily industrialized area. The greater area around the trendy shops and hipster restaurants. Like much of the housing in massive metropolitan areas, the new flats cost a pretty penny. Cost for the fully furnished homes range from "£810,000 for a studio to £2

Image 7.11

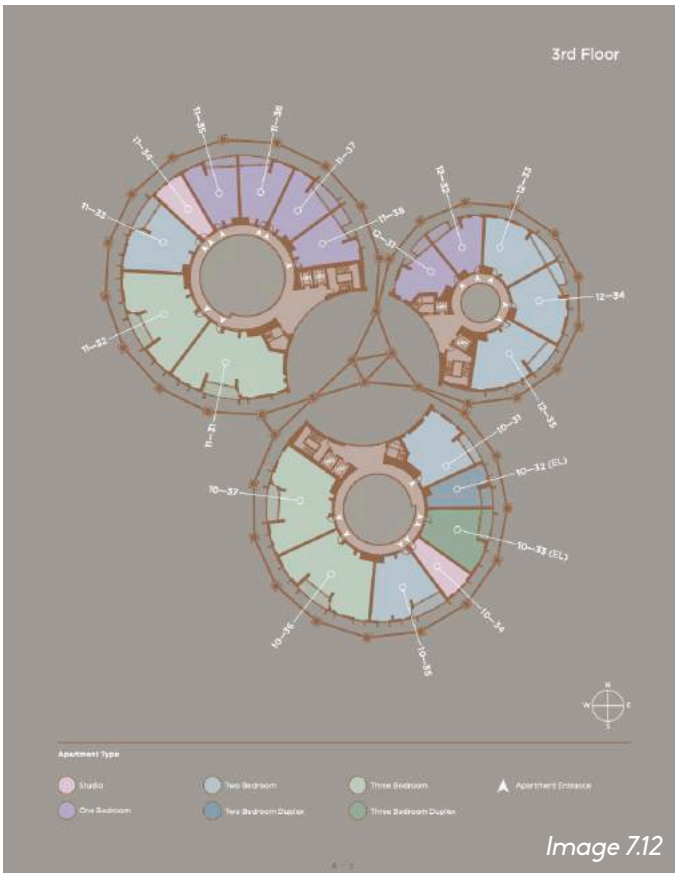


Image 7.12

million for a three-bedroom home."[5] Walking distance from King's Cross Station and situated on Regeant's Canal (that also served the Bethnal Green Gasholders), the project utilizes three of the four remaining gasholders on the site. The fourth and final gasholder, much smaller than its counterparts, has been transformed into a public park. The three gasholders used were much closer together and had similar heights. The floors were divided into wedge shaped apartments that had various bedrooms and amenities. The center is left free for atrium space, stairs, and elevators. An interior space is carved out by the additions. While this area appears to be dead space, visiting the site reveals a series of small bridges as well as mechanical units. There is also underground parking on site. Most gasholders were designed with underground basins that held water or pistons. On the Bethnal Green site, these underground areas extend 50 feet deep.

[1] Johnson, Daniel. "Gasometers: a Brief History." *The Telegraph*
[2] Steve. "Life's A Gas: Vienna's Recycled, Repurposed Gasometers" *WebUrbanist*
[3] "Mecanoo Completes Masterplan Villa Industria Inspired by the Industrial Heritage of Hilversum." *Mecanoo*
[4] "348 GASKLOCKA TOWER." *HERZOG & DE MEURON*
[5] Mairs, Jessica. "Wilkinson Eyre and Jonathan Tuckey Convert King's Cross Gasholders into Luxury Flats." *Dezeen.*

EARLY DESIGN

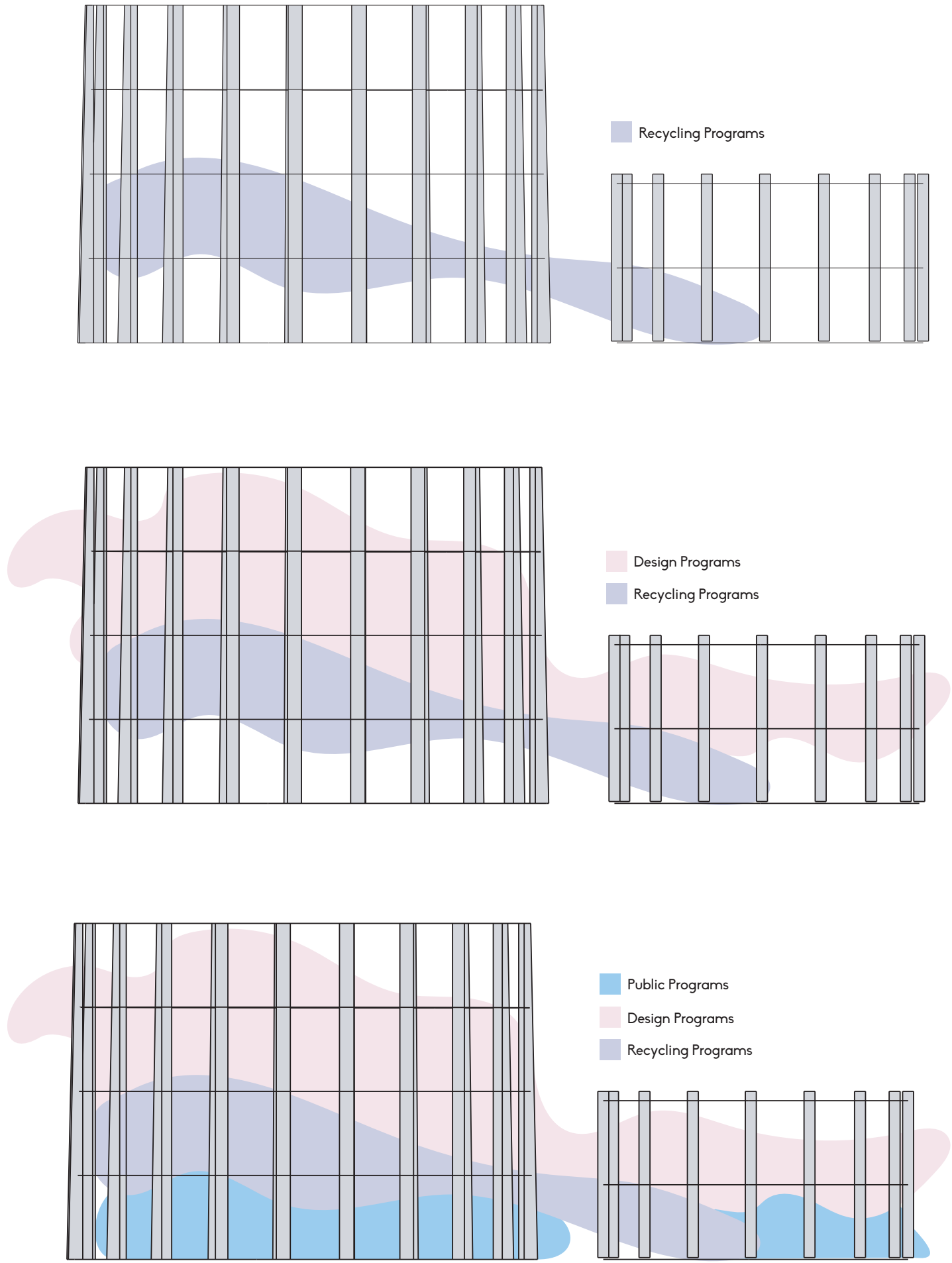

Recycling Programs
Design Programs
Recycling Programs
Public Programs
Design Programs
Recycling Programs

Image 8.1

VIII
PROGRAM

In order to strike a balance between the previous research and future design, the program addresses major points of concern and contingency. First and foremost, the program will be designed around consumerism. Both the textile and architecture industries are driven by consumers. Whether it be buying new clothes or moving into penthouse apartments in the heart of a bustling city, the common man has the power to drive both industries into the lap of luxury or the pit of despair. With this rampant consumerism and the rapid development of trends and technology, waste has begun encroaching on our everyday lives. The immediate thought goes to plastic which is permeating our water ways. However, this is only part of the problem. Textile waste is also a large contributor to the global landfill. In the US alone, 12.7 million tons of textiles are discarded every year.[1] This does not account for the 60 billion square meters of scraps left on work room floors or the waste produced countries. Even if the textile does not end up in a land fill, it may be incinerated. The majority of high end fashion brands, such as Prada and Gucci, burn their unpurchased merchandise at the end of the season.[2] This maintains the elusiveness of the brand, maintaining superiority and inflated prices. With this in mind, the program will include places for reuse and recycling. Luxury brands and clothes in "good shape" will be broken down, adapted, and redesigned. This process will continue until the textile is thread bare. At this point the textile will be broken down or burned and the process will start again. The Halo will become an area for creative thought by learning and studying innovative ways to reduce textile waste and reuse what has already been made.

However, the giving the gasometers of Bethnal Green a new lease on life will be more than a commentary on the negative effects of consumerism. The inciting point of this entire thesis was the curiosity and development of fashion and architecture beyond the extensive flirtationship. Using previous examples and arguments about the concepts of play in human progress, the spaces created will also become whimsical and encourage collaboration and creation. In addition to the underlying motives of recycling and rebirth, the Halo will provide spaces for work and play. Studios, fabrication labs, and material libraries will be integral components of the final design. These key pieces will hail designers, fabricators, and visionaries that already flock to London. Exhibition spaces will also be included to allow consumers to present their designs and continue the process of recycling. As the Gasholders of Kings Cross demonstrated, the cost and demand for housing is astronomical. There will be some living spaces provided on site to alleviate the cost and provide equal access to creatives hoping to participate.

[1] Chung, Shuk-Wah. "Fast Fashion Is 'Drowning' the World. We Need a Fashion Revolution!" *Greenpeace International*

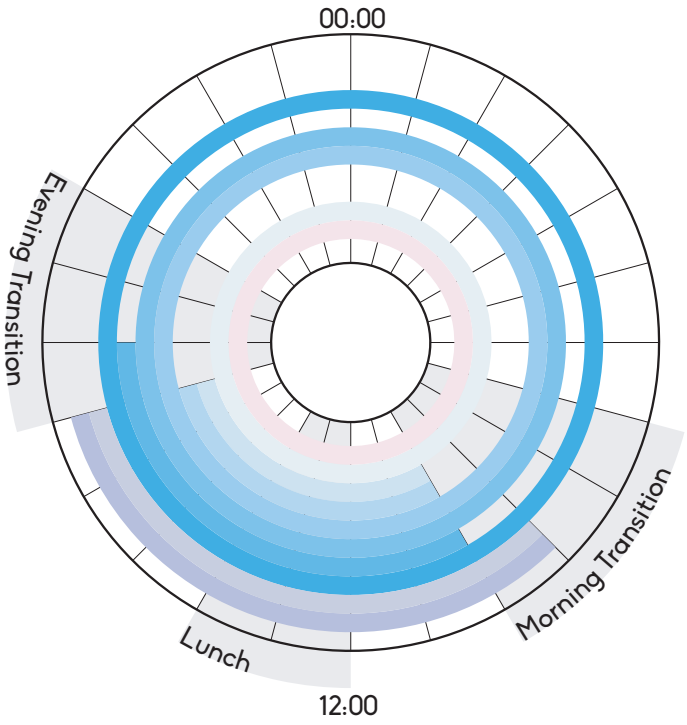
[2] Paton, Elizabeth. "Burberry to Stop Burning Clothing and Other Goods It Can't Sell." *The New York Times*

PROGRAMMATIC BREAKDOWN

The final portion of the Halo is potentially the most important: education. Conservation, recycling, reuse, and progress mean nothing without education of the general public. The site itself is massive, approximately 225,000 square feet. The area surrounding the gasholders can easily be transformed and reused, contributing to the program. A public park, green house, public recycling center, small pop-up shops and parking can all easily be added onto the site, encouraging public interaction and use. Since the Bethnal Green neighborhood is in transition, the area can also provide new areas for gathering and interaction with the public. This public component will also have access to the exhibition spaces, contributing to the education of the public and sparking interest for the next generation.

Combining these three programs, the Halo will strive to educate, create, and reduce waste not only in Bethnal Green but in the greater London area. The site itself is close to public transit, connecting it to the outer boroughs and suburbs as well as the inner city area. And with luck, The Halo will influence the fate of the remaining gasholders in England in the rest of Europe, encouraging adaptive reuse and minimizing waste.

A key component to the success of the Halo is the hours of operation and developing an understanding of the time demands of spaces previously outlined. For this erasion, the subsequent 24 Hour experiment "Feed Me" (outlined in the next section) will be pivotal in understand how and when the spaces will be used. The diagrams below show how each gasholder will be used by different programs throughout the day. The diagrams are divided with three colors: one for recycling type programs in purple, studio and design programs are represented with pink, and finally public programs in blue.



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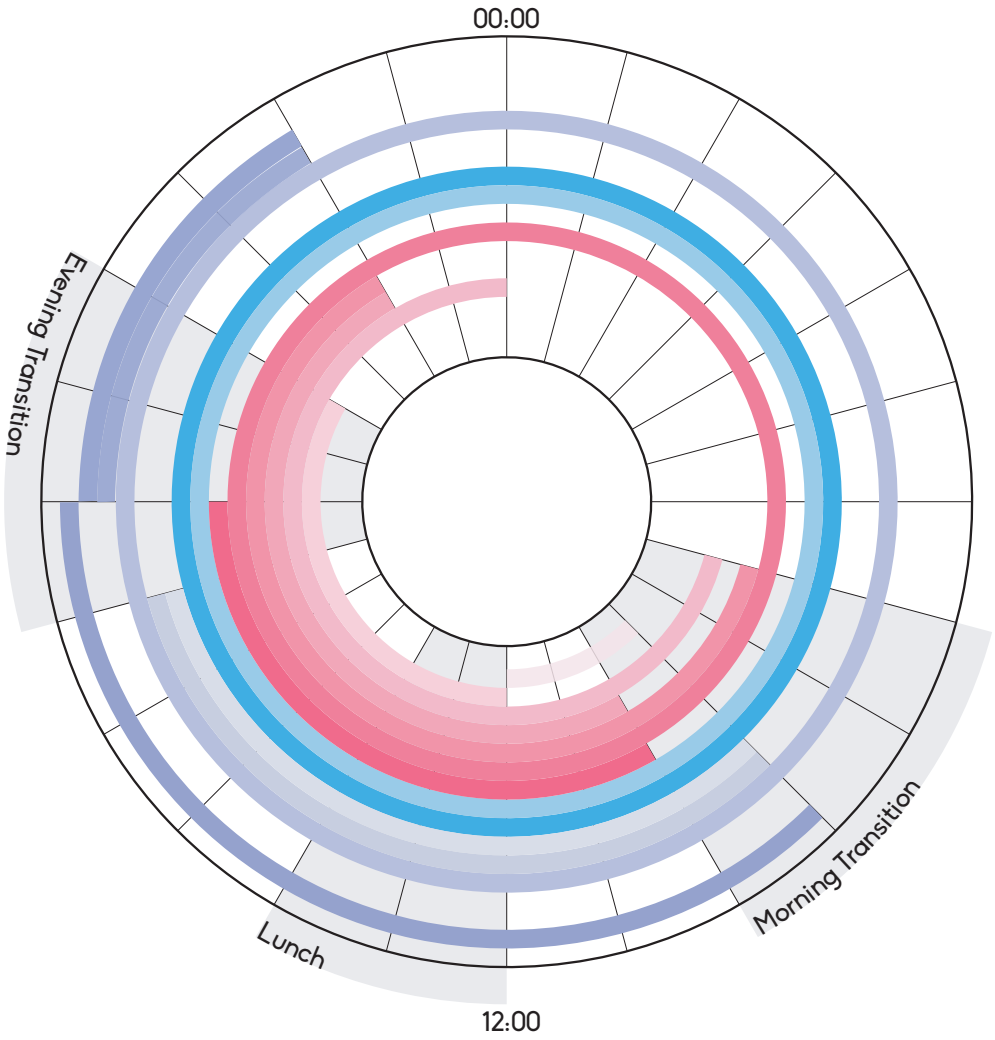


No.5

Recycling Center
Material Grinder
Incenerator
Material Library
Junk Yard
Deconstruction Room

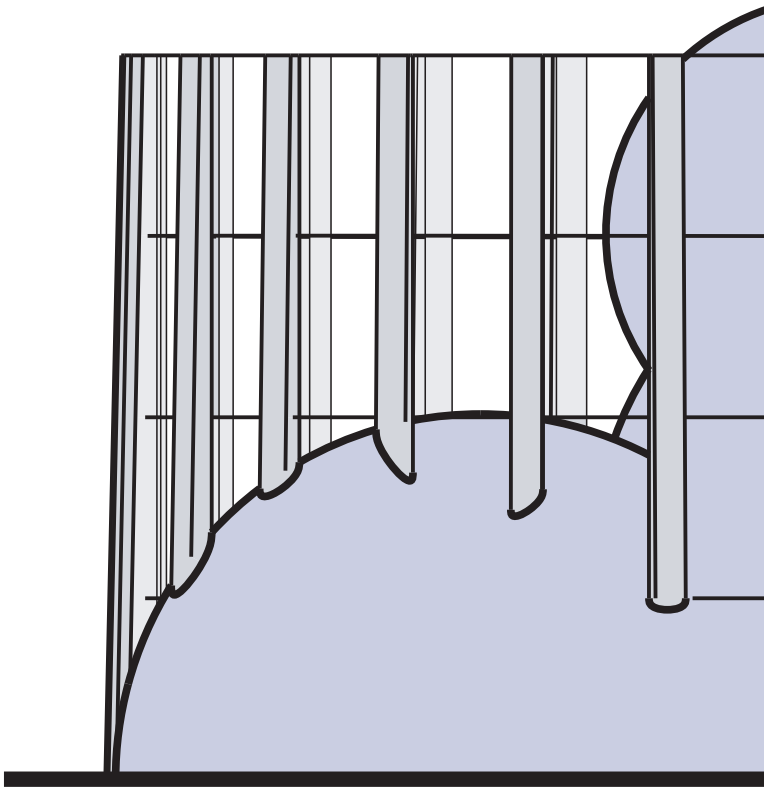
Public Parking
Public Gallery
Greenhouse
Park
Recycling Center
Shops
Donation Station

Gallery/Exhibition Space
Studio
Think Tank
Digital Fabrication Lab
Library
Presentation Space
Housing
Lecture Halls

Image 8.2

EARLY INTERVENTION 1 OF 3

In the first of three preliminary interventions to the Bethnal Green Gasholders, the idea of bubbles was developed. By placing a series of spheres within and slightly outside the boundary of the gasholders, unique interior and exterior conditions were produced. In this instance, and in subsequent interventions, the gasholders are not treated as a "holy" structure, instead allowing the form to ebb and flow from within.
In all previously mentioned case studies, the new additions to the gasholders strictly adhered to the provided interior space. Using the existing structure as a determinant of form, there is not much play or exterior intervention. One of the main goals of Halo is to create this sense of play and how this playfulness can be translated into architecture. In this first intervention, the structure is anchored to the ground, which, while practical, is not the desired affect. This affect will be addressed in later iterations.



