# Timeline
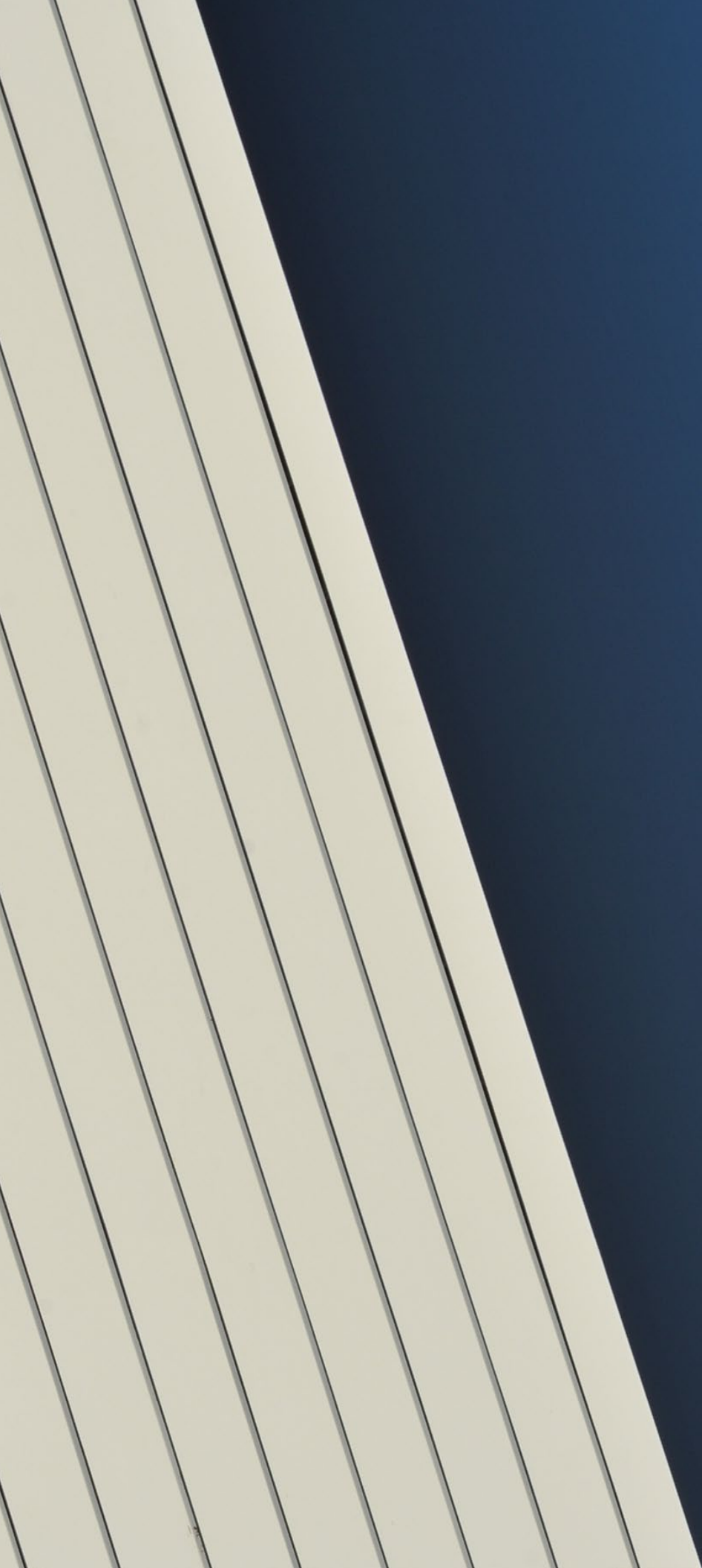## Arvin Mirzakhanian

## COLUMBIA UNIVERSITY
### IN THE CITY OF NEW YORK

Timeline - Architecture Portfolio

**Arvin Mirzakhanian**

Master of Science in Advanced Architectural Design

Graduate School of Architecture, Planning and Preservation

COLUMBIA
**GSAPP**

Columbia University
New York City, NY

Class of 2020

An unforgettable experience with exceptional minds. I am so grateful to be a part of GSAPP family and have met amazing people here. I would like to thank all my family members and friends who made my experience in GSAPP so special. The journey has just started!