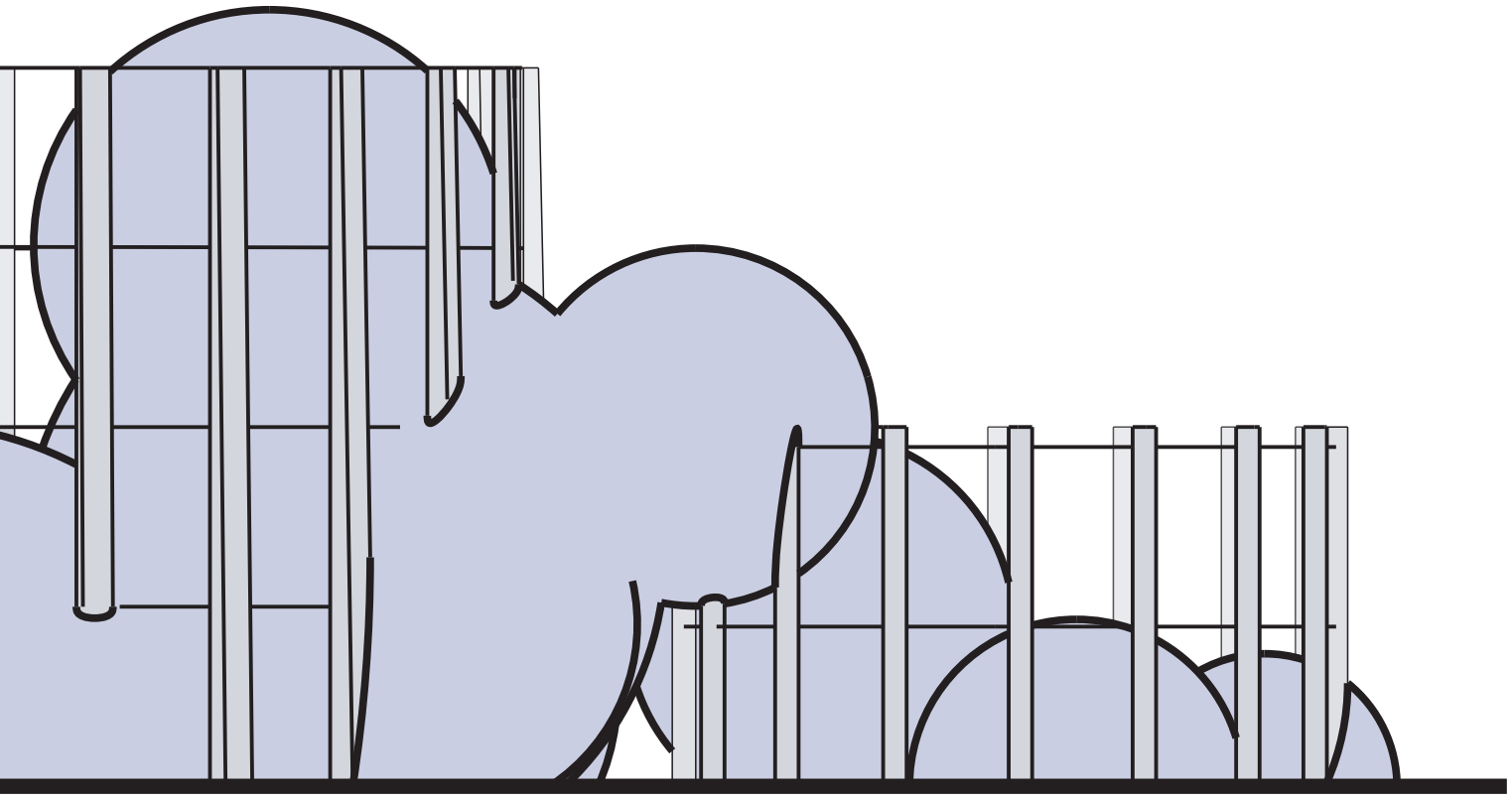


Image 8.3

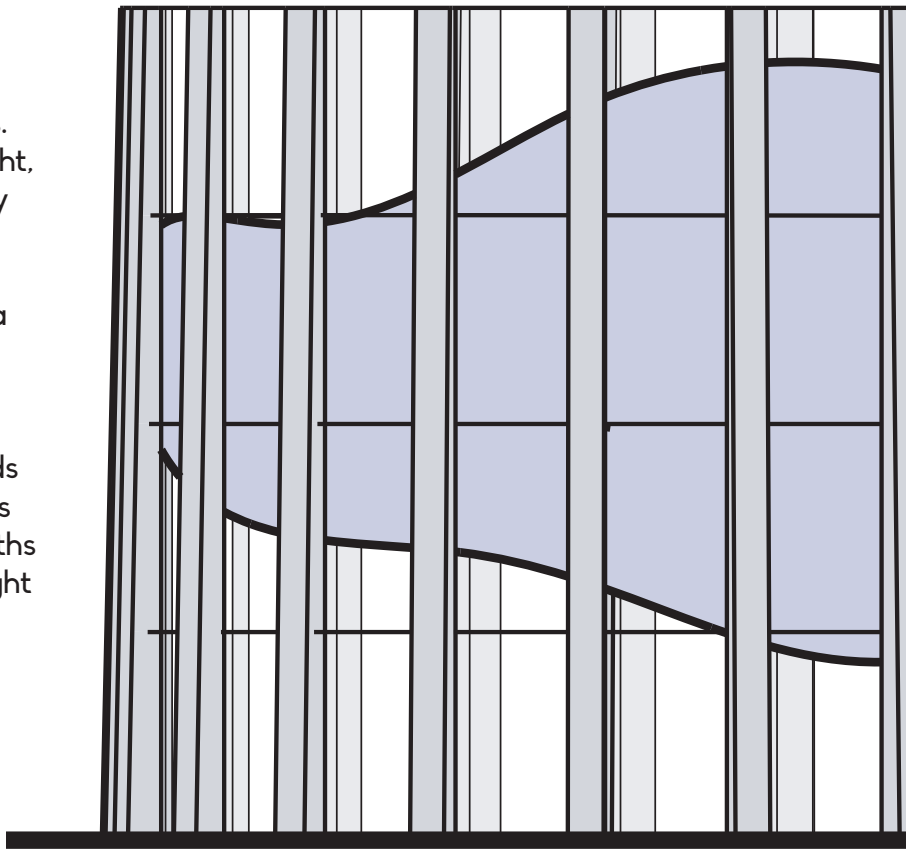
EARLY INTERVENTION 2 OF 3

The second iteration in this series of preliminary explorations was done physically, opting for the messiness of hand made structures instead of digitally rendered ideas. The model, at 1'=1/16" scale, is made from MDF frames that match the gasholders size and width. Then pliable wire mesh was pulled and formed. This mesh would ideally mimic the stiffness of architectural fabric pulled tight over an internal structure. The mesh levitates inside the frame, giving an illusion of weightlessness. The mesh exceeds the top plane of both gasholders, however, this may ultimately be modified. A design goal of Halo is to maintain the skyline of Bethnal Green, so that the levitating structure dissipates into the sky above. The second iteration temporally ignores this. Secondly, there is no "bridge" the merges the two gasholders together. Since some programs overlap or demand proximity, a bridge will be necessary in the final design to create ease of circulation between the two gasholders. This bridge may purely be for circulation, or for more interest, may become an adaptable runway to highlight designers work and give additional dynamic exhibition space. These issues are addressed in the final preliminary iteration on the following page.

Image 8.4

EARLY INTERVENTION 3 OF 3

The third and final iteration presented in this book attempts to combine the "best ideas" from the two previous iterations. This iteration of the Halo is lifted off the ground, allowing for potential public space to interact underneath. There is a bridge between No. 5 and No. 2 gasholders, merging programs and allowing the ease of circulation between the public and private sections of the program. Finally, Halo does not exceed or interfere with the top edge of No. 5 to maintain its distinct shape to the Bethnal Green skyline. This site was initially attracted and chosen because of the height. The No. 5 gasholder is the tallest structure in the immediate area, and for this reason a pivotal marker to the area. The Halo should not interfere with these upper bounds, but instead slowly dissipate into the sky above, solidifying the illusion of a floating structure within the city. One component that this final iteration is lacking is the playfulness with the exterior structure. Ideally, the structure would gently push against and past the existing gasholders. These may become balconies or portals for light, but the new addition should not be completely caged by the gasholder. This idea will lend itself to future exploration and iterations. In order to continue to explore this form, the idea of inflatables and a adaptable structure will be explored. The these two concepts will lend themselves to a structure that breathes, or expands and contracts with the daily demands on the space, much like the original gasholders did to provide a service to the city. These breaths will be gradual, but noticeable from day to night as the capacity of the building is met.



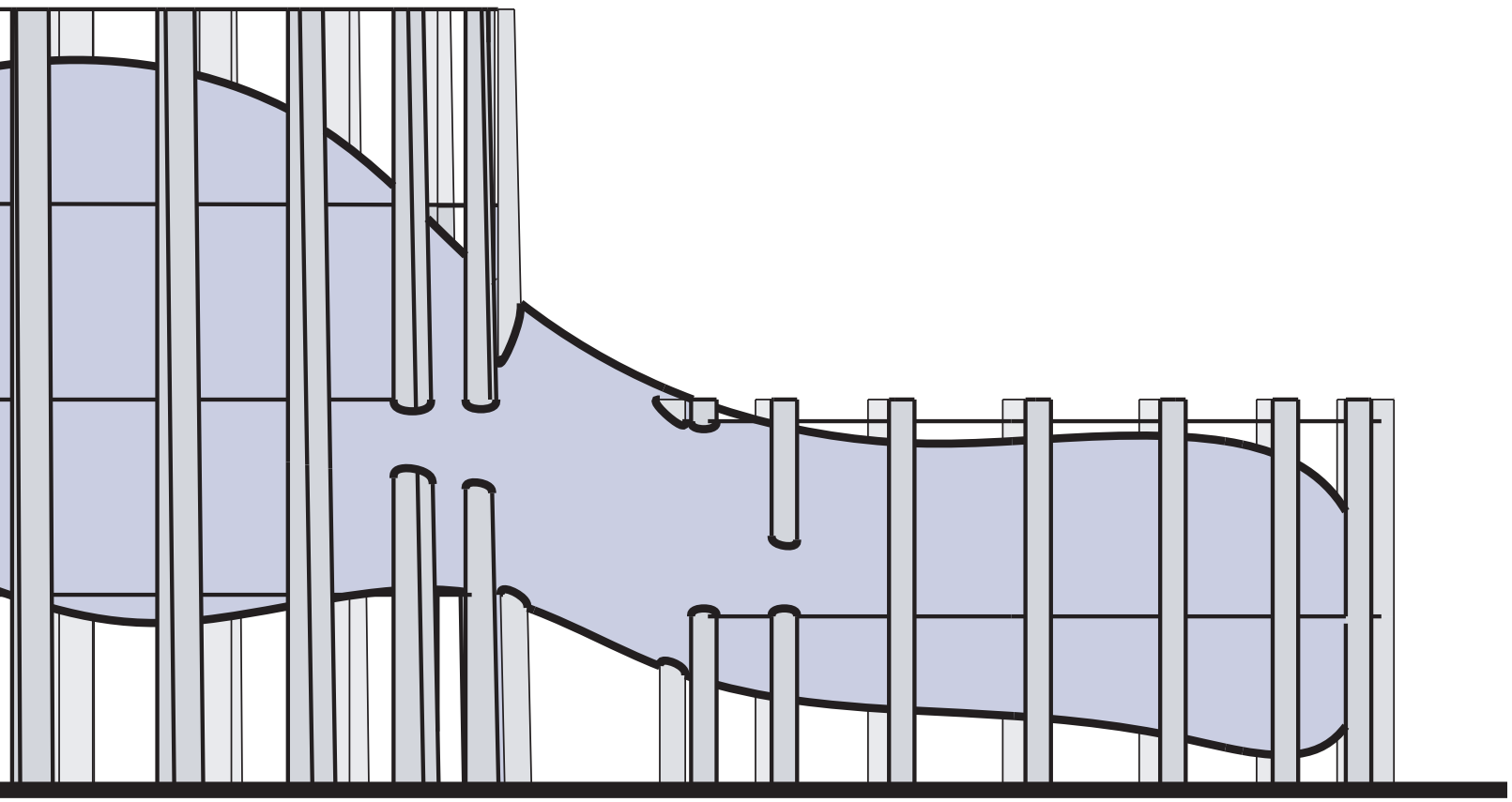


Image 8.5

DESIGN SECTION(S)

Image 9.1

IX
DESIGN DECISIONS

RECLAIM

REUSE

ADAPT

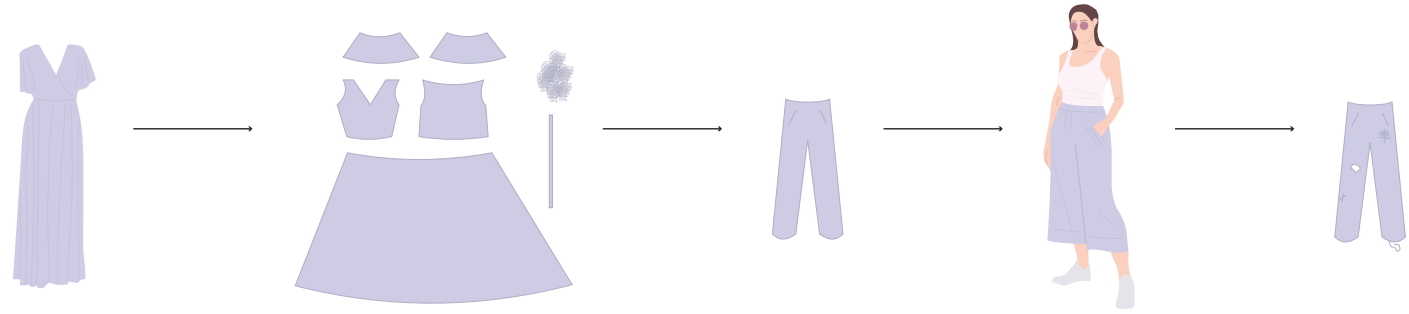
U J R R Q N U J G R Q N U J G R Q N U J G R Q N U
L R E C L A I M A O I R L A R O I R L A A O I R L
U M U D S E D M B D S E U M E D S E U M B D S E U
Q E S A H A D A P T H N Q E U A H N Q E I A H N Q
W S E M I D W S P M I A W S S M I A W S F M I A W
E R E C L A I M E T T T E R E C L A I M E E T T E
R L E S A P R L R S R E U S E S A R D L R S A A R
T I N U B T T I N M E K T I C U B K E A D A P T T
Y Z N A S R Y Z N A C A Y Z L A S R Y C P A A A Y
U A A C R E U A A C L R A D A P T E U A L T R R U
I B T S N U A B T S A E I B T S N U R B A A N E I
O E H E E S O D H E I D O E M E E S E E D E I N O
P T A R R E C L A I M B A T A R R E C L A I M M P
M H N E E E M H D P L E M P N E L E L H P E L E M
N B M N U A N B A N T A N B T N A D A B T N O A N
H R O R S U H R P A G U H R O A G U I R O A G U H
G I N M E R G I T M A R R E C L A I M I N M A R G
F A I I N C F A I I N U F R I I D U F A I I N U F
S N C K V G L N C K V G R E C L A I M N C K V G S
X L A E R G X A A E I G X U A E P G X L A E I G X
Z U J R E C L A I M V E Z S J A T E Z U J A V E Z
A C E R U R A C E M I R R E U S E R A C E R I R A
D Y R I S L D Y R I A L D Y R I A L D Y R I A L D
Q E R M E E Z U J A O N A U M C I B N Z N M B K Q

Although fashion and architecture are seemingly only connected by an overarching umbrella of "design," the progress of technology has increased the transfer of information and techniques between the two disciplines. The result: a new age of dynamic architecture. If the playful frivolity of fashion can be translated into this new age of architecture, then architecture can be a spectacle, encouraging new ways of thinking and design.

Halo has grown from its original interests between fashion and architecture to an examination of how textiles can influence and change architecture. In many of the experiments leading to the final design, the products steaming from the ideas and play and spectacle have resulted in a design that has a unique tactile nature.

As Halo continues to grow, the goal is to maintain this attribute through the cultivation of designer friendly spaces with a side of sustainability.

The ultimate goal of Halo is to address textile and architectural waste through three actions: reclaim, adapt, and reuse. The site itself is an adaptive reuse of a historic industrial site which provides cage like structures and extensive underground excavations. Coupled with a program of textile recycling, Halo seeks to draw independent fashion designers from around the world to create new styles from clothing donated from the community. Halo will make a more sustainable future, one shirt at a time.



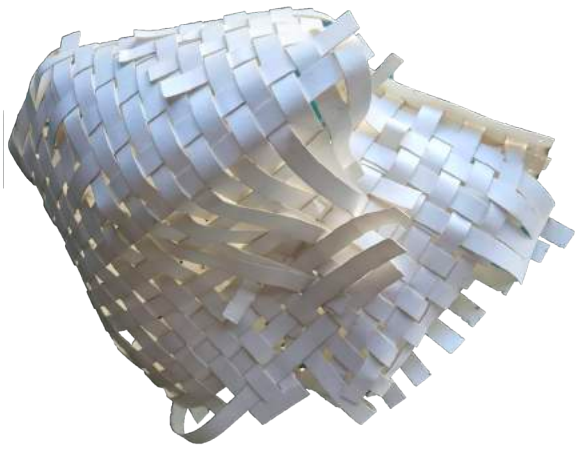
donate deconstruct redesign sell donate

Images 9.2 - 9.4

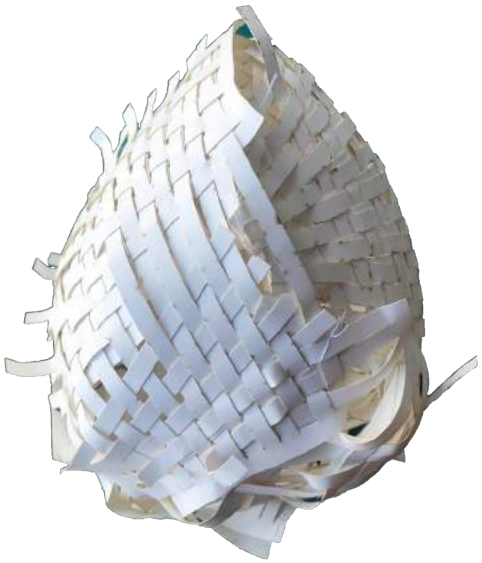
BEGINNING DESIGN ITERATIONS

Laser cutting squares at two sizes (6 inches by 6 inches or 4 inches by 4 inches) with quarter inch stripes of "fringe," i began weaving the initial modules. Then, by pulling, twisting, or overlapping, I began to develop three dimensional surfaces. By weaving and intersecting the surfaces, I began to develop volumes of varying size with varying apertures. The volumes are nearly entirely held together by friction, with a few instances of machine stitching to ensure the longevity of the piece. These initial volumes became the basis of design, weaving together the entirety of the final form. Below there is a sample of a simple weave with minor undulations.

Sample Weaving Process



Weaving study with fraying edges.



Weaving study with varying apertures and weaving techniques.

Weaving study of elongated surface made from two 6x6 sheets.

Weaving study for closing of apertures.

Image 9.5 - 9.8

Image 9.9

SITE EXPERIMENTATION

With several volumes to choose from, the weaves were placed in a 1/32" site model to understand scale and site relationships. The iterations were subsequently photographed and traced to begin digital modeling

Image 9.10

SECTION V1

Version1 of the design section, including floor plates and programmatic adjacencies.

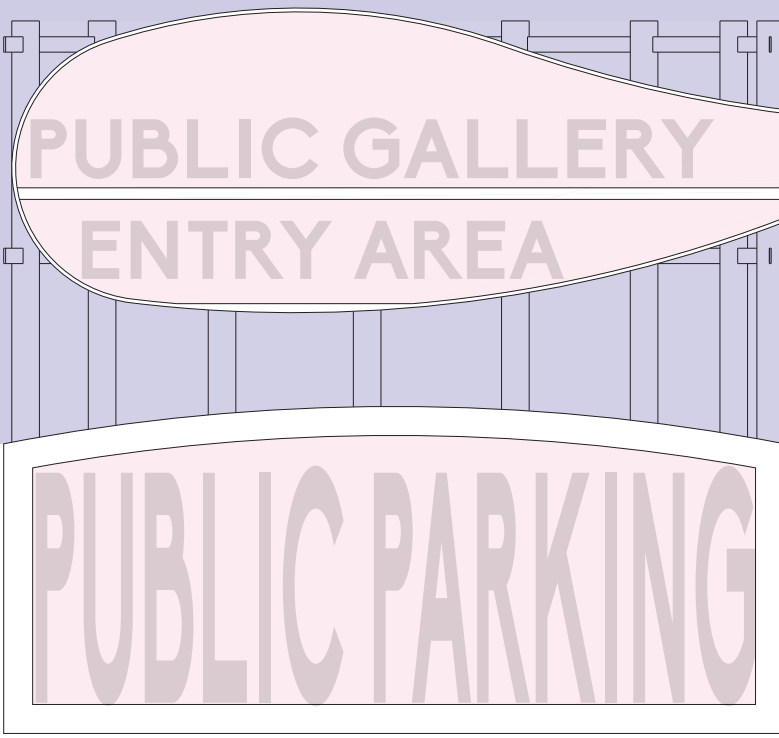
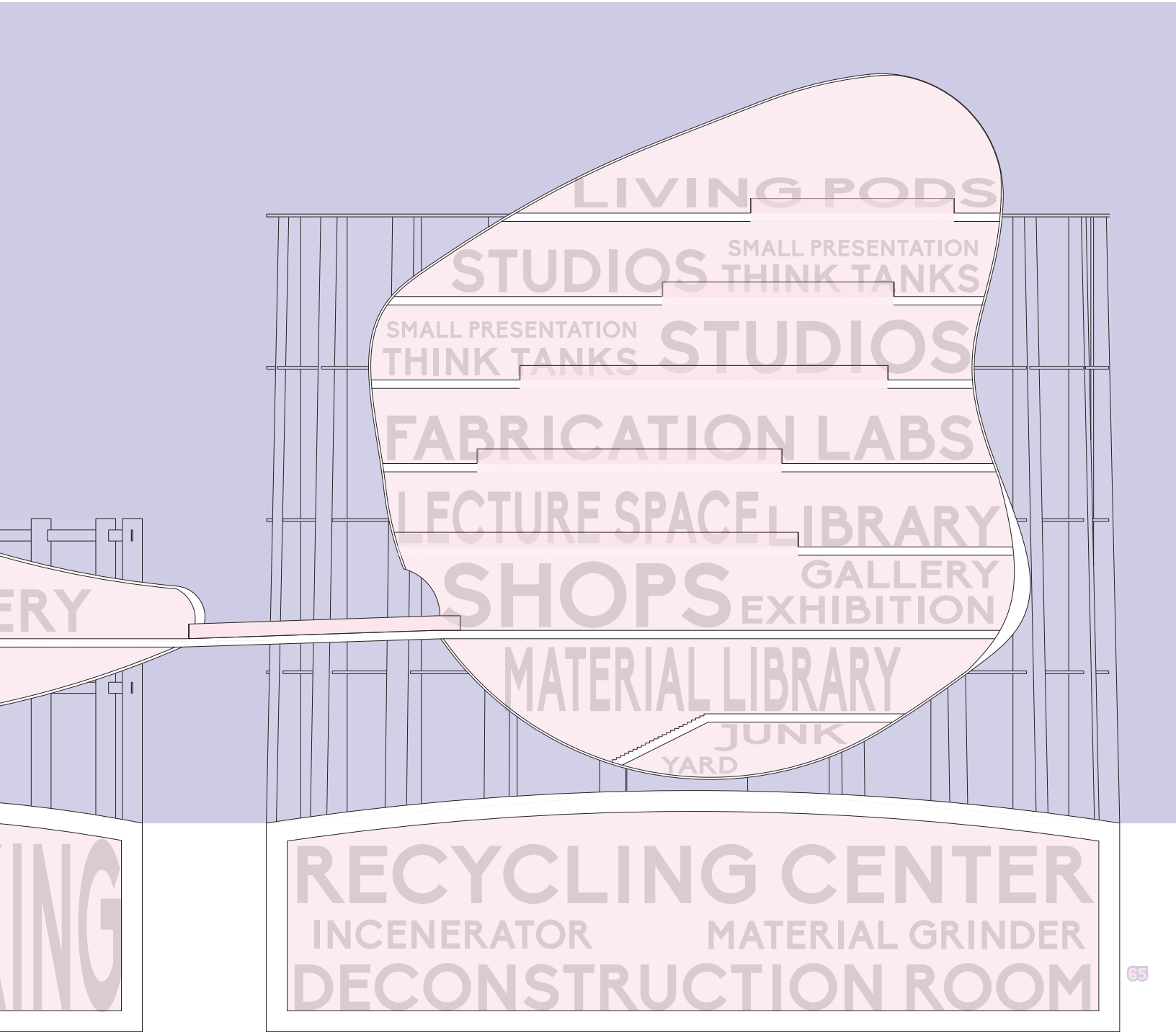
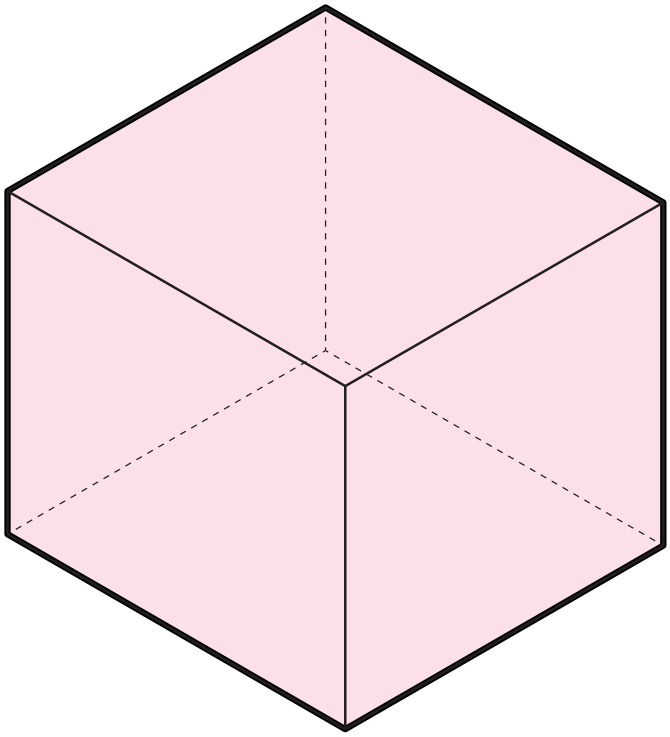