## Table of Contents

# Advanced Architectural Design
Summer 2019

Critic: Nerea Calvillo
TA: Marcos García Mouronte

Group Members: Arvin Mirzakhanian
Christopher Spyrakos

**Borderline Extreme Makeovers** | Or how nature can be built otherwise

We are living in an environmental crisis, with climate change, systemic pollution and environmental injustice all across the globe. In this context, scientists, anthropologists, philosophers or economists are suggesting that taking the environment seriously requires a reformulation of our forms of life and production. We need to imagine alternative futures. Isn't architecture well equipped to do so?

However, the way in which architecture has dealt so far with the environmental crisis is through 'sustainable solutions': solar panels, efficiency standards, or smart buildings, amongst others, to reduce the negative impact of buildings in the environment. These 'solutions' might be useful but, are they all we can do as architects?
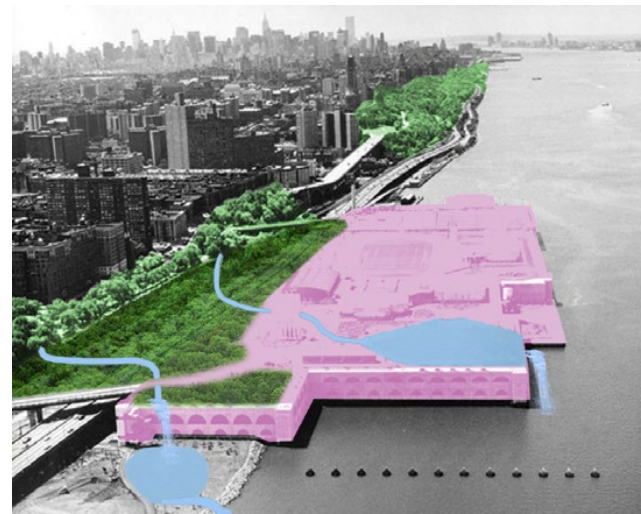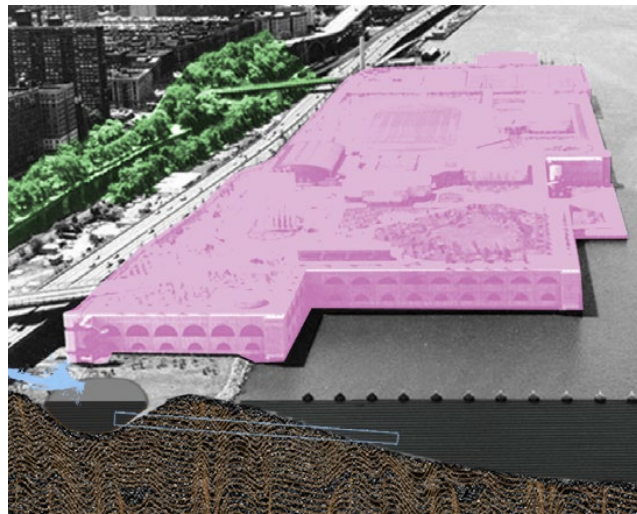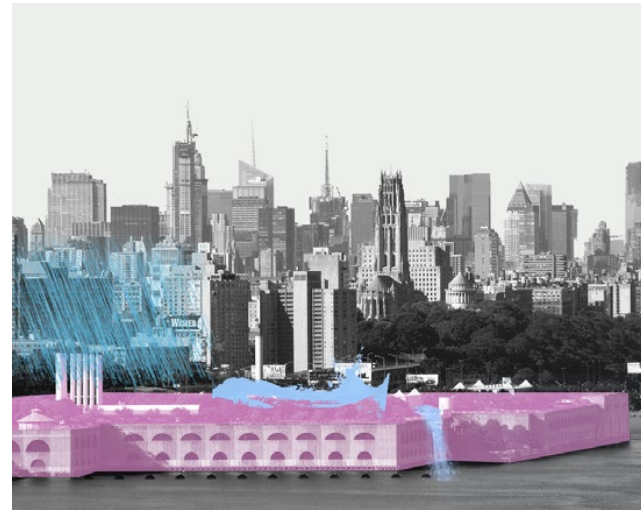
Nerea Callvilo

# Dead Zone Treatment Plant

Riverbank State Park, New York City

Dead Zone Treatment Plant is an equalizer that operates within a gradient of life and death through algal cultivation. Aquatic Ecosystems are very sensitive among other species to algal concentration. When oxygen levels are low, life struggles. Nutrients like phosphorus and nitrogen increase the probability of life and by abundance of nutrients (and also sunlight & temperature), algae starts to form and attracts fish and marine life for feeding from the algae.