Image 9.11


LIVING PODS
STUDIOS
SMALL PRESENTATION
THINK TANKS
SMALL PRESENTATION
THINK TANKS
STUDIOS
FABRICATION LABS
LECTURE SPACE
LIBRARY
SHOPS
GALLERY
EXHIBITION
MATERIAL LIBRARY
JUNK
YARD
RECYCLING CENTER
INCENERATOR
MATERIAL GRINDER
DECONSTRUCTION ROOM

In early iterations and attempts, the original volumes quickly lost their character, becoming flat and uninteresting. Through various trials and errors, the finally design process was developed. First needed is a frame made up of flat surfaces. Using Grasshopper and WeaverBird, the surfaces are subdivided to create a smooth object, or bubble. Once the frame is removed, the bubble remains. The surfaces can be extremely complex or simple, and by removing a surface apertures can be added to the bubbles. This process is used for all subsequent iterations.



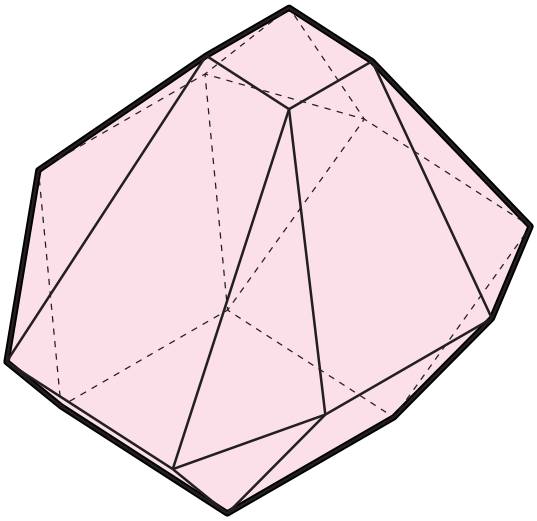
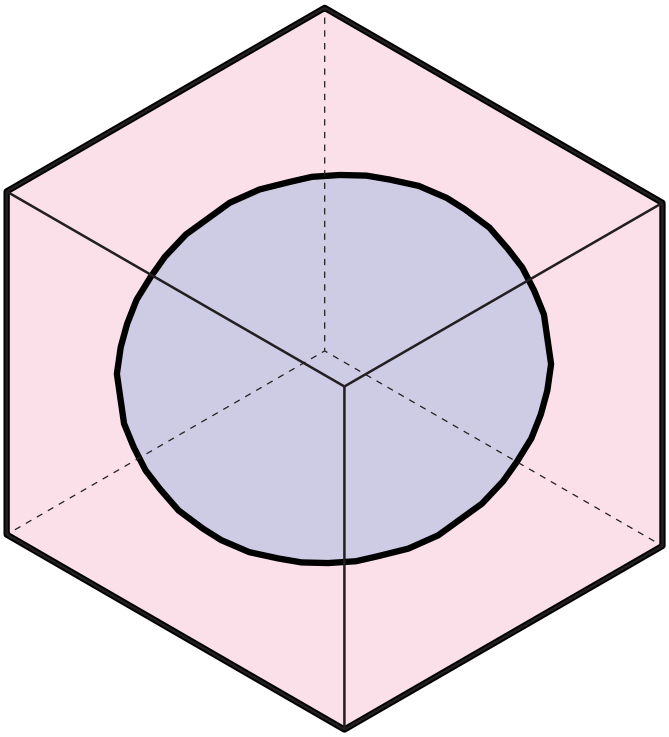
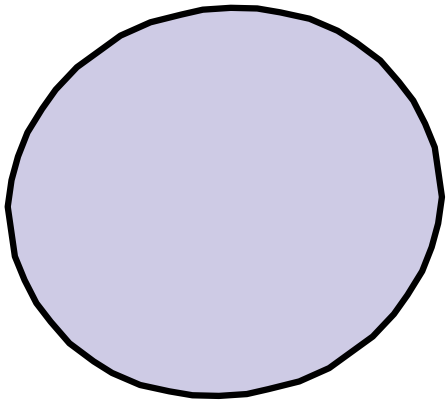
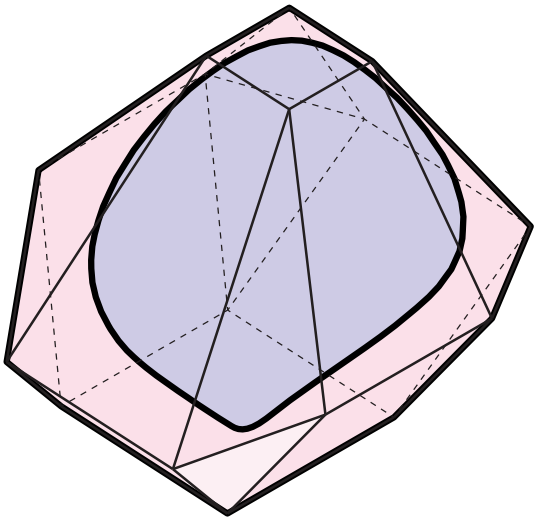
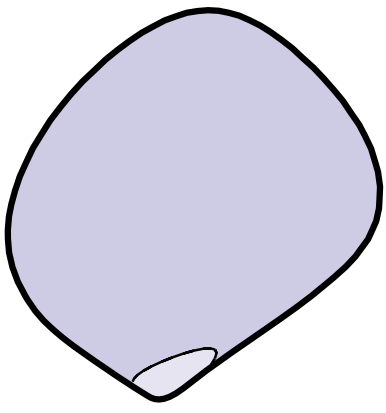


Image 9.12









SECTION V2

Version2 of design section for section show. The bubbles, through the Grasshopper process, have propagated. However, the bubbles remain detached from one another, and issue that is remedied in later iterations. The bubbles are lifted from the ground to allow circulation from above and below, giving the feeling that the building is floating above everything else.

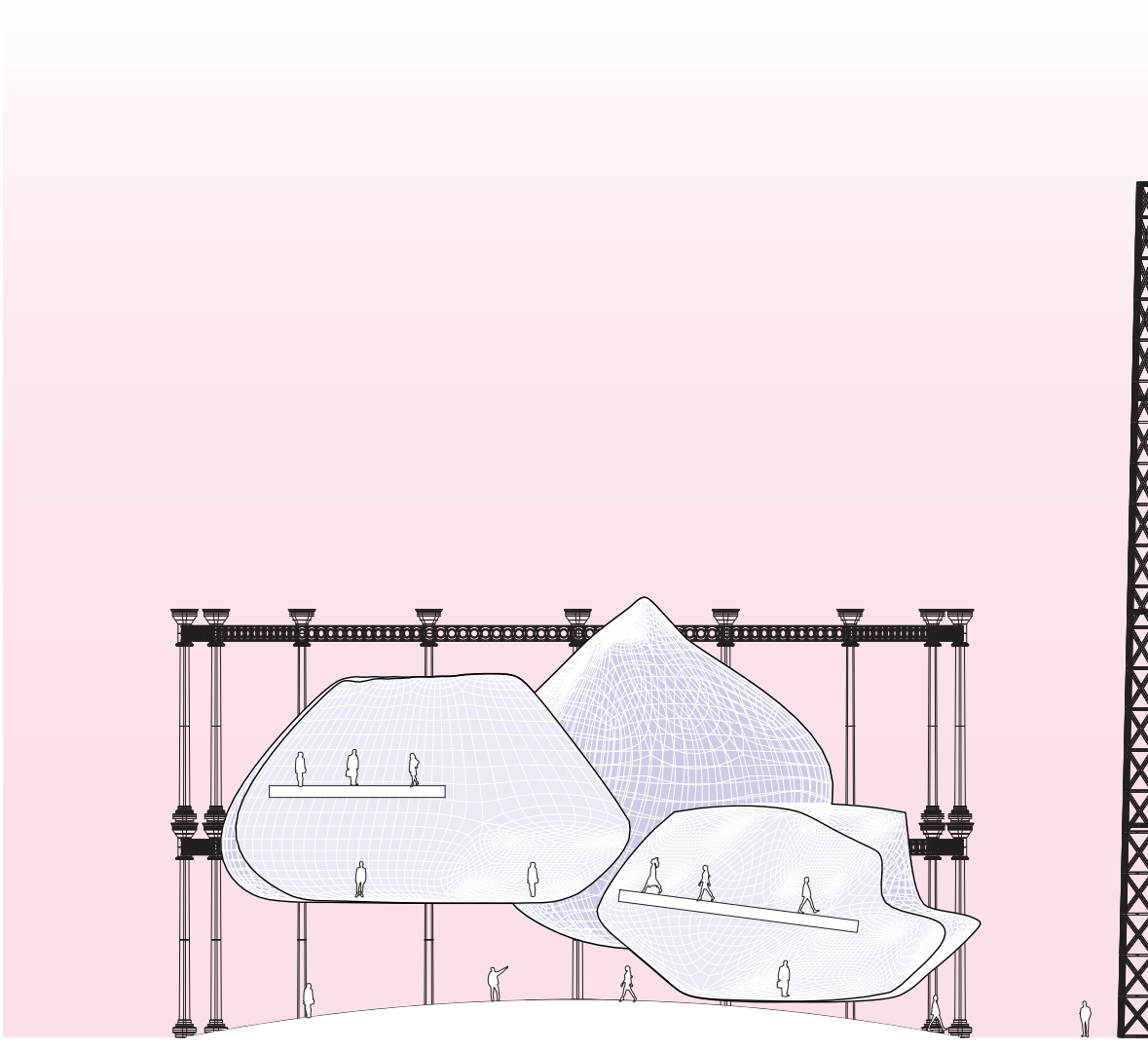
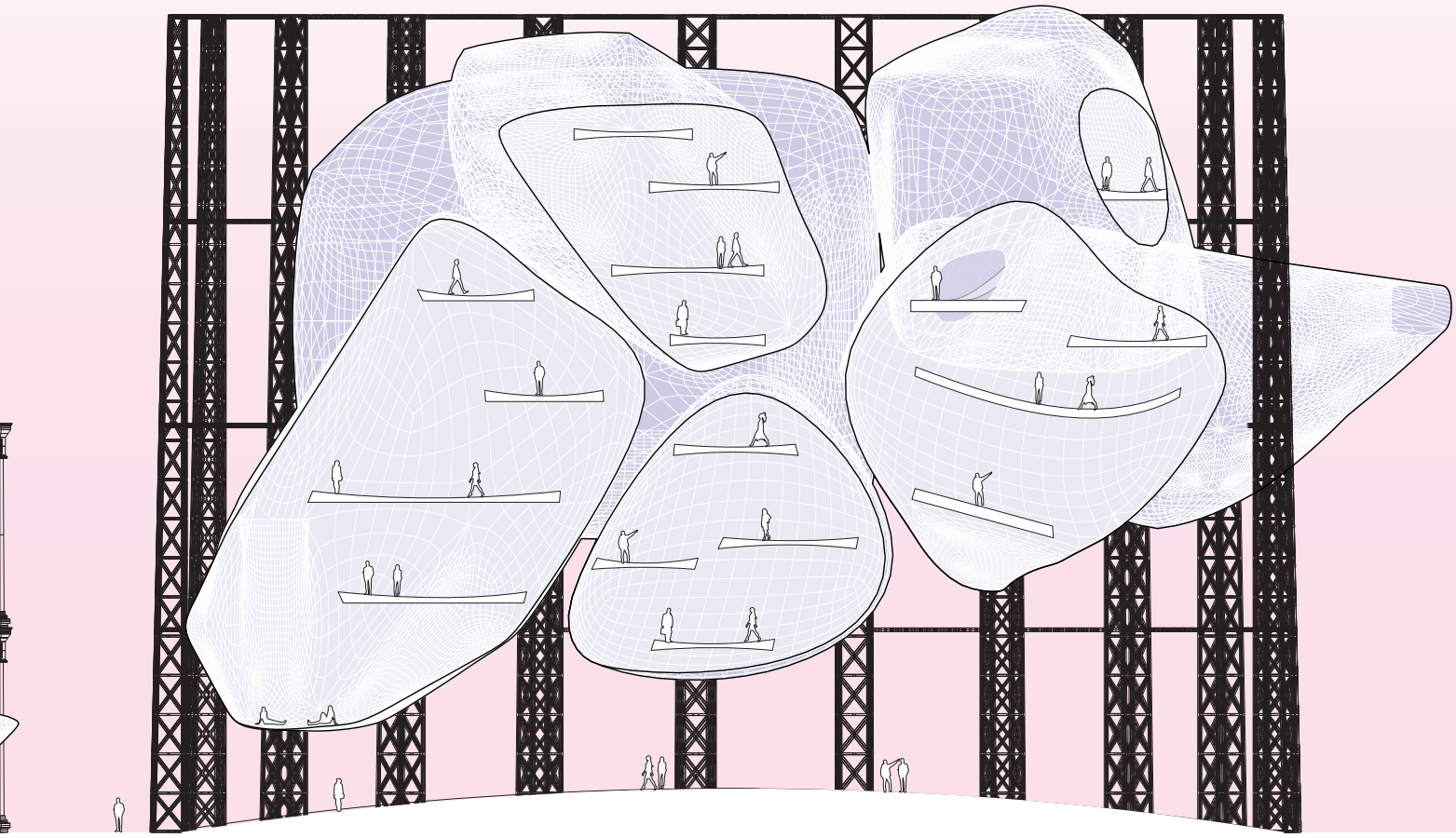
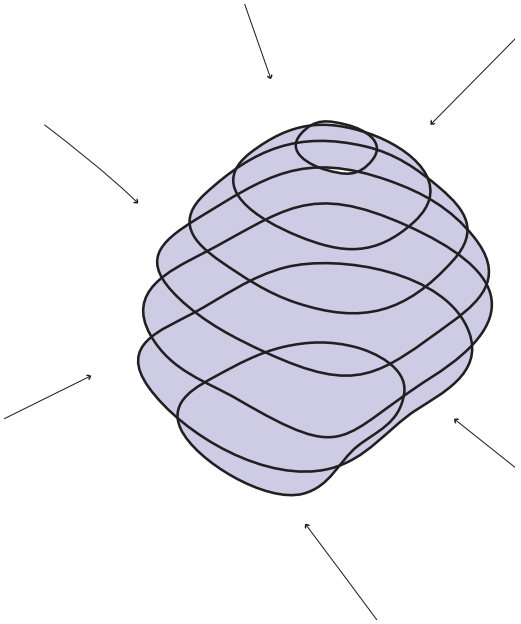


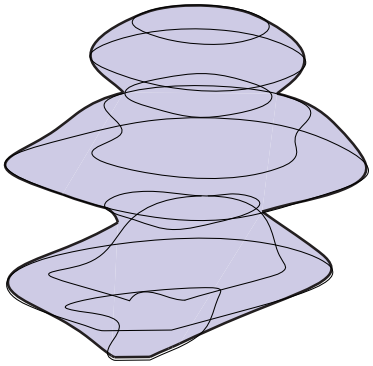
Image 9.13



FLOORS, STAIRS, AND STRUCTURE, OH MY!

With the lack of interior development for Section V2, the next step was to examine the interior. To maintain the voluptuous exterior form, the interior is developed from the same basic rules. The floors elegantly transition to the walls and have natural atria for circulation and light. Circulation manifests in three distinct ways: first the initial vertical circulation to enter the bubbles, second isolated circulation within each bubble, and finally a conveyor belt system that connects the entire project. The structure has three main components: the vertical system, primary steel waffle, and secondary horizontal system. The structure would be made of steal, giving Halo unique ribs that would be faintly visible from the exterior.





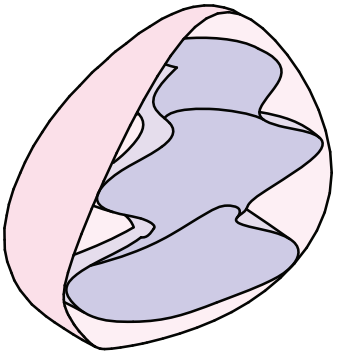
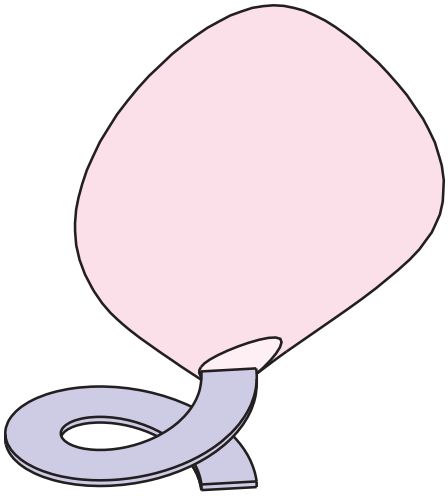
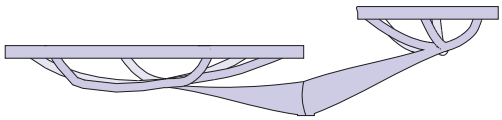
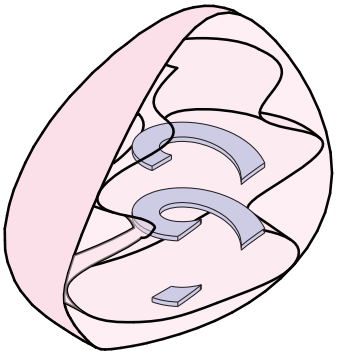
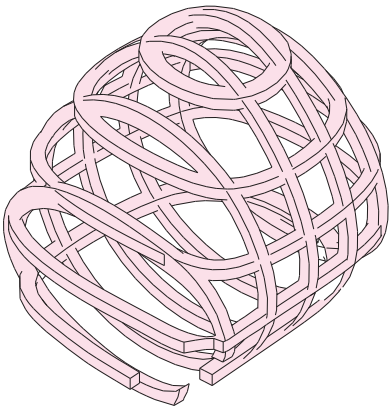


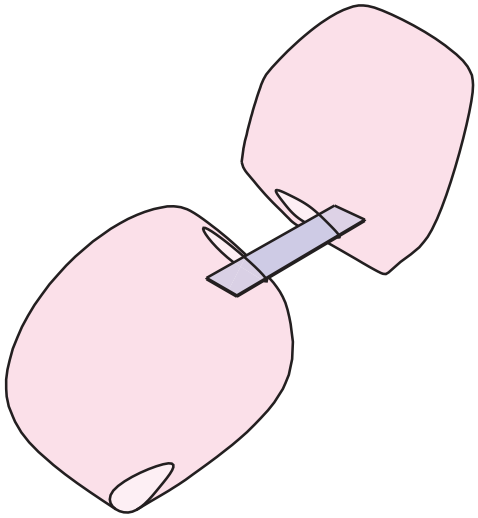
Image 9.14

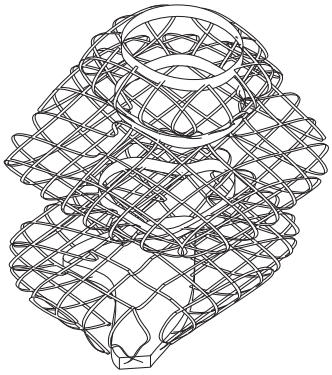












SECTION V3

Integrating the previously mention iterations, Version3 begins to show an understanding of interior space and structure. The bubbles interact with one another and are all interconnected while maintaining their original form. This iteration also sees the introduction of the Sleeping Pods. These pods attach to the interior of the bubble to allow quick access to safe sleeping spaces.