Algae produces oxygen and life starts to thrive but when algae overgrows takes over, its decomposition consumes the oxygen in the water and areas called "dead zones" start to form. Dead zones are low-oxygen areas in the waters. Since most organisms need oxygen to live, few can survive in such conditions. Dead zones occur when a body of water gets too many nutrients, such as phosphorus and nitrogen.
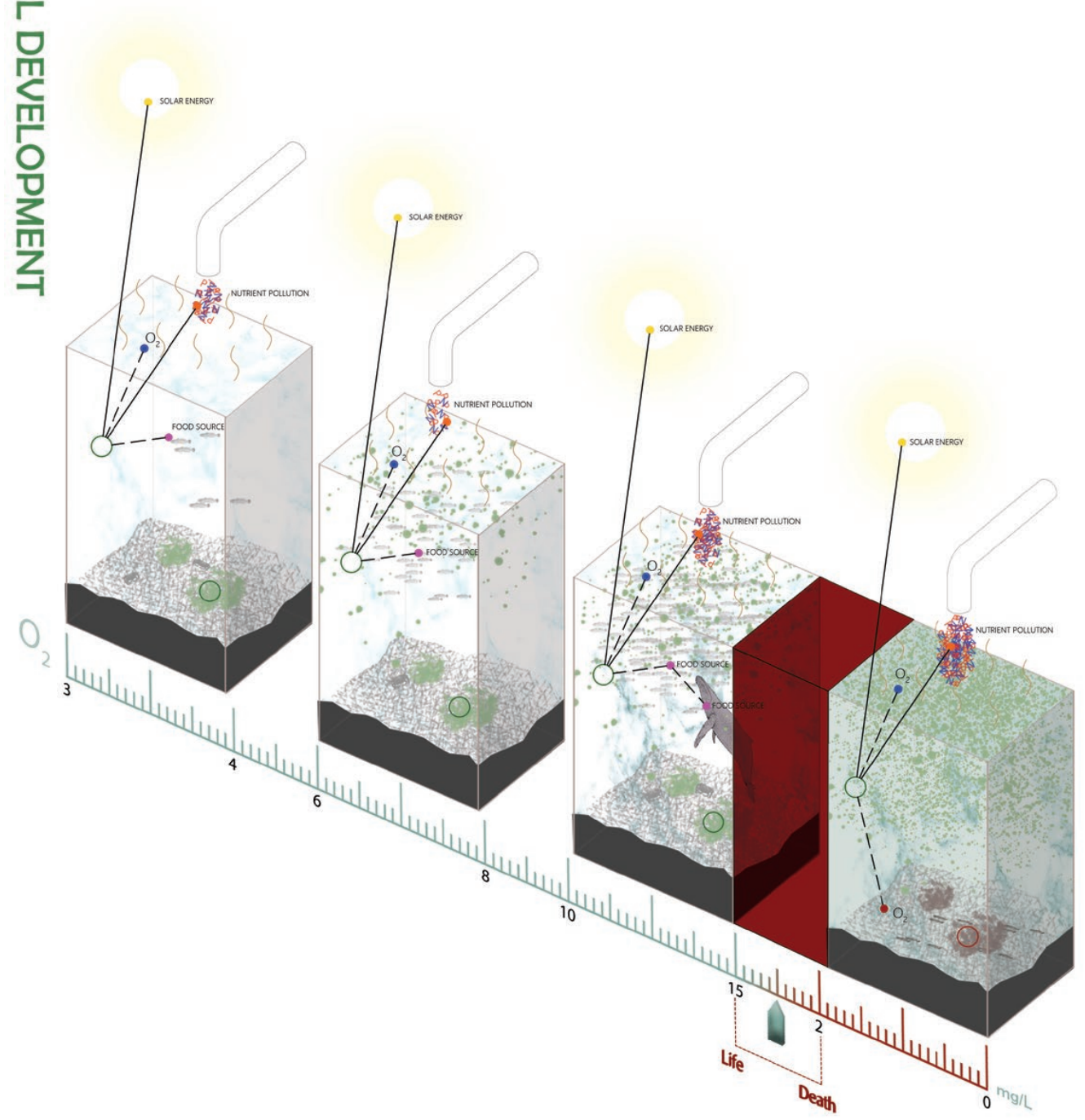
The project is an algae equalizer that operates within a specific gradient between life and death, to maximize life.