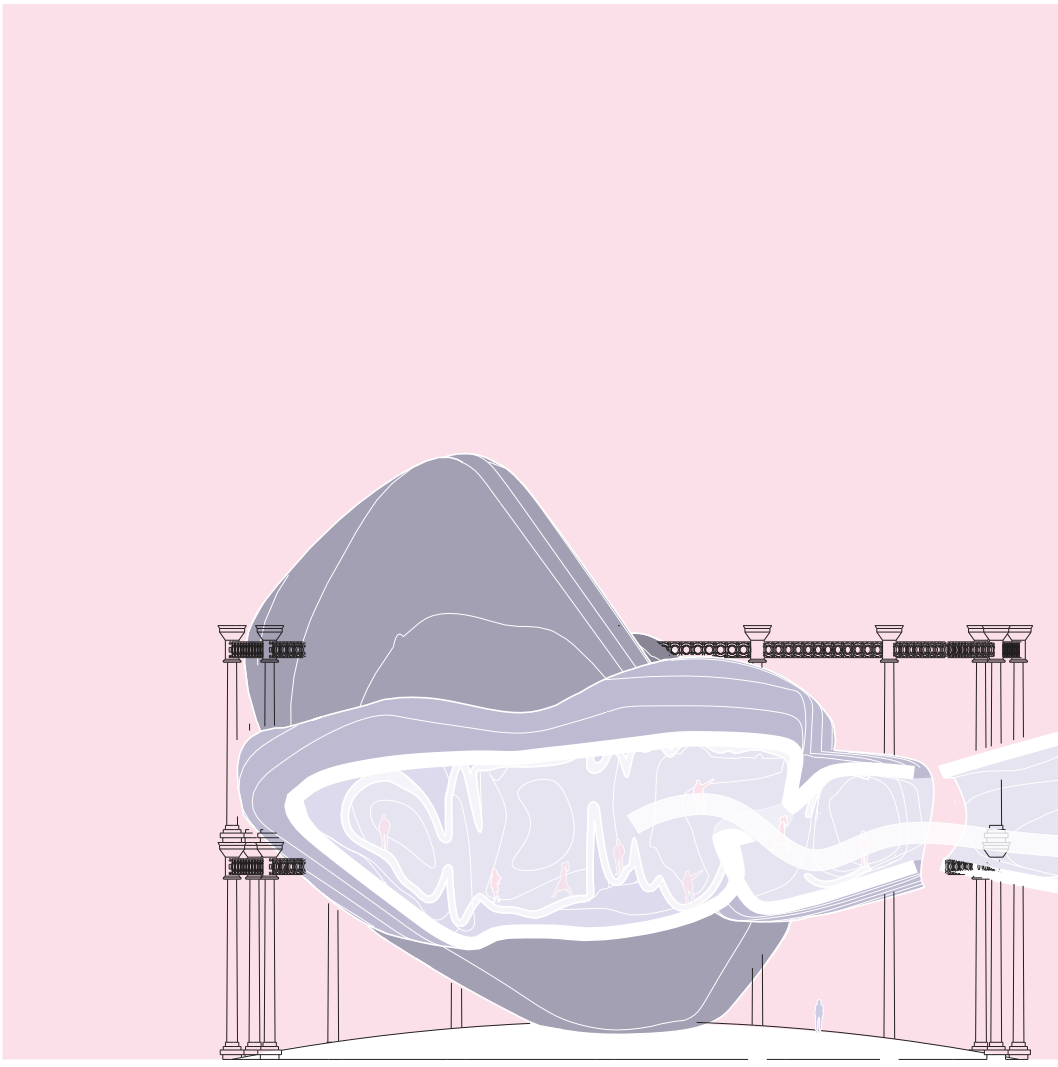
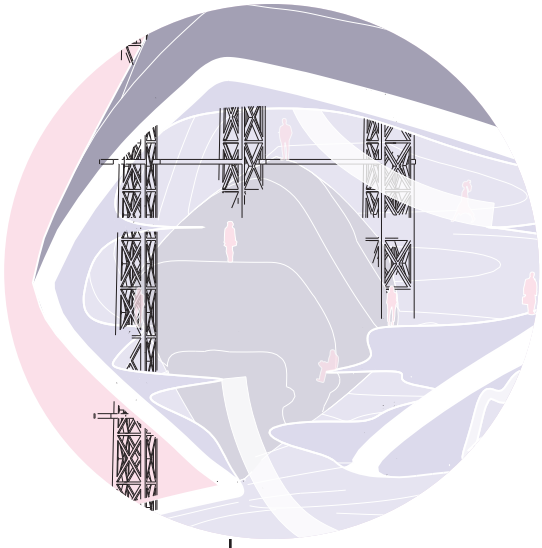
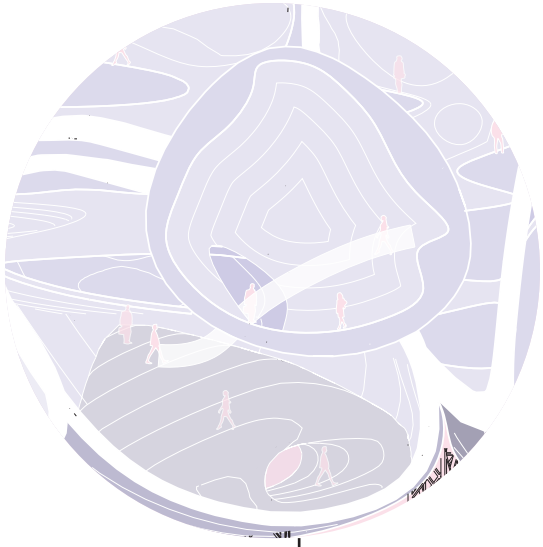


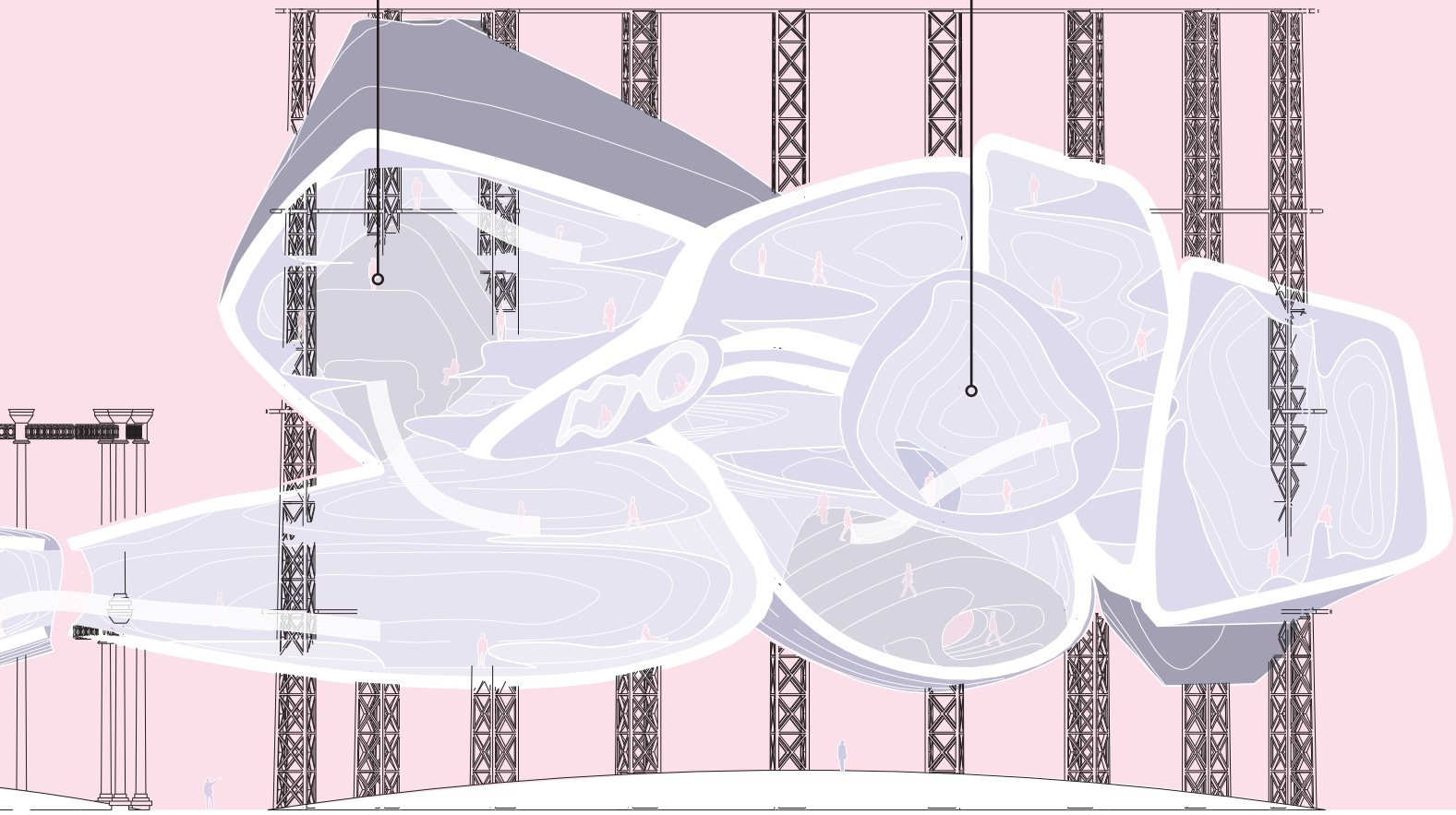
Image 9.15



Sleeping Pod Exterior



Sleeping Pod Interior



SECTION V4

In the final iteration for winter quarter, the bubbles have procreated and extended far beyond the original bounds of the gasholders. In this iteration, more realistic materials are used to show depth, structure and light. Circulation is staring to develop, and more bubbles near the ground to allow for entry.

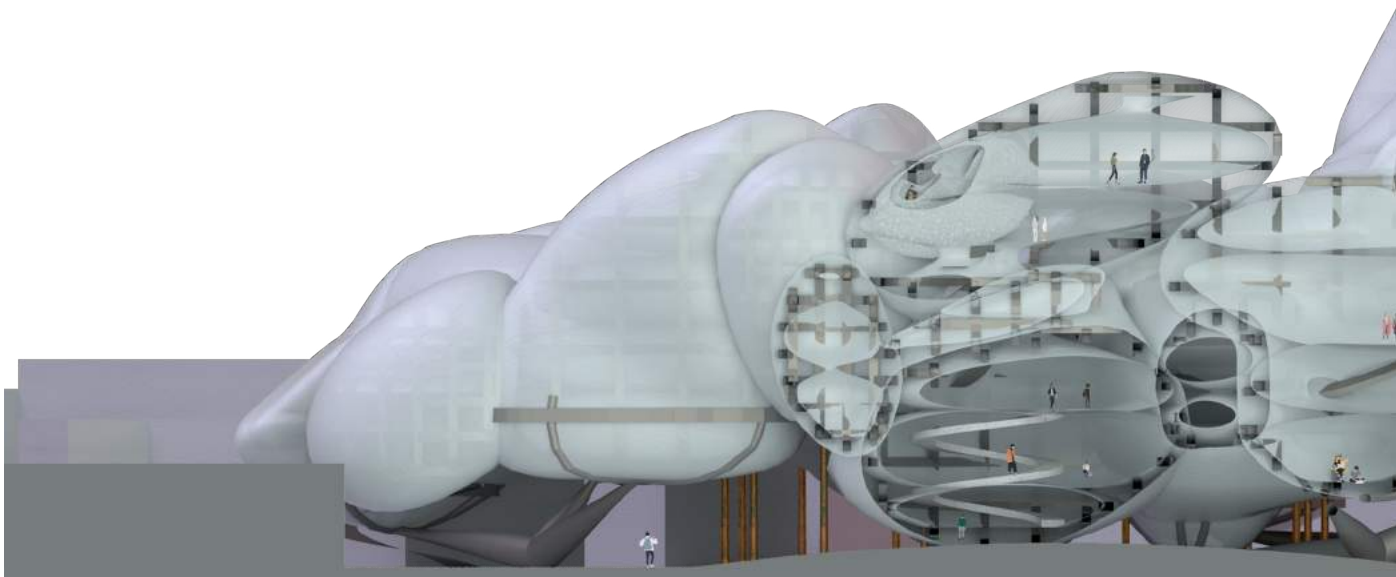
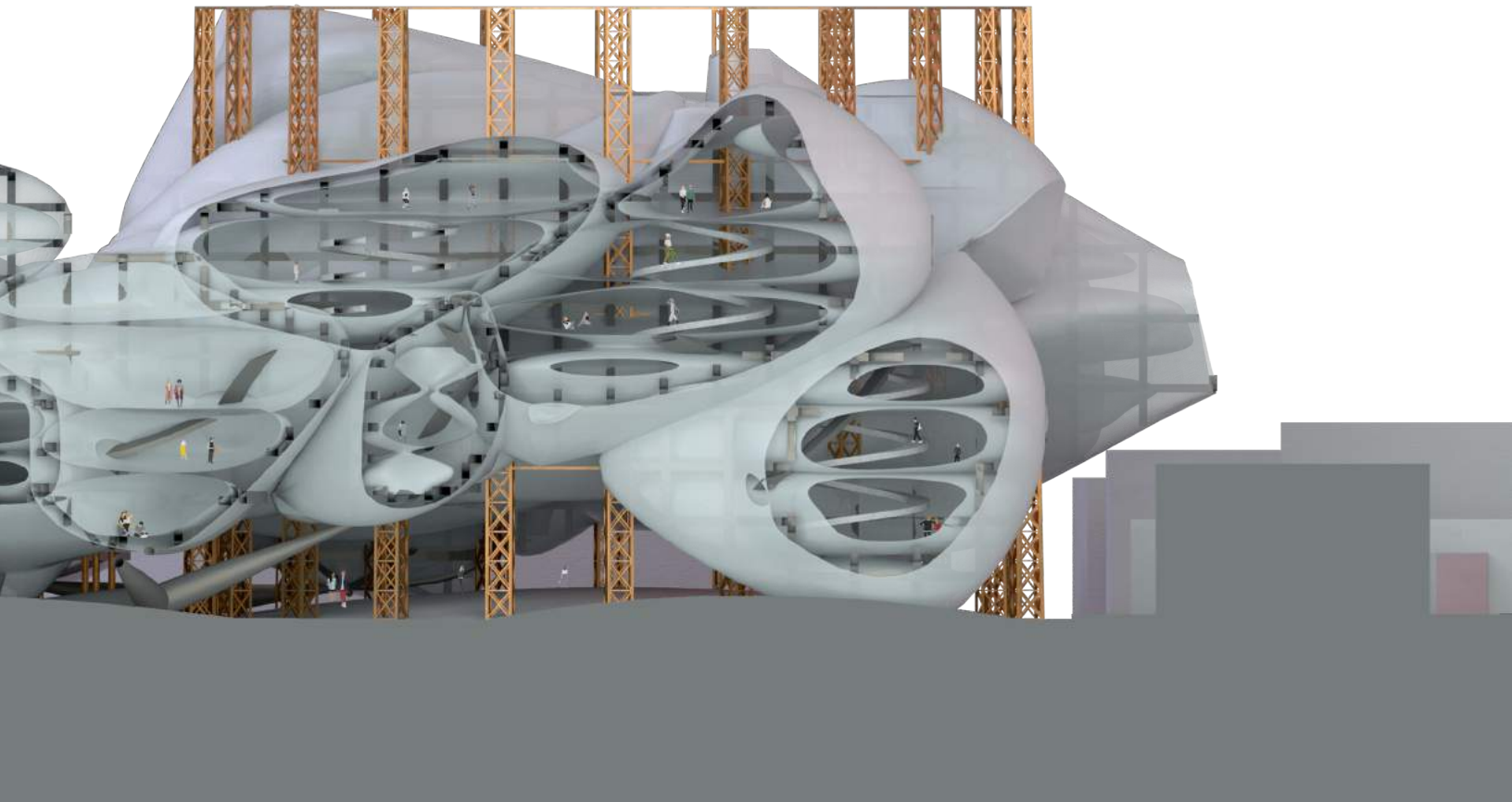
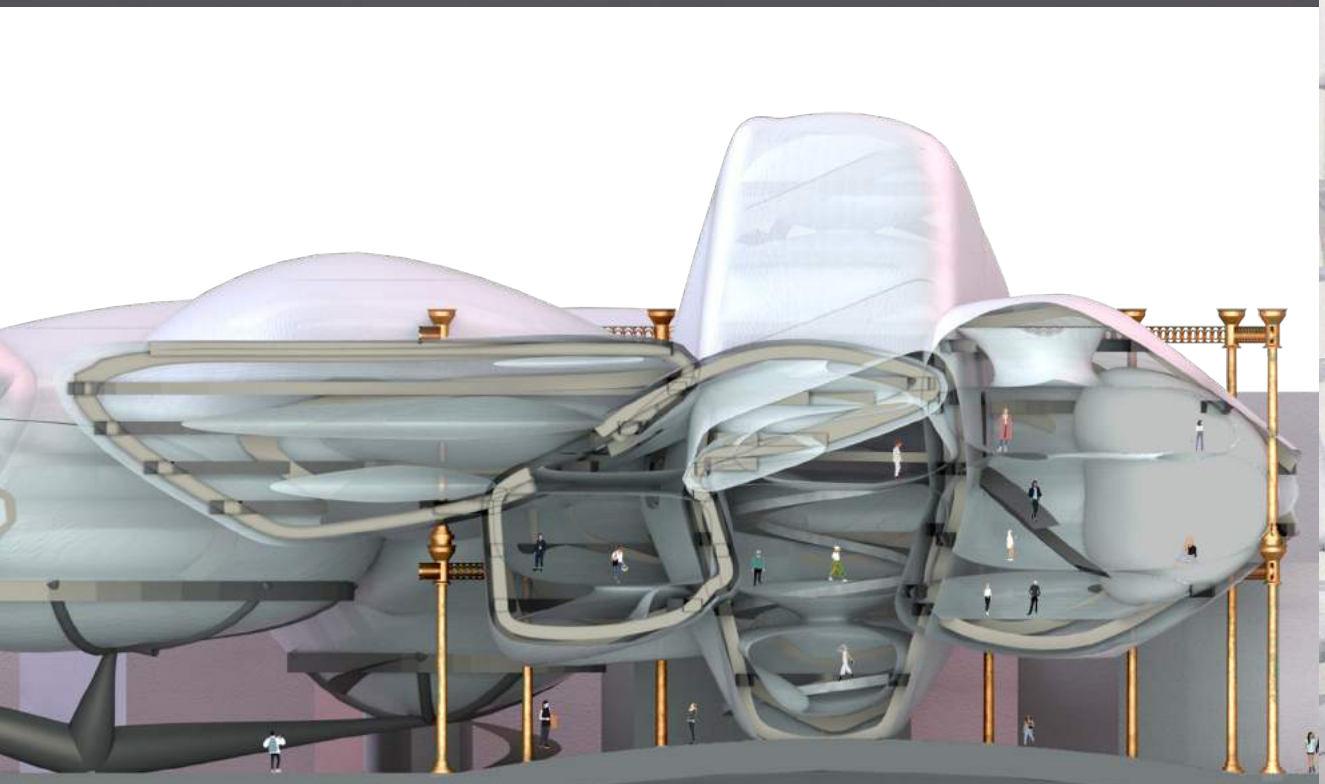
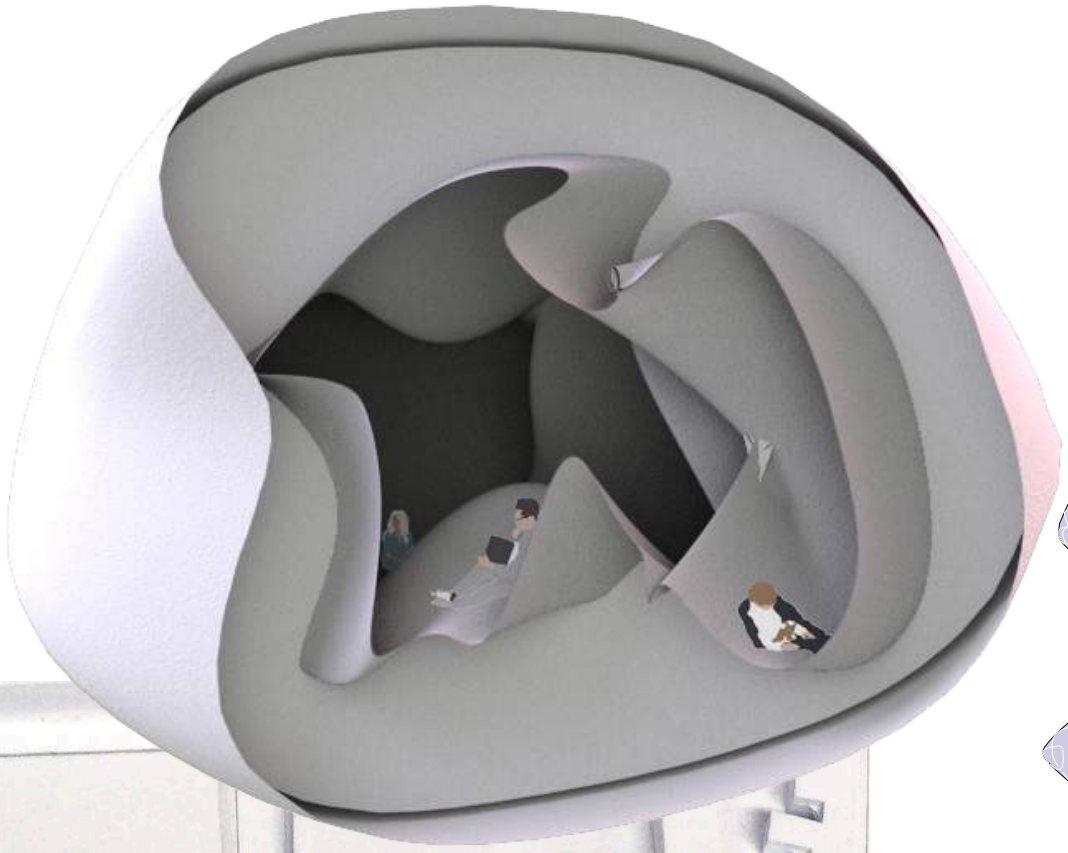
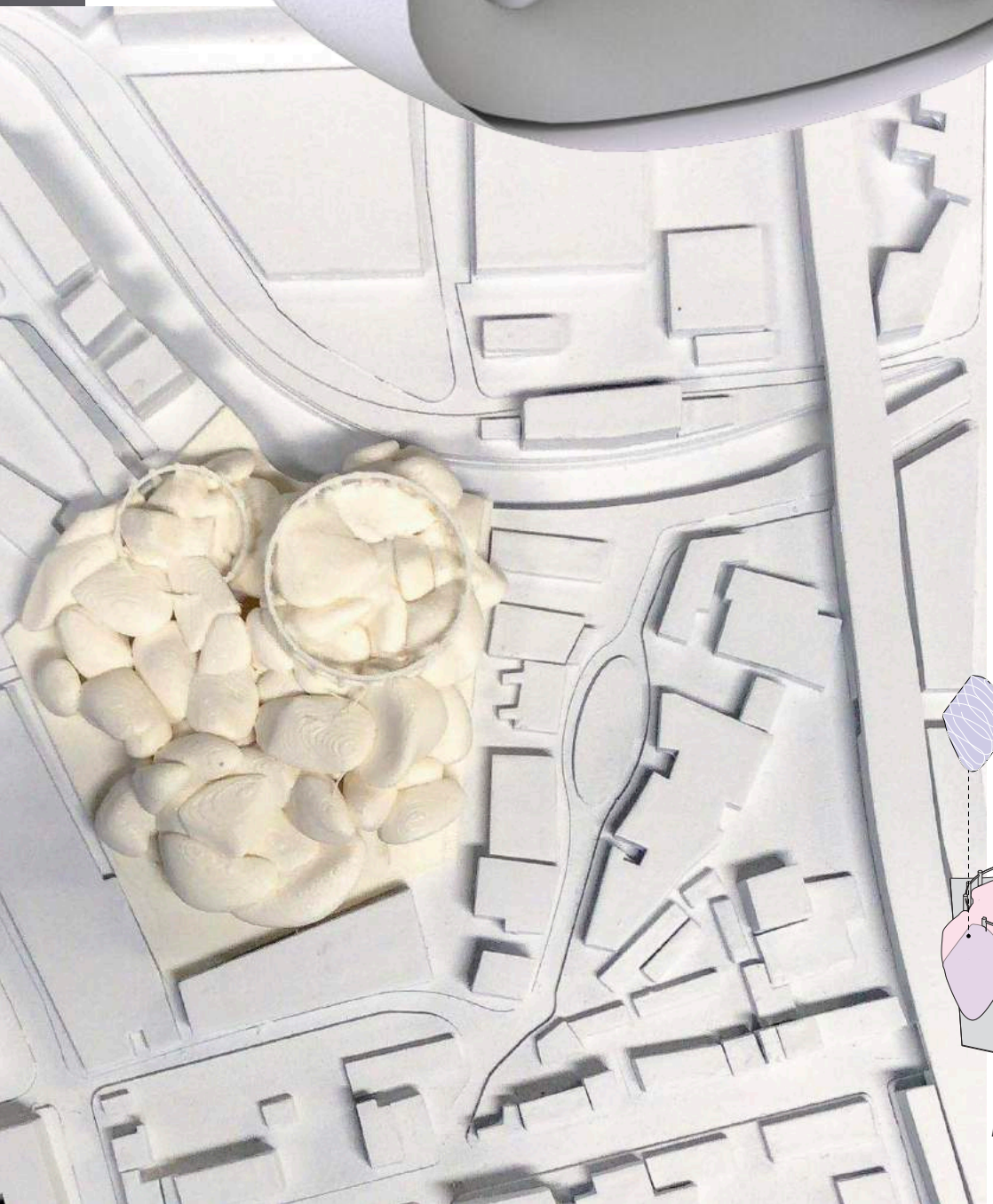