ALGAE CIRCULATION

WATER CIRCULATION

WATERSLIDE TOWER

RUNNING TRACK

ALAGE CULTIVATION POND

Preliminary Iterations

# ALGAL DEVELOPMENT



Algal Development

SCALES OF INTENSIFICATION

Proposed Project Area

Riverside Park

North River Sewage Treatment Plant
Sewershed Area

Major Sewer Line

Minor Sewer Lines

Combined Sewer Overflow

Gas Stations (For Bio-Fuel Distribution)

**Manhattan Sewage Data:** NYC Open Data
https://openseweratlas.tumblr.com/map
**Manhattan Rain Flow Potential:** Based on Topography
https://en-gb.topographic-map.com maps: n8r3 Manhattan
**New York and New Jersey Gas Station Locations:**
Based on Google Maps Data



Algae Equalizer

Area Utilization



Rainwater Collection



Algae Cultivation



Algae Distribution

Aquatic Life Attraction

Recreational Layer

Synthetic System Diagram

HUMAN/ALGAE INTERACTIONS
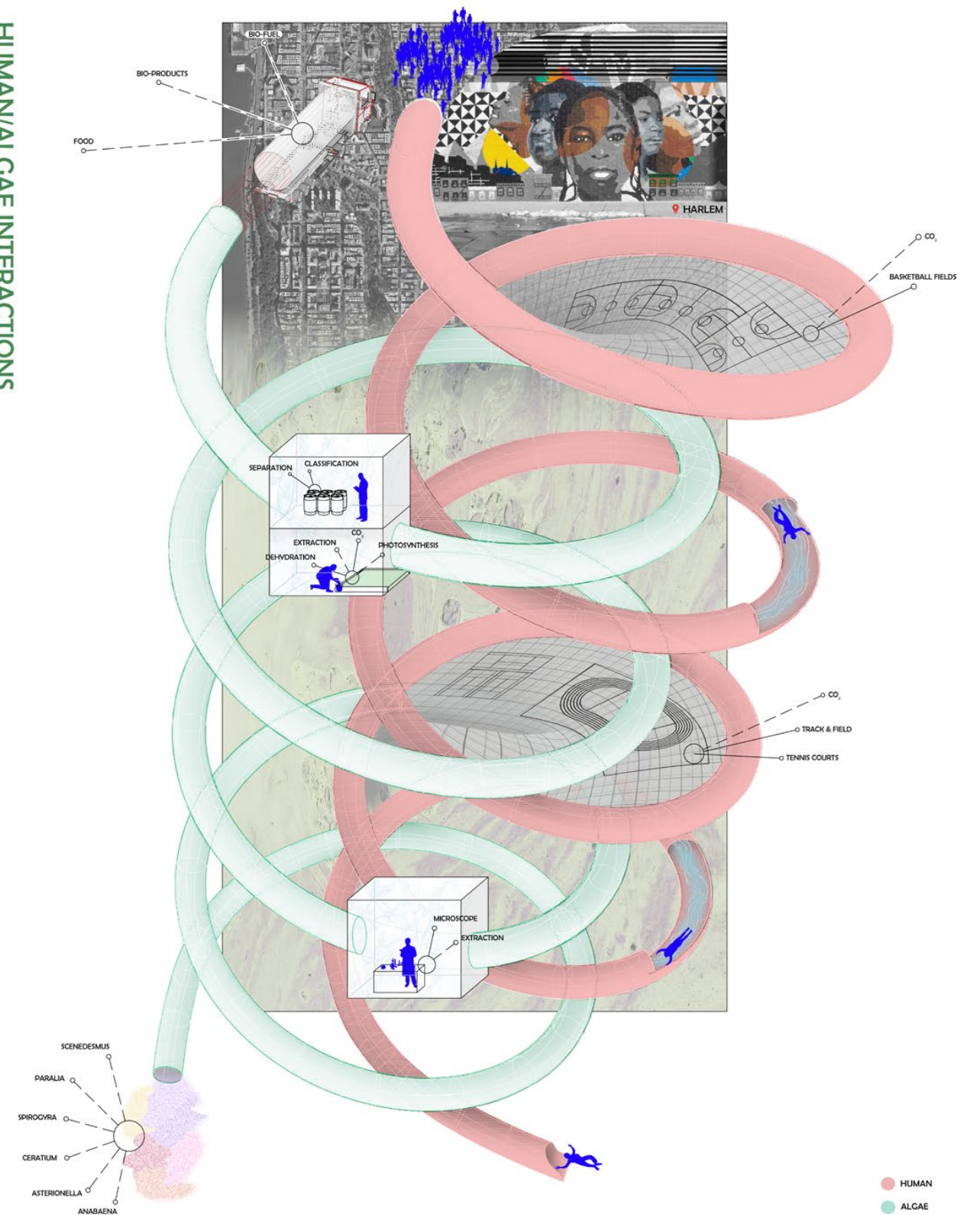


Human / Algae Interactions