Image 9.16









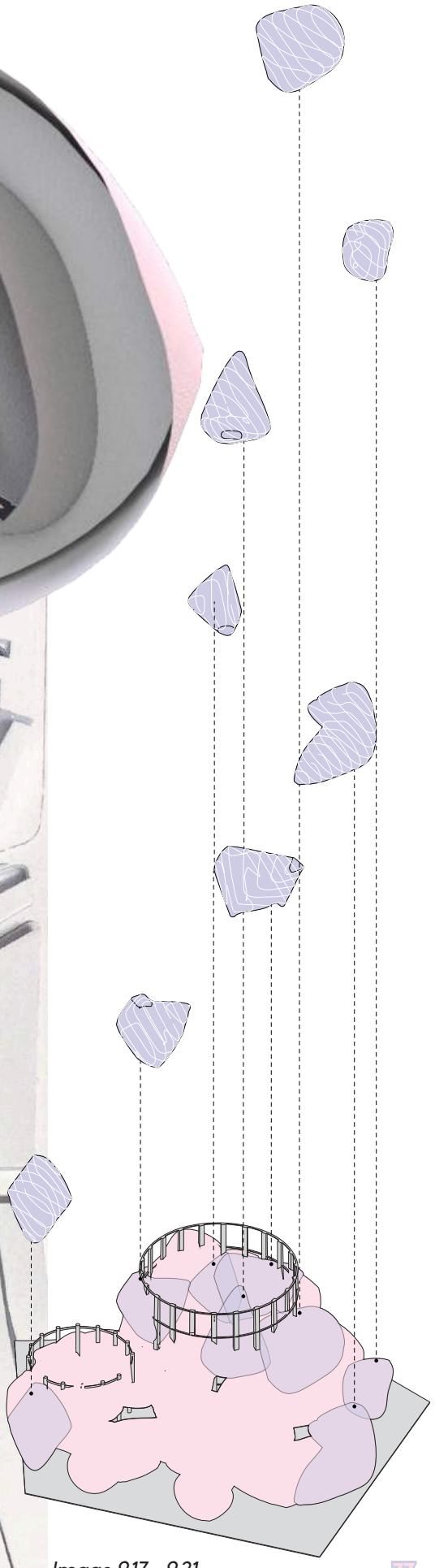


Image 9.17 - 9.21

FINAL PRODUCTION

Image 10.1

X
FINAL OF THE FINAL OF THE FINAL

Final production first began with the final iteration and design of Halo. Moving with the advice received at VANOVA, the 40+ bubbles were consolidated in 15. This allowed more breathing room throughout the site, and gave each remaining bubble a unique shape. This also aided in circulation integration, allowing the passage between bubbles and polyps to become further simplified.

Once the final bubbles were created, then came the surface development. Instead of creating smooth stone-like surfaces, the surfaces were modeled with a pillow like texture. The goal was to create a semi-transparent facade made with EFTE panels that would take on a whole new life once the sun set. The glowing facade, as seen in *image 10.1,* would act like a beacon drawing people in from the area.

The final step was to further develop the structure and interior spaces of Halo. The structure was similar to the previous quarter, with focus on the connections between superstructure and facade and polyp. This was further explored in physical models and rendering.

Image 10.2

X.A
THE MODELS

With the models, there were three primary goals:

- *show* Halo in a larger context
- *illustrate* Halo's semi-transparent qualities
- *highlight* the interior space created by polyps

Three goals resulted in the creation of three models. The first is the Rose Gold Baby. At 1/128" = 1', the Rose Gold Baby reused the original site model built in November 2018. This showed Halo within a larger context, reaching to the above ground railway and beyond the canal.

The second is the Discoteca. By using semi-transparent materials and remote controlled LED lights, the Discoteca is able to show how Halo can transition from day to night and draw people to the site. This model also highlights the height and size of Halo within its immediate context.

The third and final model is the Clusterchunk model, which shows the interior conditions of a bubble with several polyps. This particular bubble is a retail area, so its size and additional interior spaces made it a unique area to model. The Clusterchunk also acts as a facade study, using a simple quilting technique the EFTE panels are modeled with iridescent tulle and stuffing. This further enhances the experiential interior model.

Image 10.3, 9.19, 10.4

ROSE GOLD BABY (1/128" : 1')

The Baby reused the original sire model build Fall 2018 with a new 3D printed addition. The model highlights the "low lying" context and shows the relationship between bubble and gasholder. While this model lacks the openings detailed in the model, it does shows the divots created by the openings within the bubble. Perhaps the most prominent of these was nicknamed the "bubble-button" for its deep depression into the otherwise smooth surface.

Image 10.5

DISCOTECA (1:400)

The Discoteca is a 1:400 scale model showing the immediate context as well as increased detail of the Gasholders. This particular model was constructed with 3D printed lattice columns, mat board, a CNC milled UltraLite base, trace paper, remote controlled battery powered LED lights, and about 10 cans of spray paint.

The result: a glowing model that gave a sense of opacity, texture, and details of the structure as a whole.

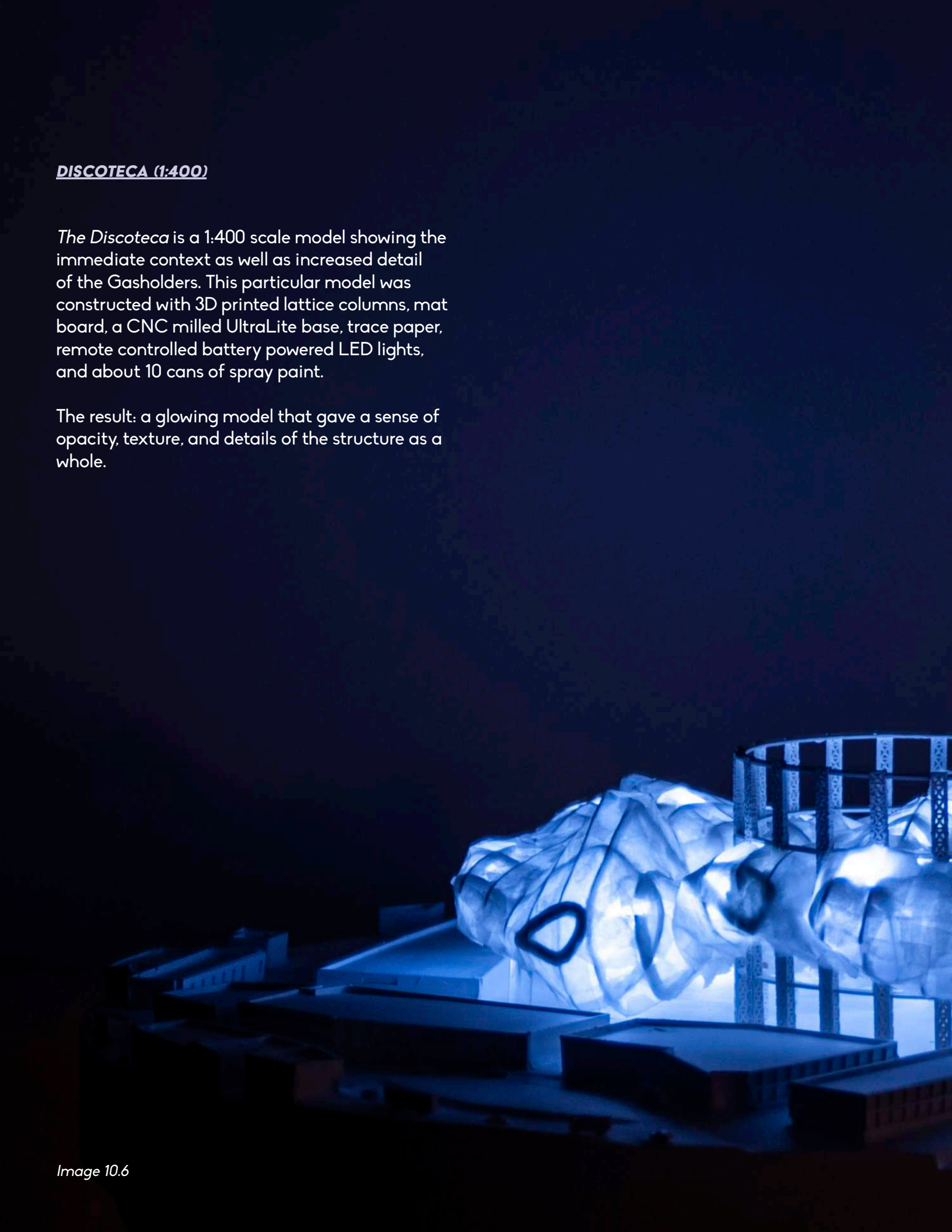
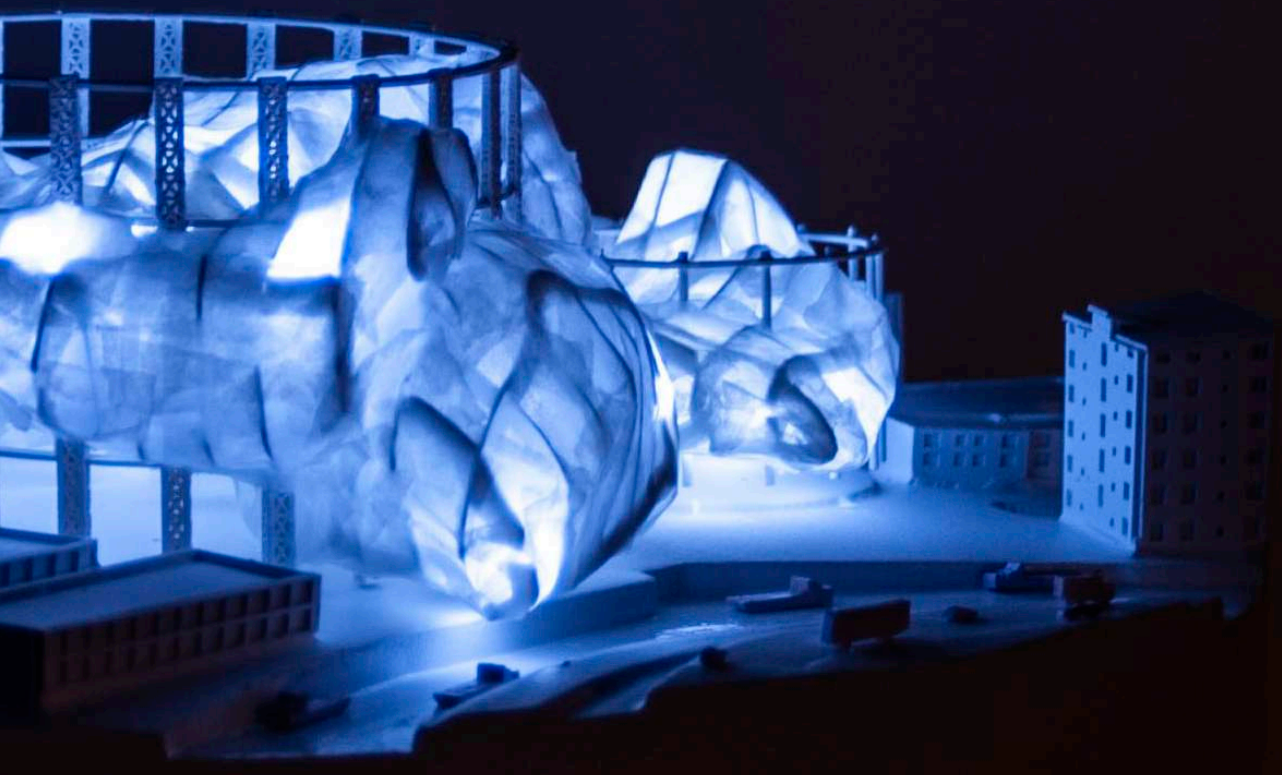
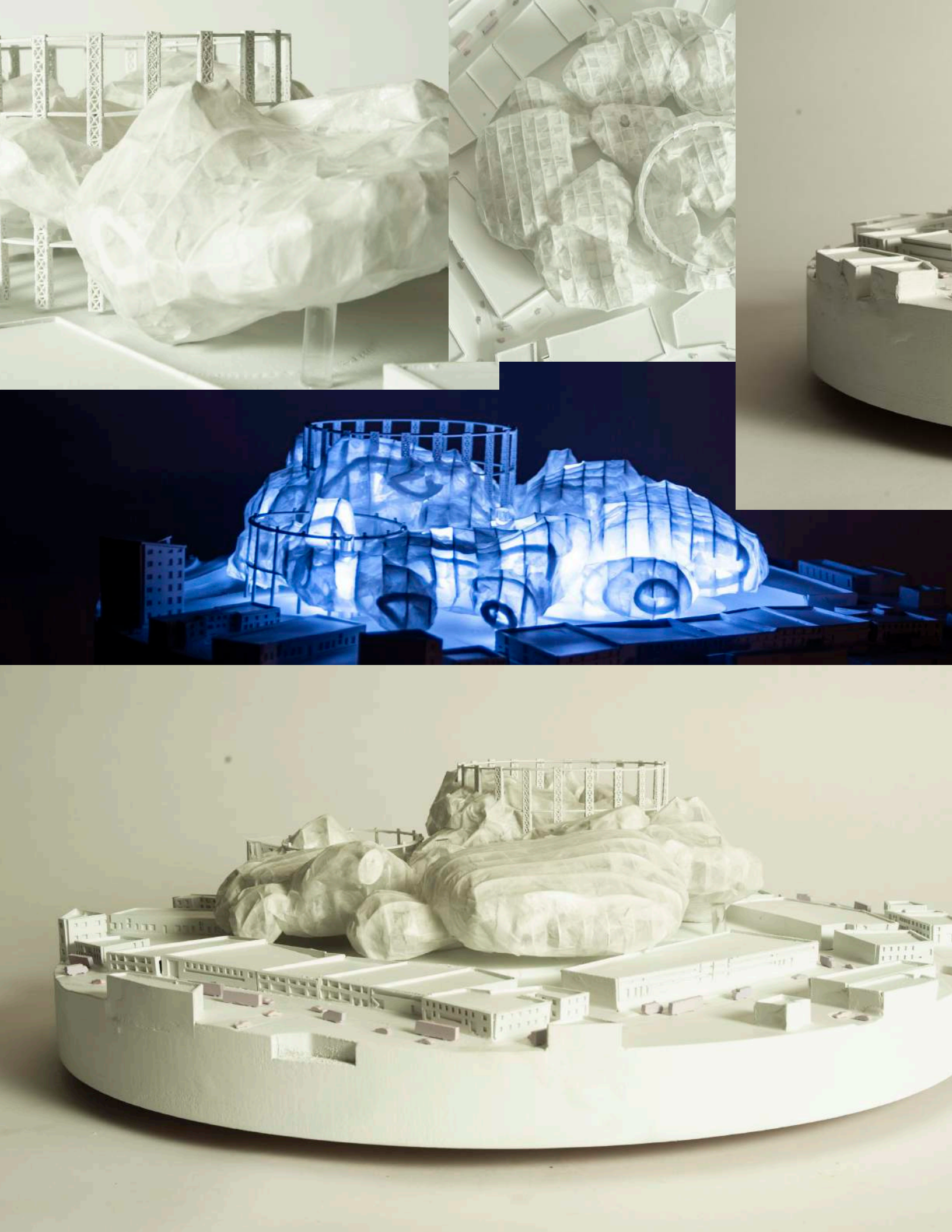
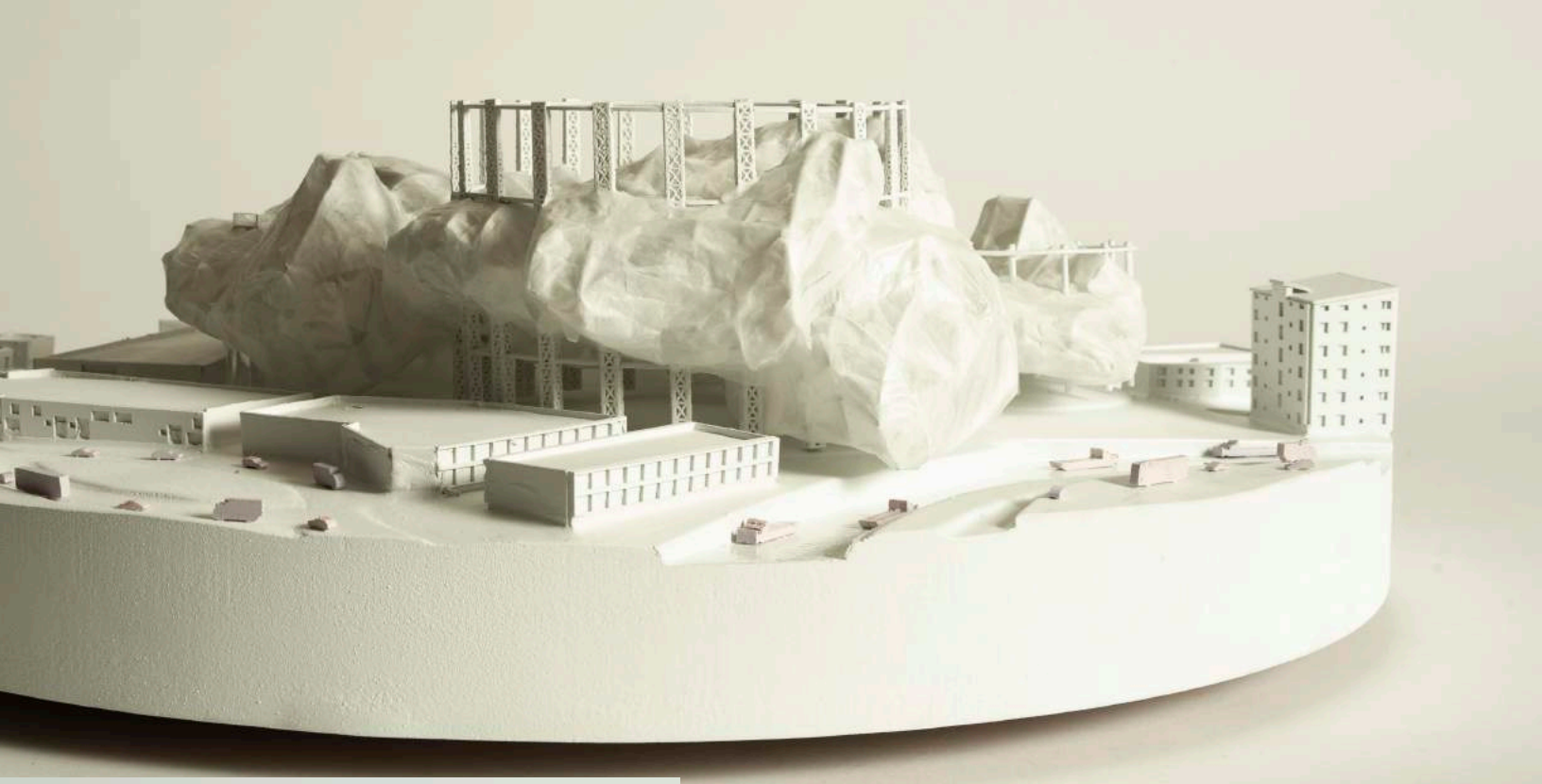


Image 10.6







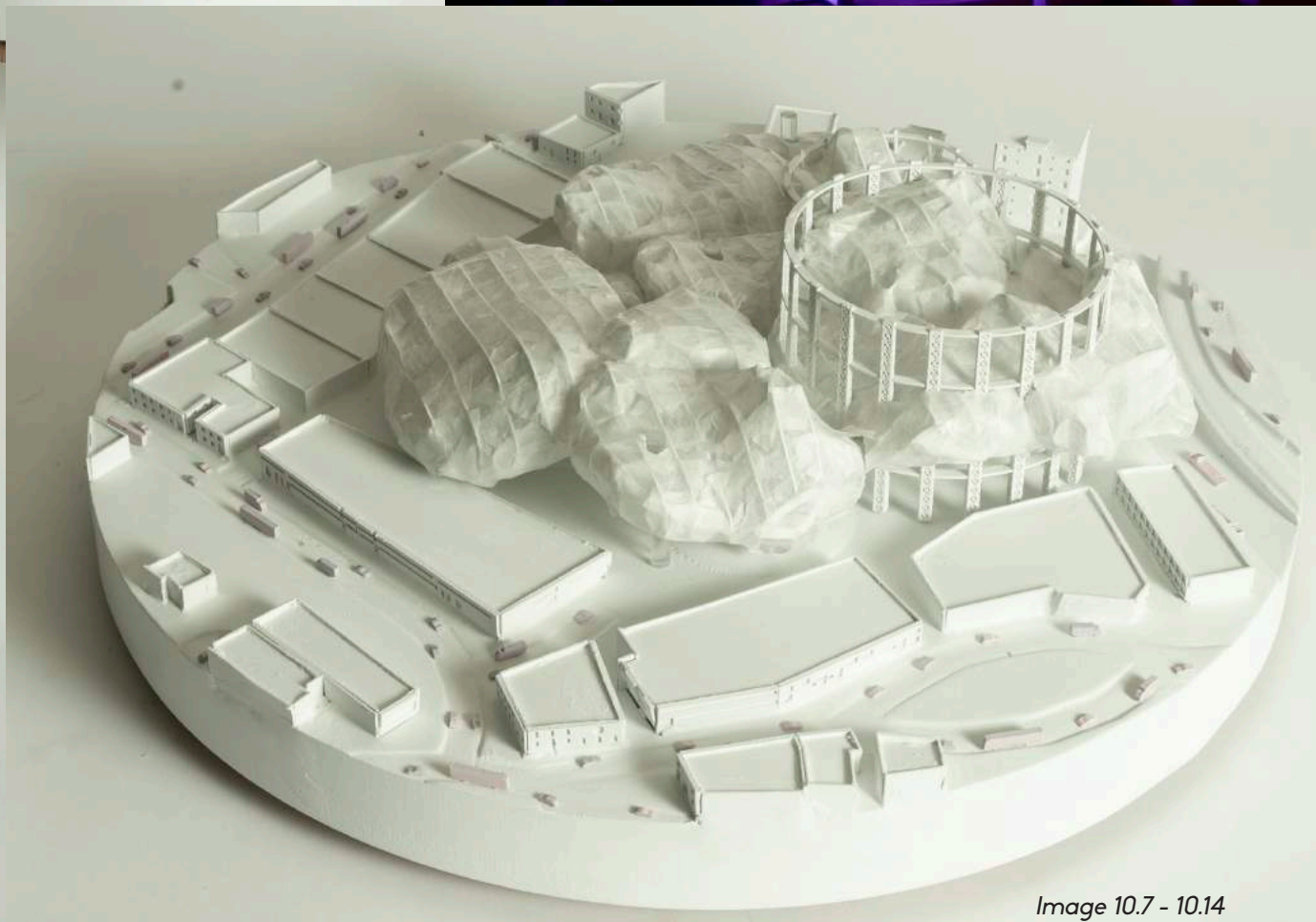


Image 10.7 - 10.14

CLUSTERCHUNK (1:100)

The Clusterchunk is a detail model of a retail bubble. Inside, there are four polyps shown. Perhaps most interesting of this detail is the facade. Using iridescent tulle and batting material, the facade is sewn in a quilting fashion to give a pillowing affect. Then, the pillow strips are hand-sewn to the laser cut facade structure. This model not only highlights the interior quality of the space, but also the construction of the EFTE paneled facade and layers of structure required to create the bubble shape and textured facade. This facade also exposed the need for additional vertical structure, and assessed the connection between bubble and polyp or floor plate. The facade is left intentionally messy, with thread pieces still attached. This invites the viewers touch as well as giving the model a unique textural and appearance of a well used creation space.

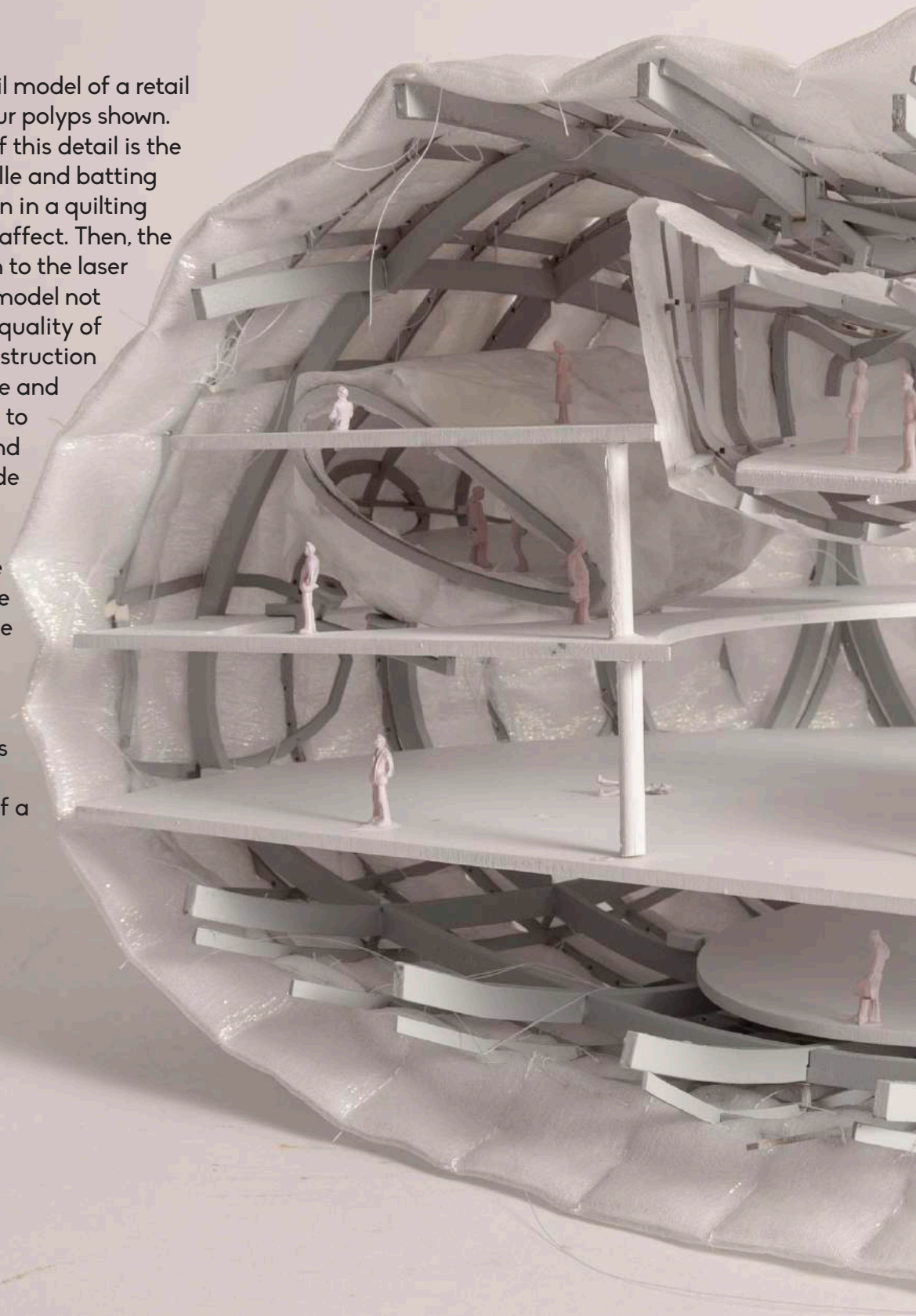


Image 10.15

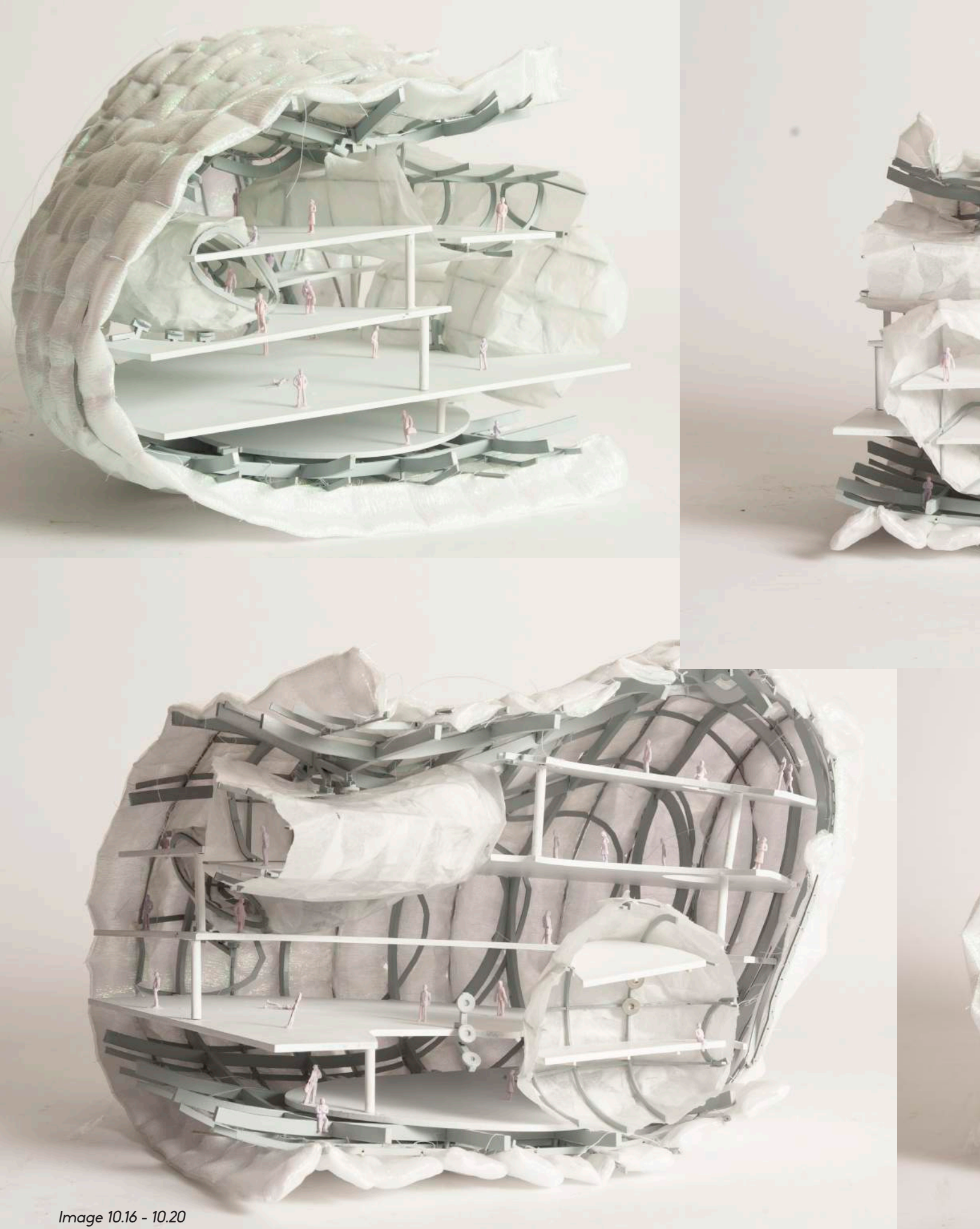
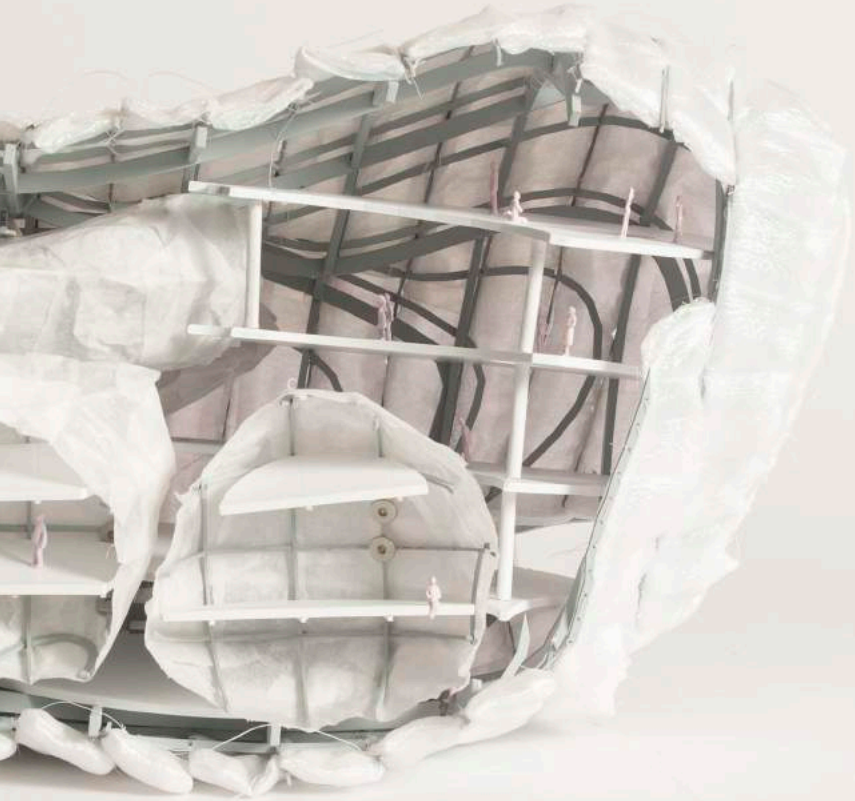


Image 10.16 - 10.20



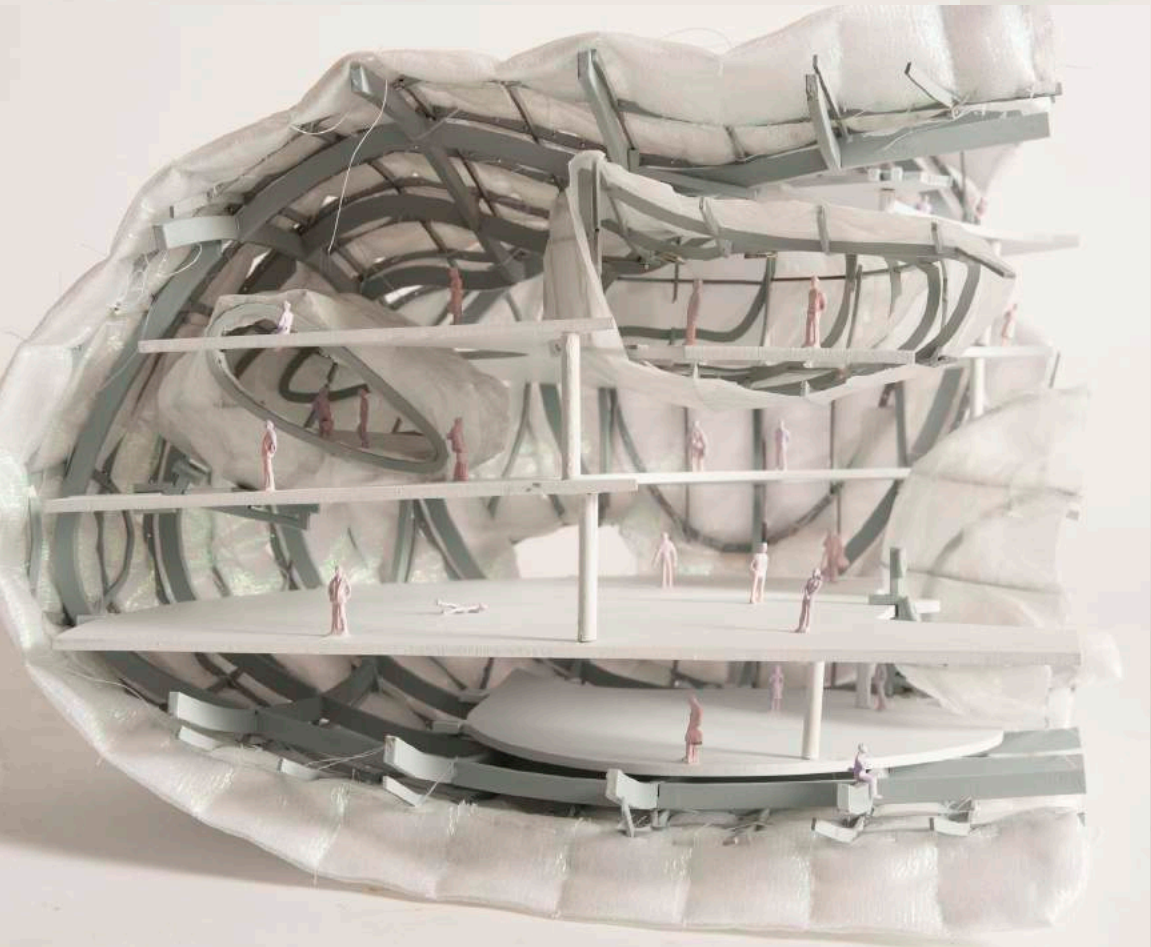


Image 10.21

X.B
DIGITAL ADVENTURES

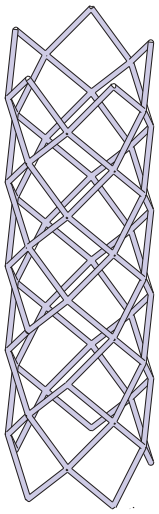
With the physical models carefully showing the details of Halo, the digital became a means to add a real-life quality to the project. All digital pieces created were either diagrams to explain the relationship of the spaces or renderings to give an understanding to the unique interior conditions. As a result the digital model became extensively developed in order to create life like spaces.

Image 10.22

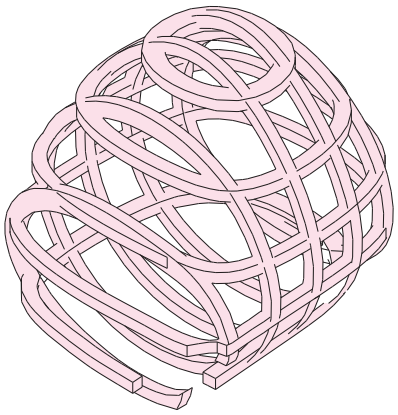
STRUCTURE DIAGRAMS V2

The structure has three main components: the vertical system, primary steel waffle, and secondary horizontal system. The structure would be made of steal, giving Halo unique ribs that would be faintly visible from the exterior.

Vertical structure comes from historic gasholders and diagrid structures support circulation and larger bubbles.



Primary steel waffle structure supports and creates bubble shape.



Secondary structure stems from waffle to support floor plane and interior polyps.

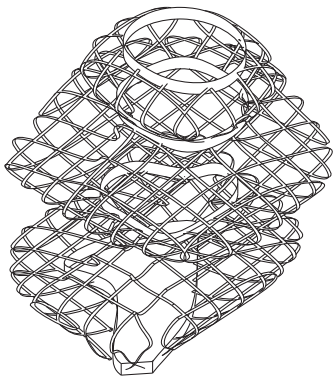
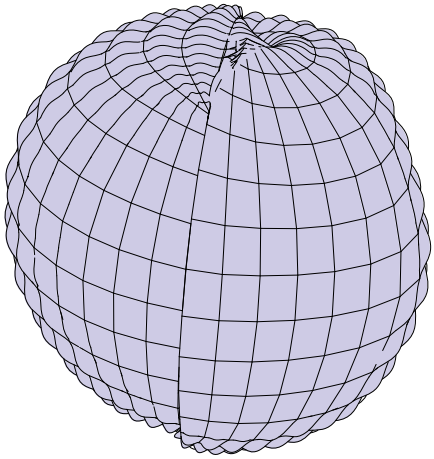
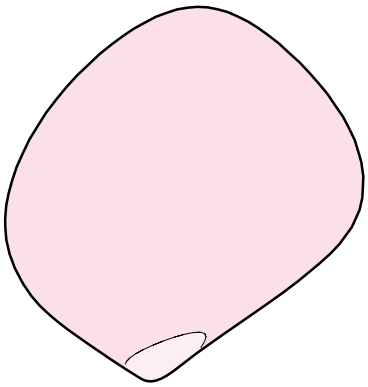


Image 10.23

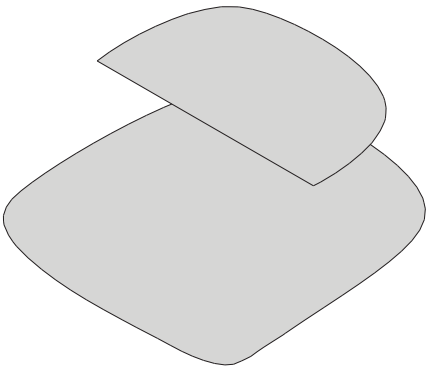


EFTE panels allow light to enter the space, and evoke the feeling of being wrapped in a blanket.

The structure plays with the ideas of quilting and softness by using pillowed EFTE panels and architectural grade fabric as the facade and polyp exteriors. The floors are made of concrete.



The architectural grade fabric allows light to filter into the space, allowing natural lighting.



Concrete gives a smooth clean surface ideal for creating.

Image 10.24

FUNCTION FROM FORM

Using the generated design, the bubbles are then used for specific programs based on size, location, and the undulating "floor plate" created by the original bubble. Bubbles on the exterior of Halo are used for more public programs: galleries, shops, and drop off centers. Meanwhile, bubbles closer to the gasholders or in more densely occupied areas offer space for more private areas such as lecture halls, studios, and libraries. In some instances, the bubble has been punctured to allow light or ventilation.

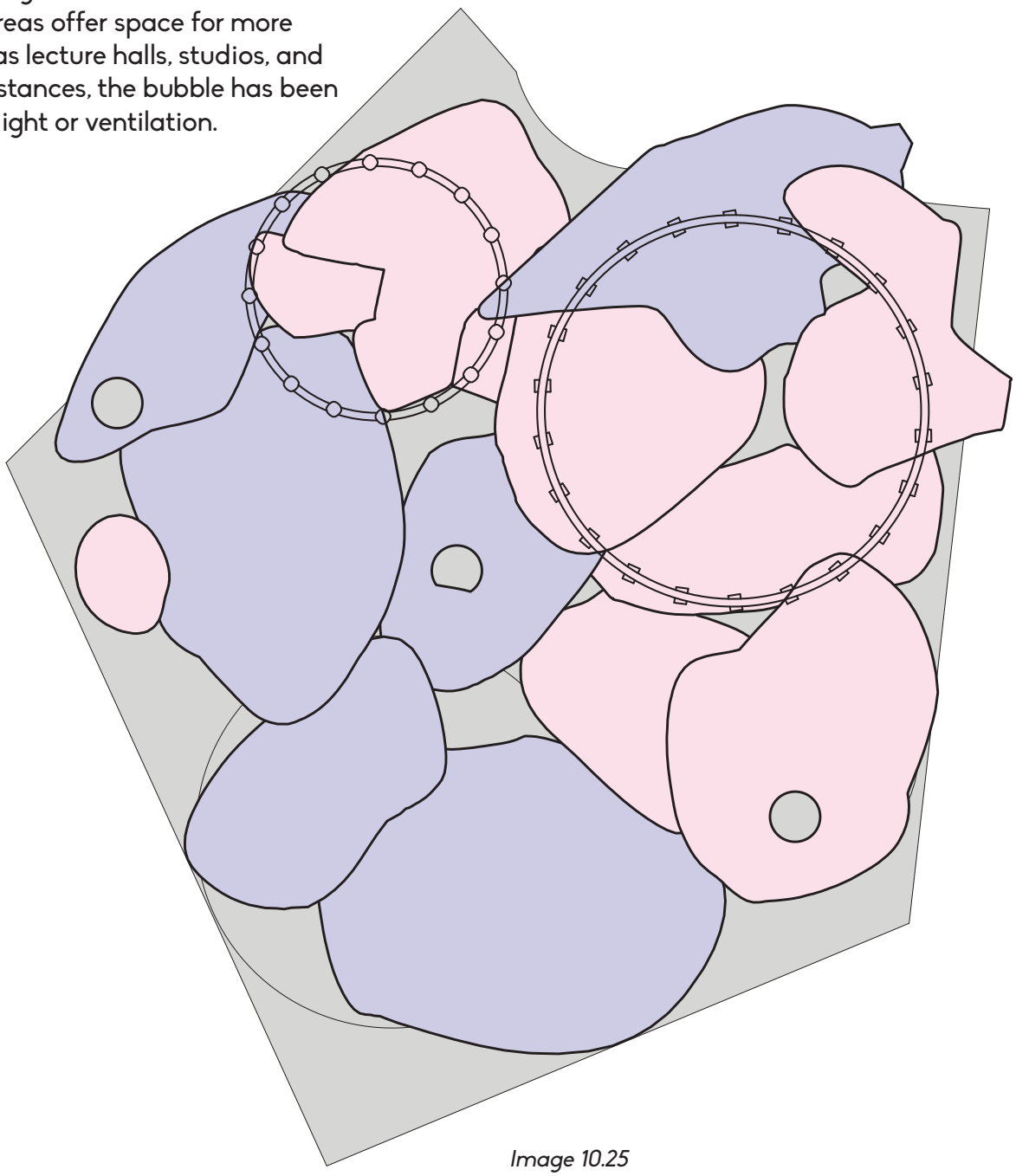
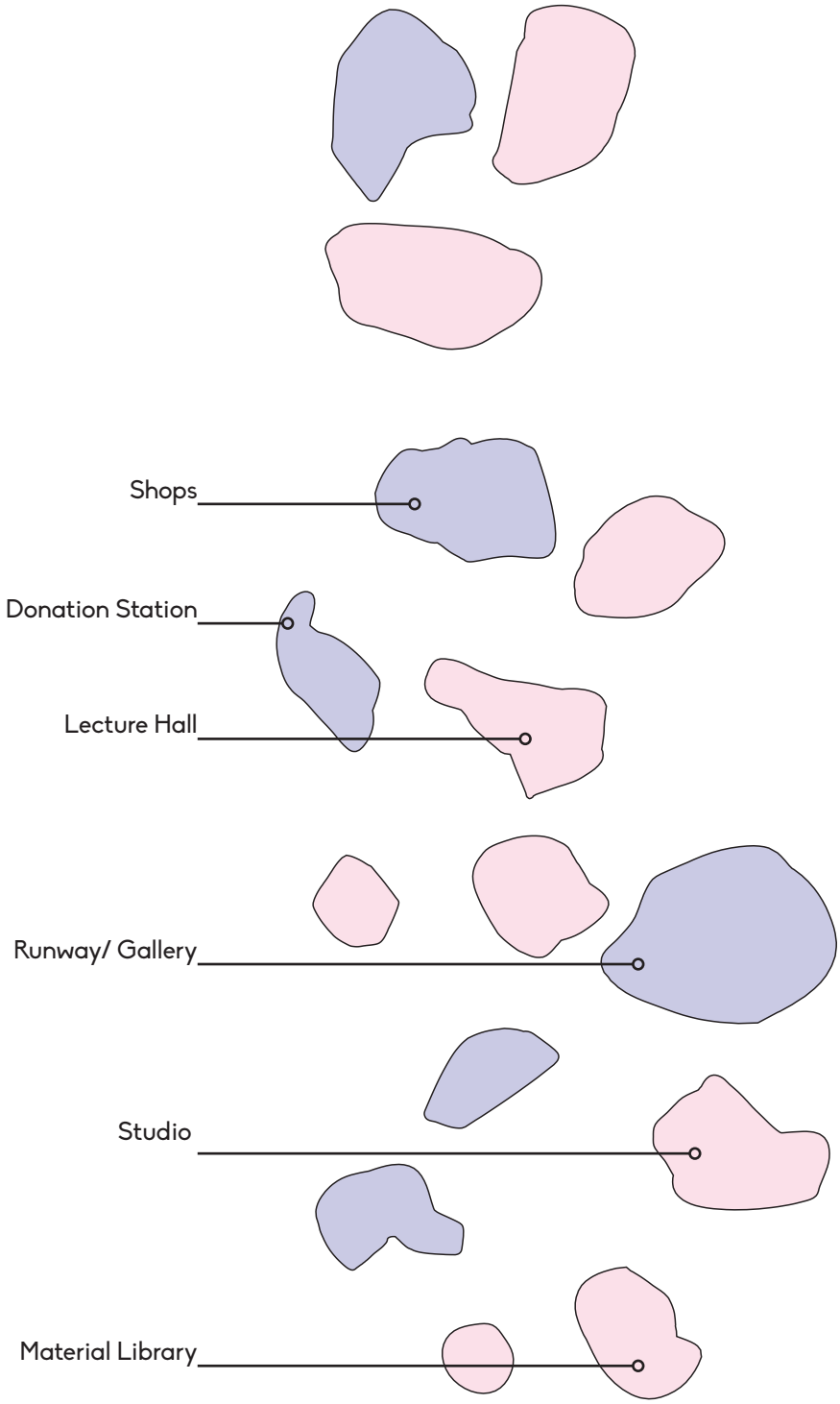


Image 10.25


Shops
Donation Station
Lecture Hall
Runway/ Gallery
Studio
Material Library

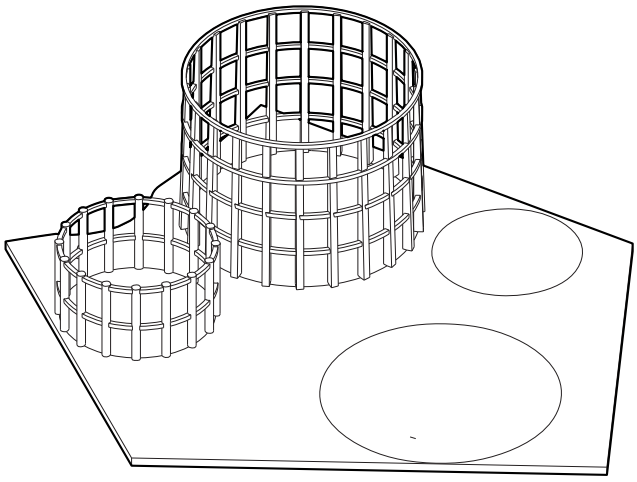


Image 10.26

SECTION V5

This project has been throughly developed through a series of sections. In the final versions of the sections, Halo shows the development of structure, facade, floors, and circulation. The gradual design and development of all these elements ultimately results in the final two sections. Both sections examine the relationship between exterior and interior, as well as the relationship of the new bubbles to the existing gasholders.

With the completion of these sections, interior renderings were also created to further create a spatial awareness of the project.. The renderings show the unique spaces of the project, including entry spaces, interior polyps, and the varying qualities of light throughout Halo.

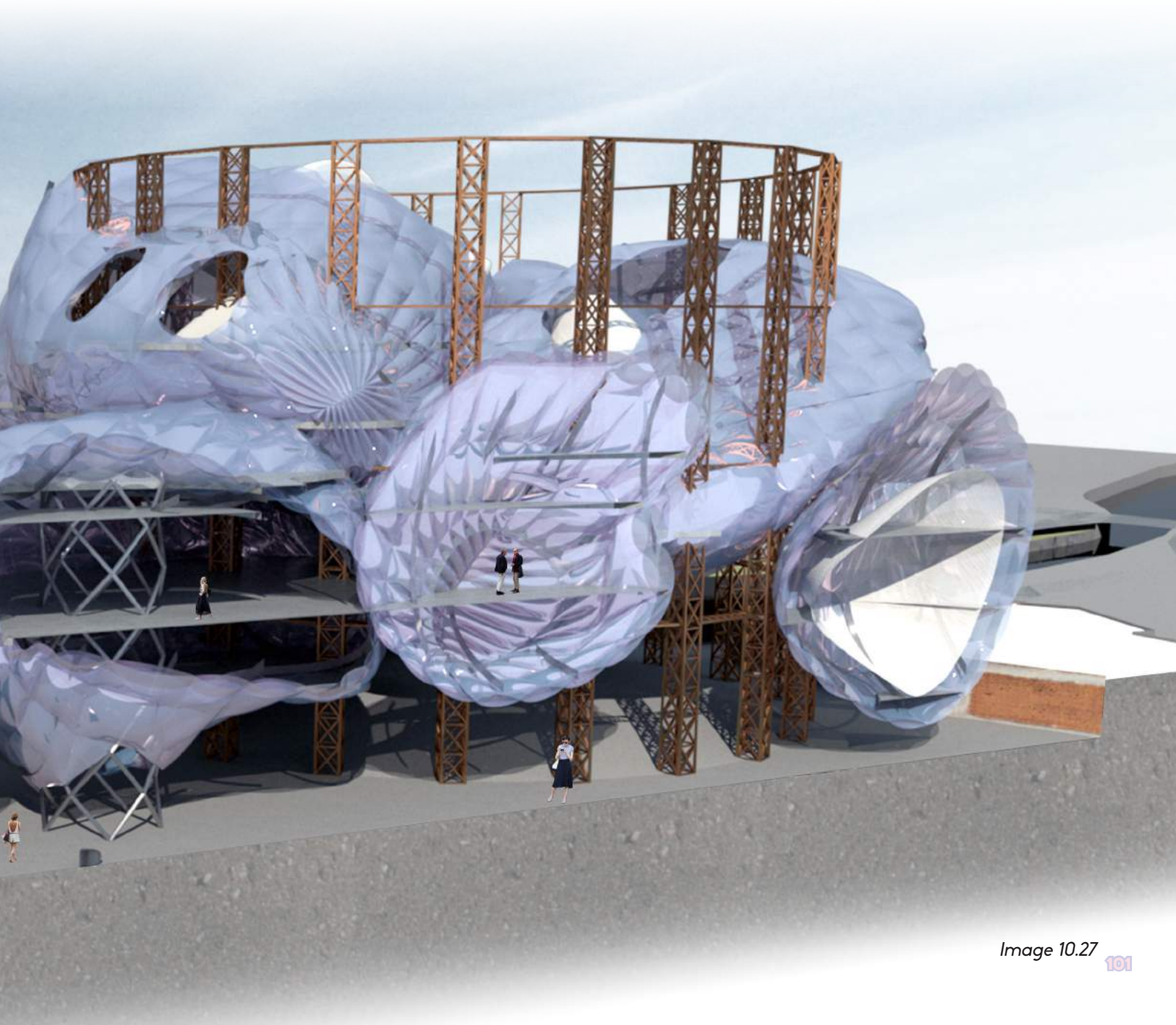
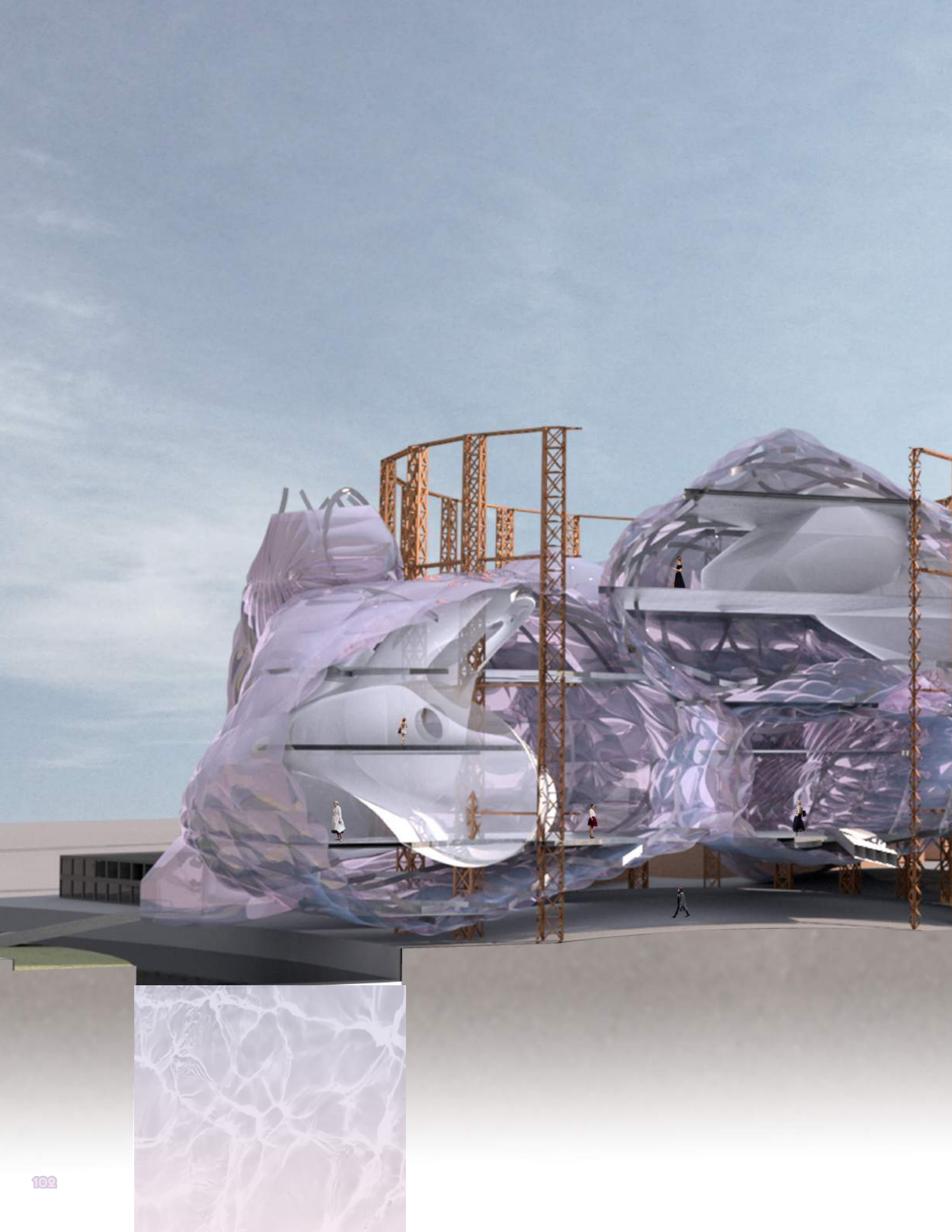


Image 10.27



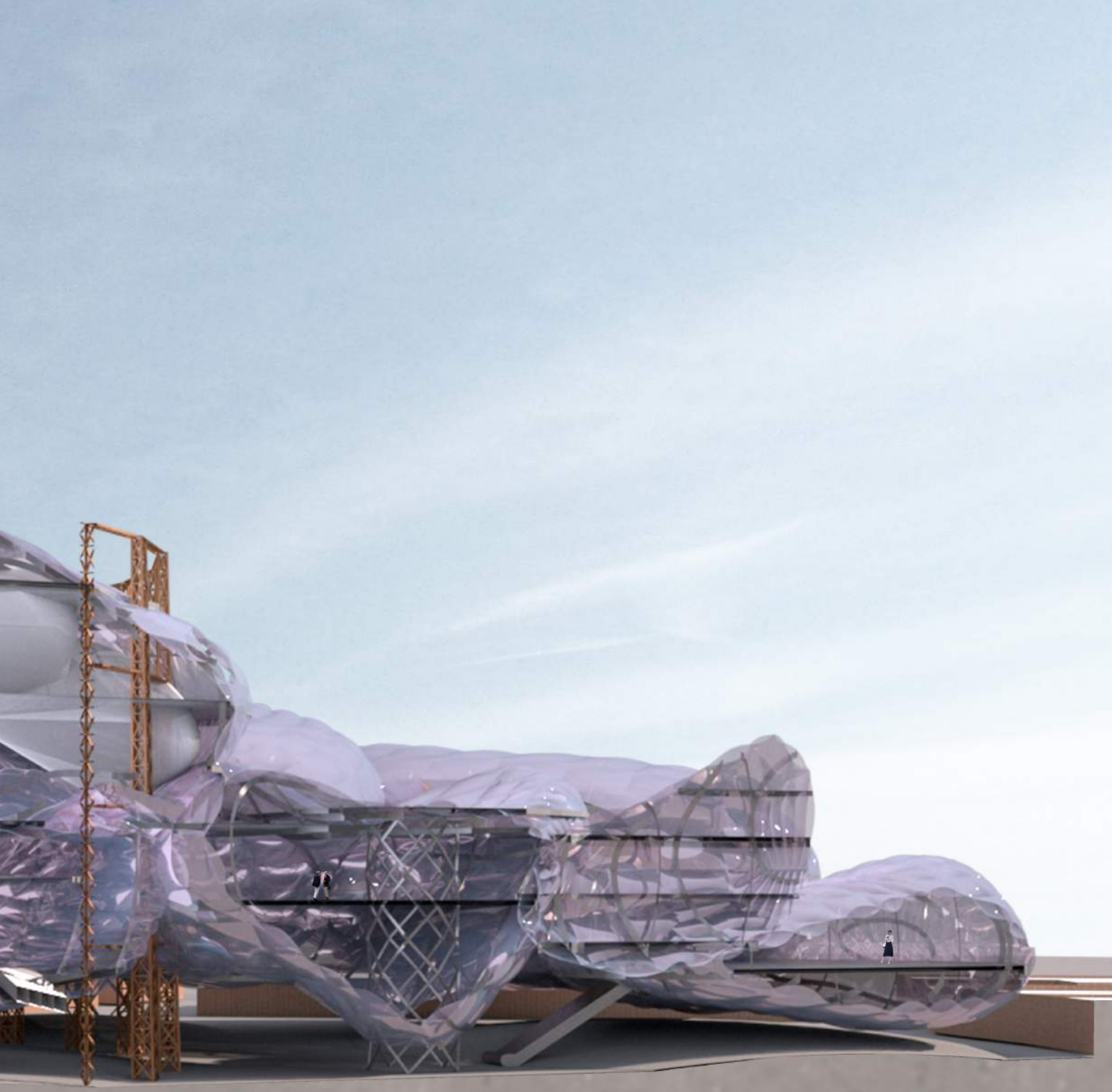
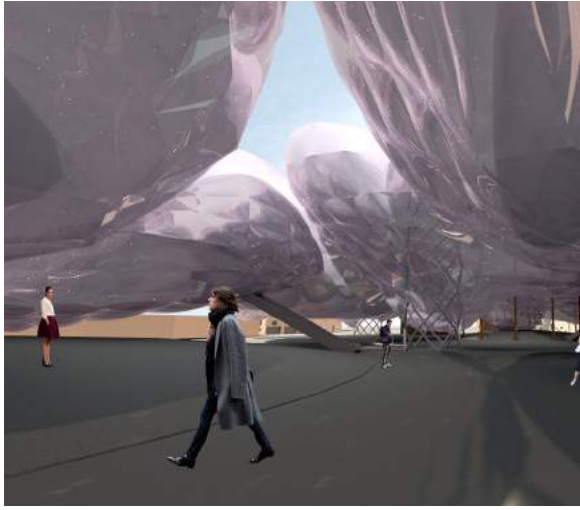
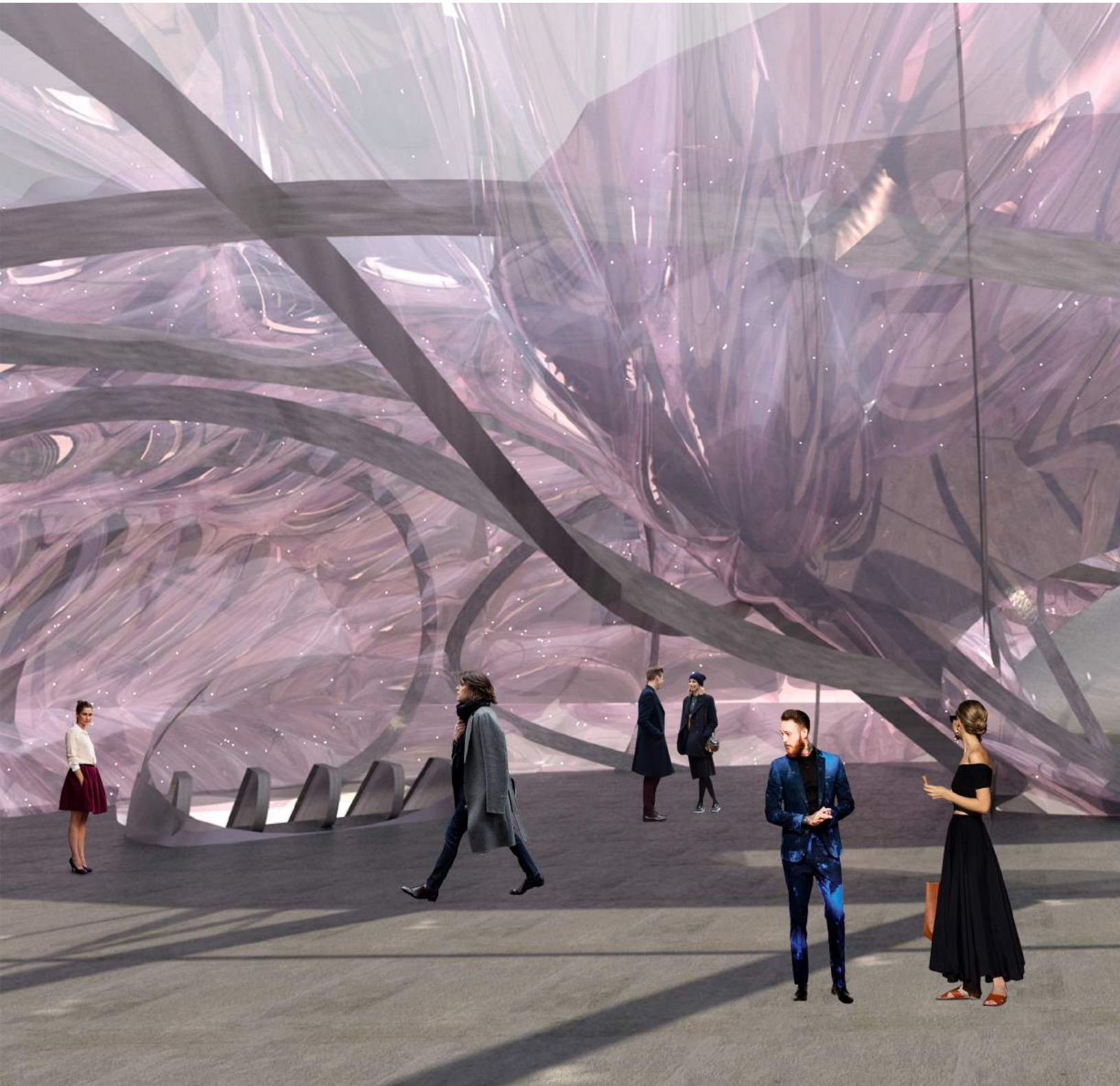
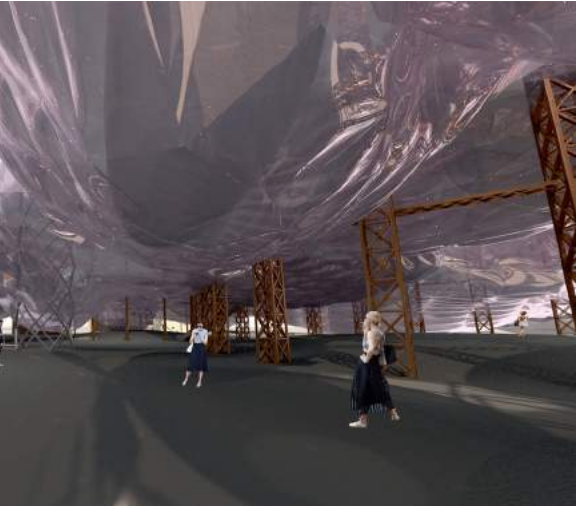
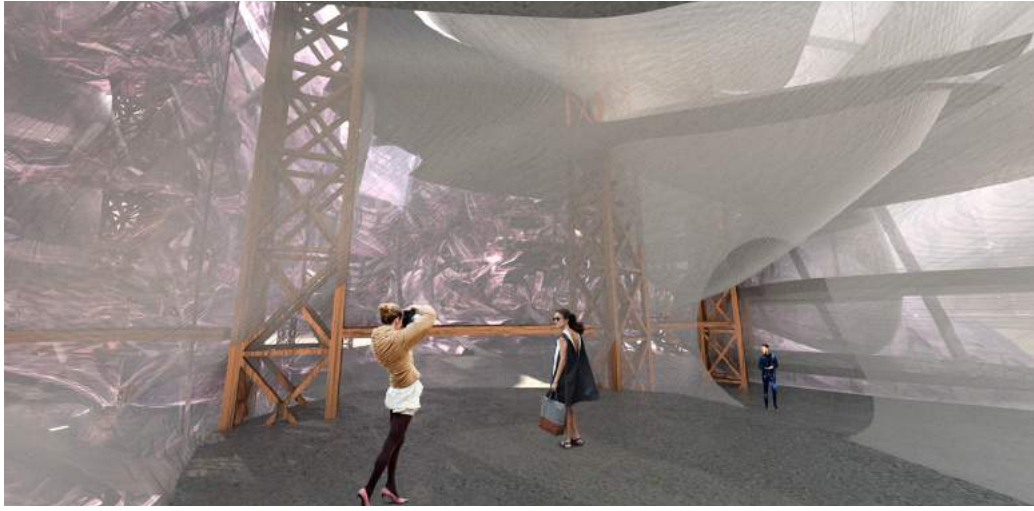


Image 10.28









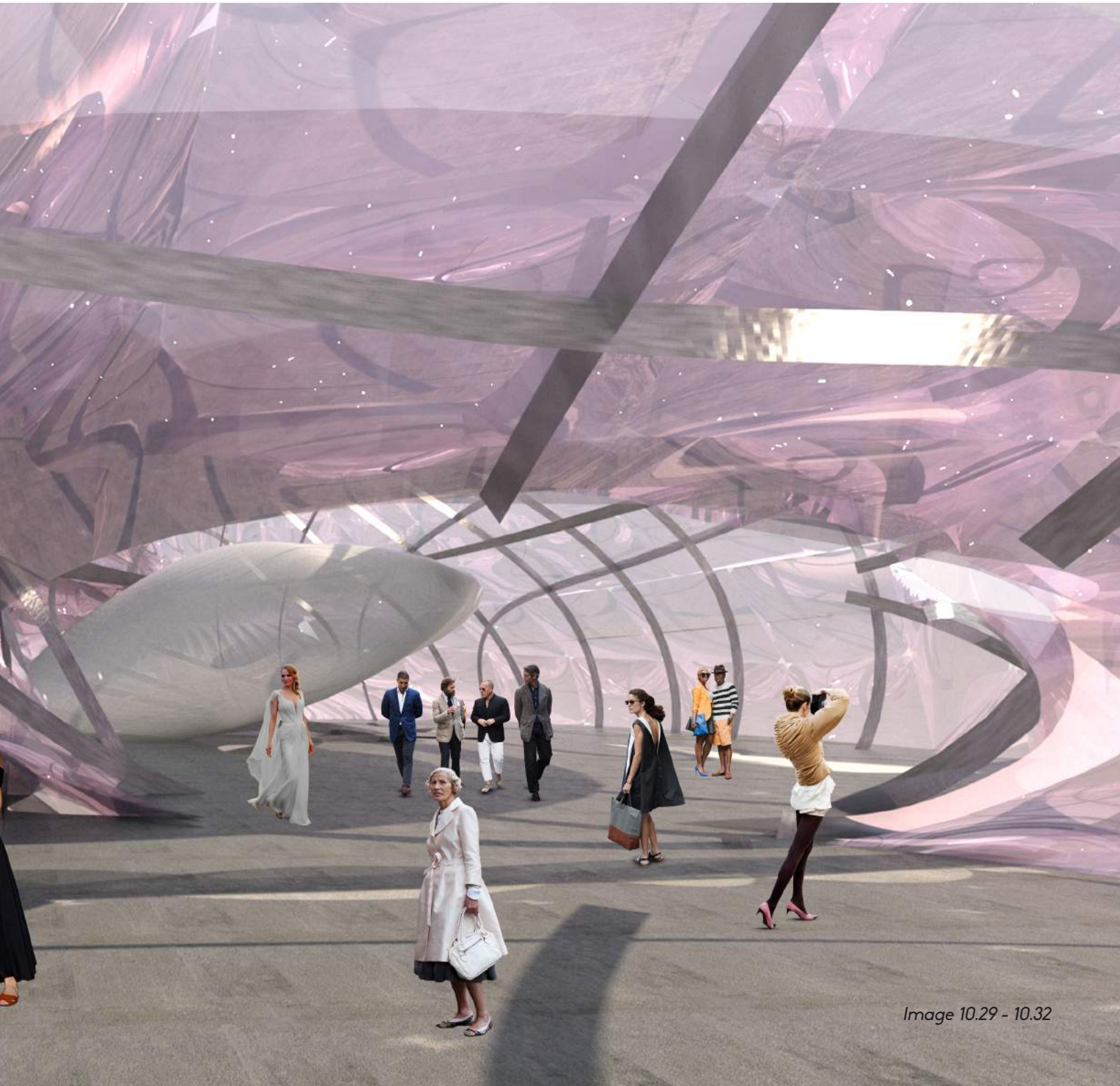
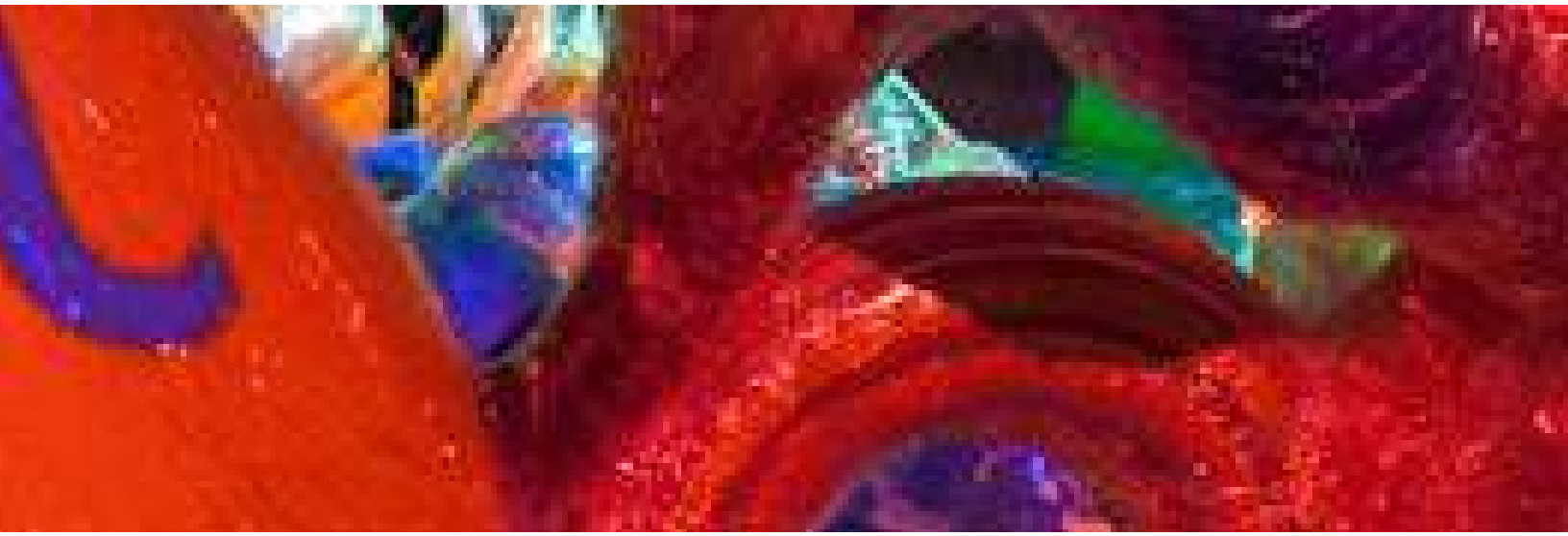


Image 10.29 - 10.32



WET DREAMS

Studio 400 | Book Show 2019

Image wd.1

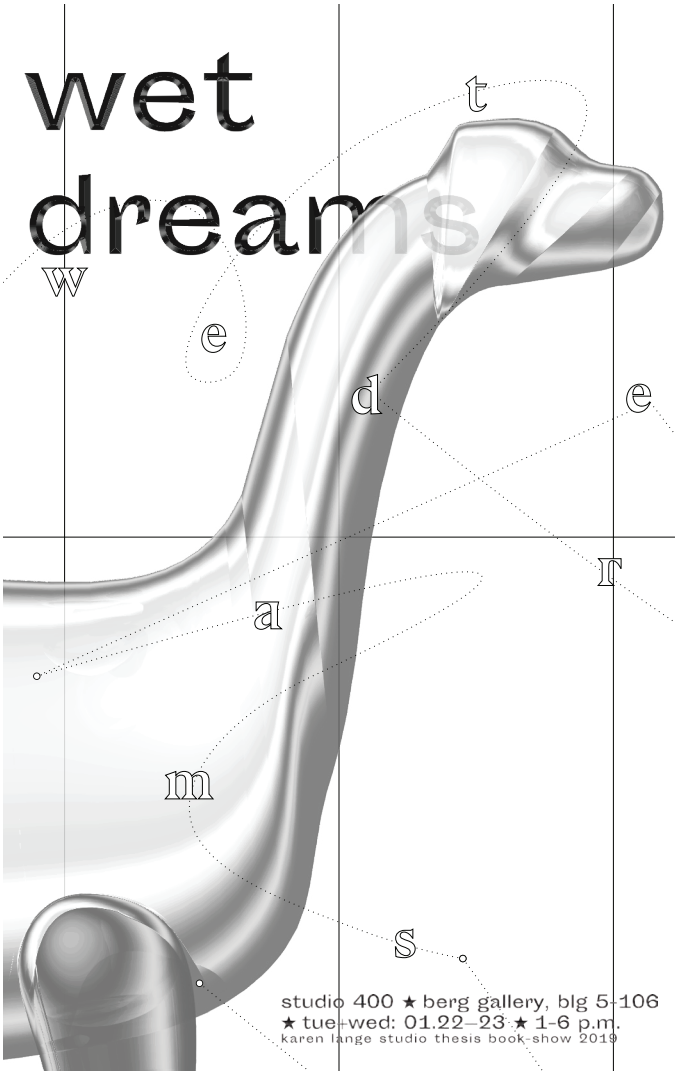


Image wd.2

The Studio 400 Winter Book Show 2019 is a play on words and meanings. The title, Wet Dreams, evokes something rather mature, and perhaps inappropriate for a school setting. However, the show itself is playful. Using pool inflatables and cling film, the Berg Gallery is transformed into an underwater (albeit slightly toxic) wonderland. The occupant feels as though they are underwater as the projections play across the plastic. This feeling is fueled by the ASMR inspired audio of gentle whispers and the other recordings. Occupants are invited to sit and explore the installation, taking time to read the research books so carefully written by Studio 400.


CRAYON

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