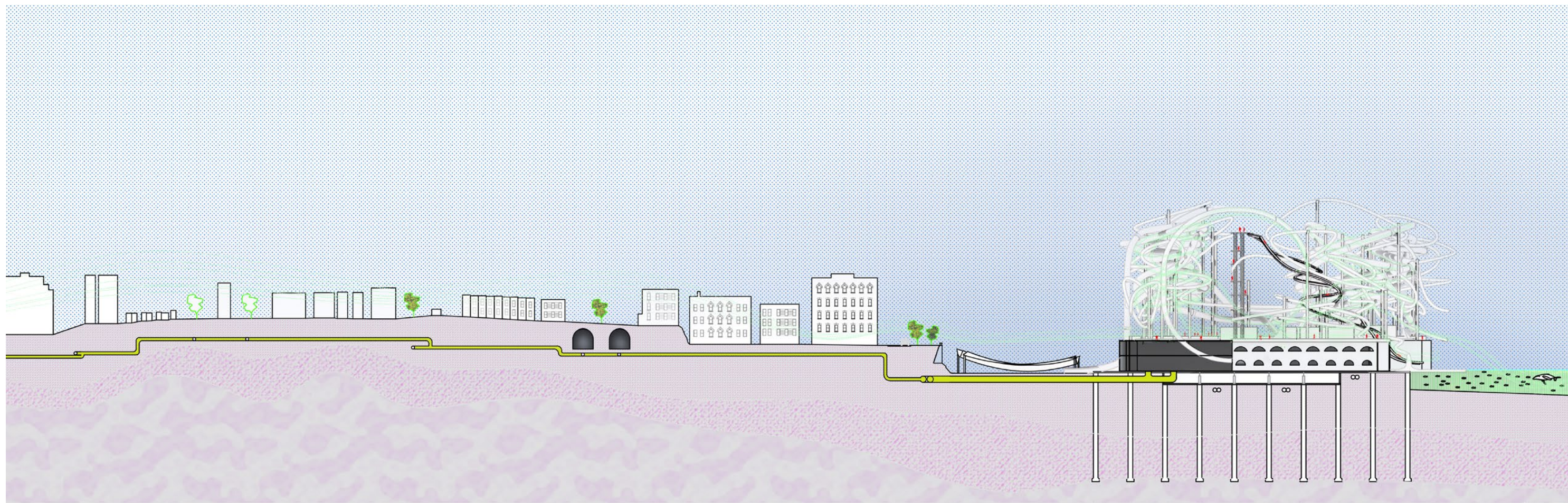
Section

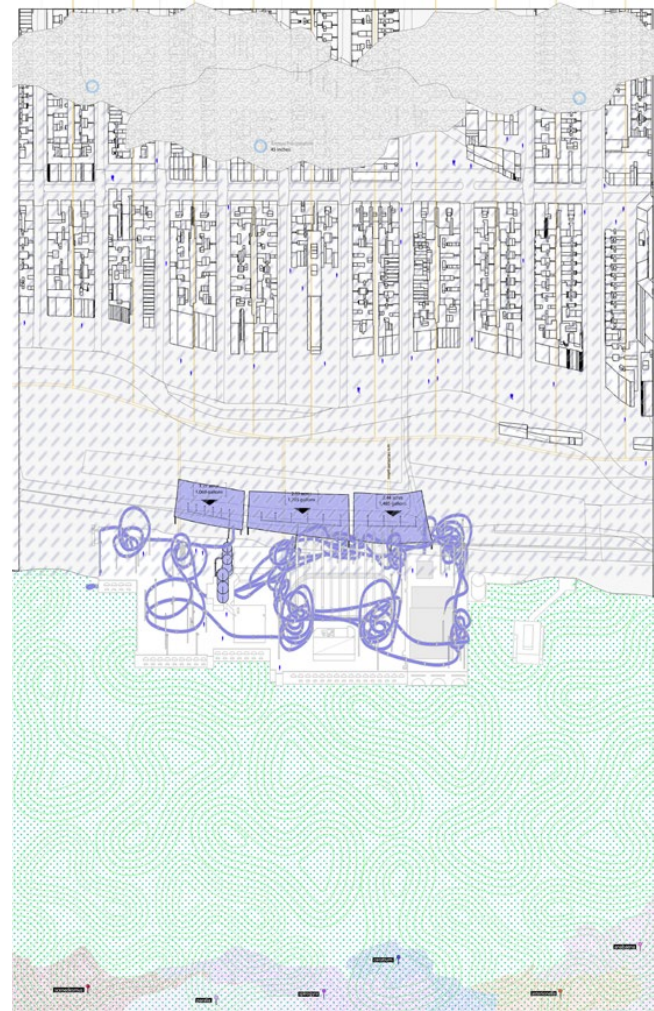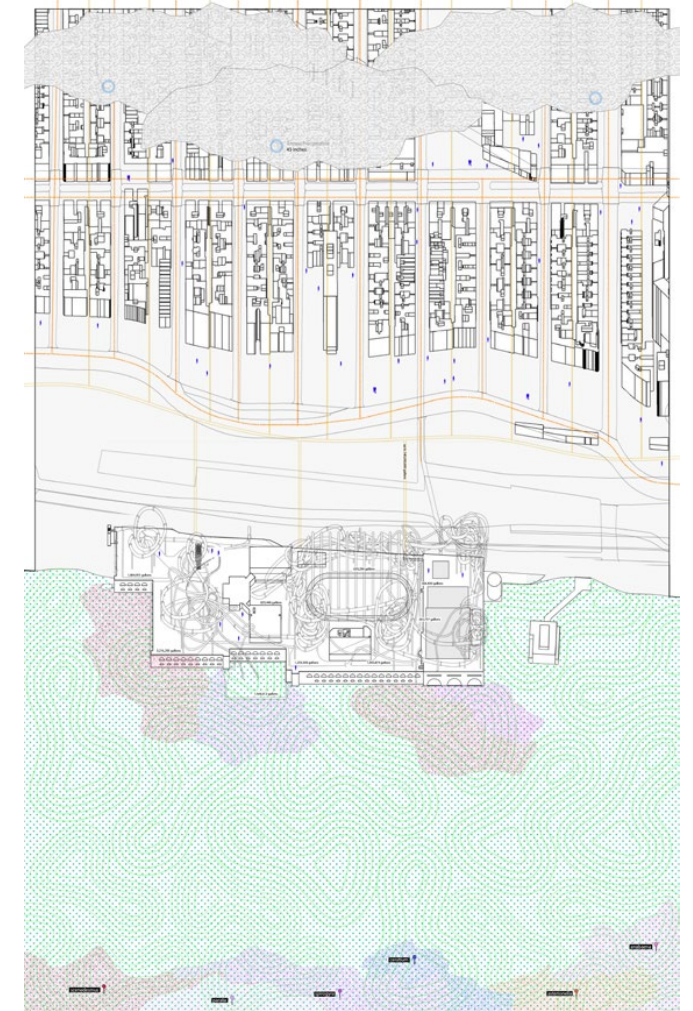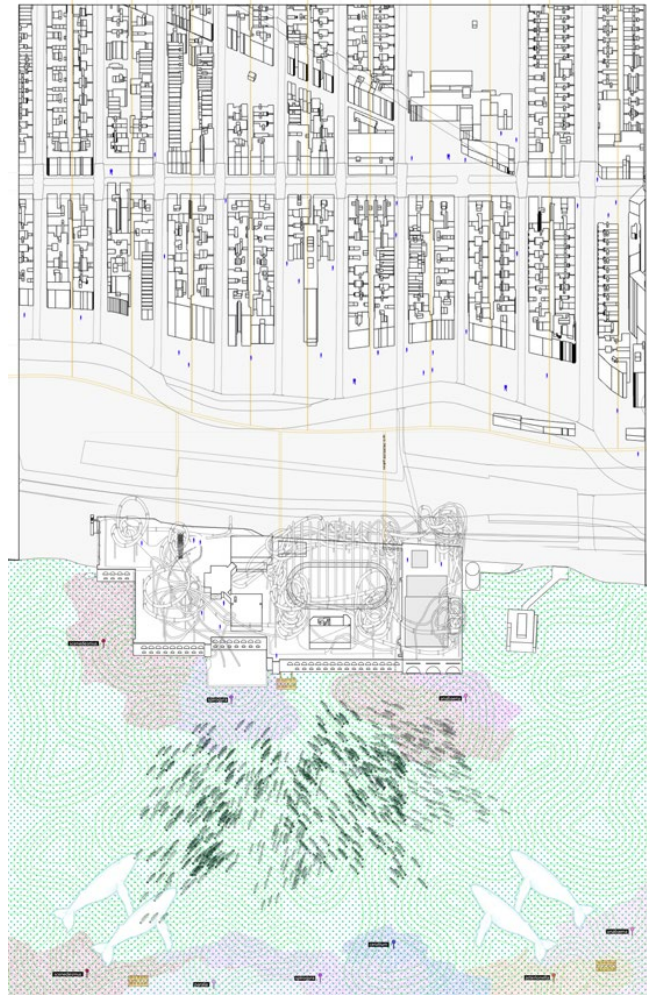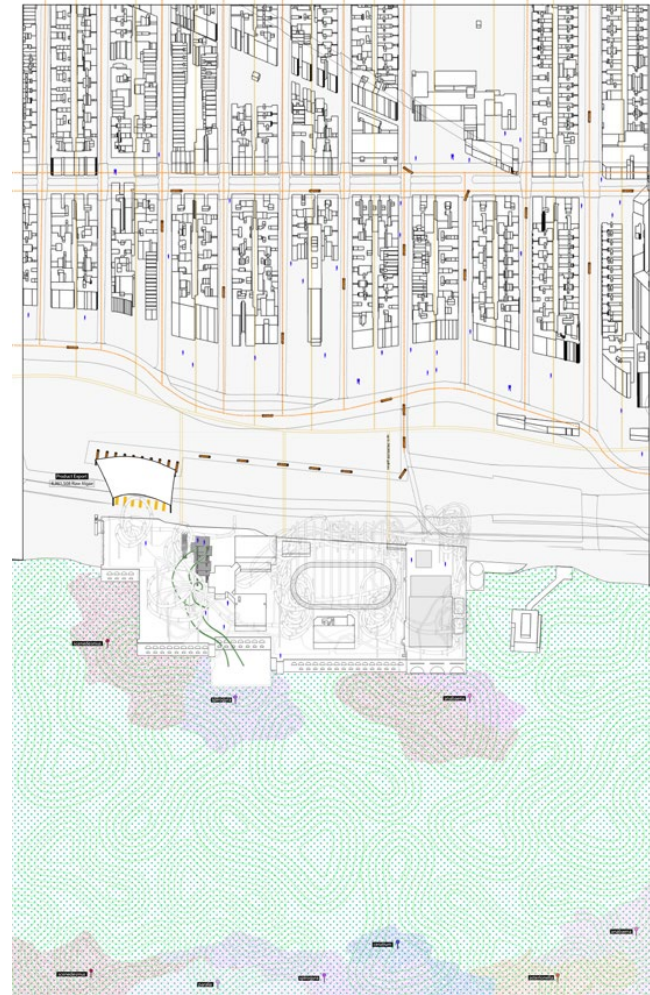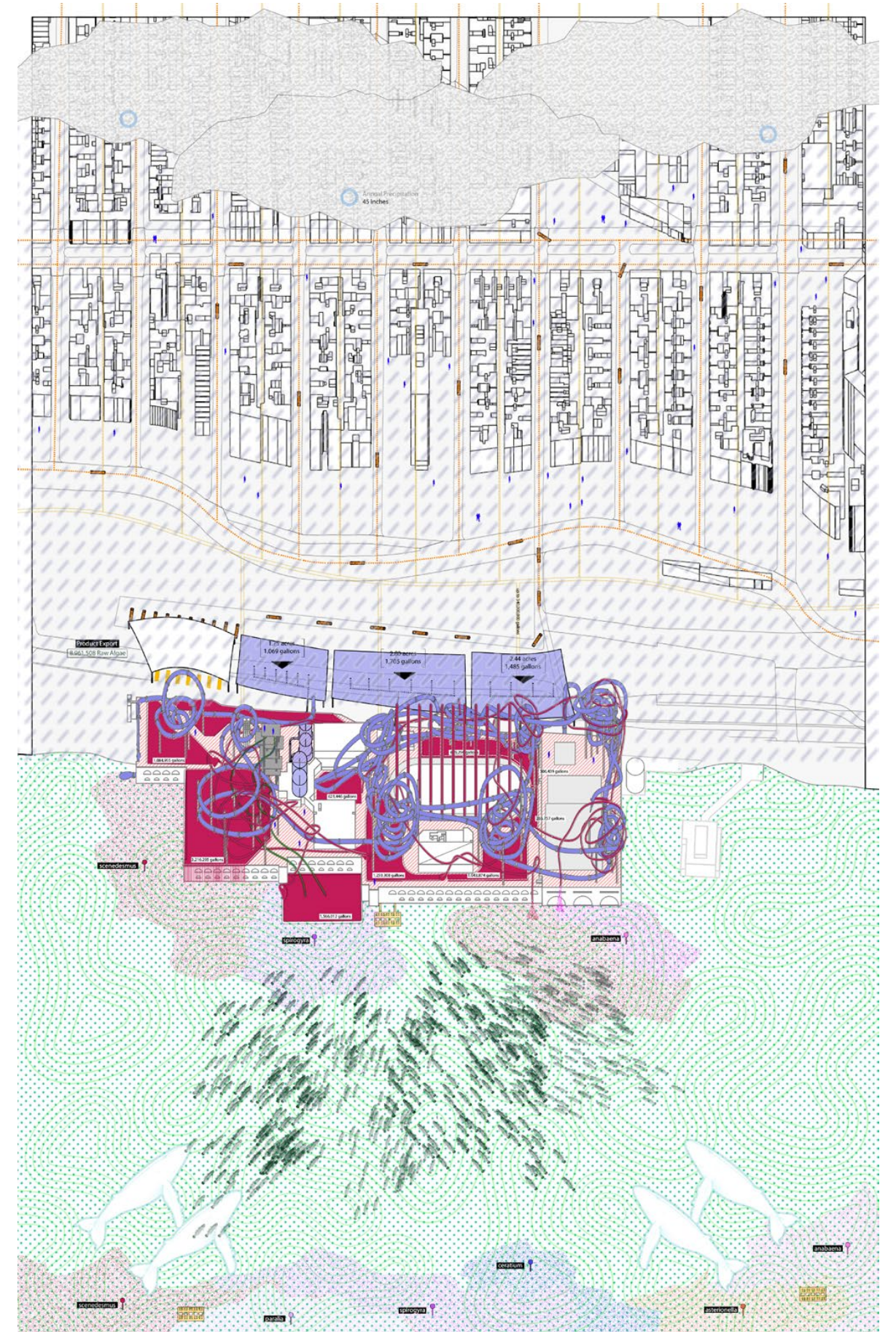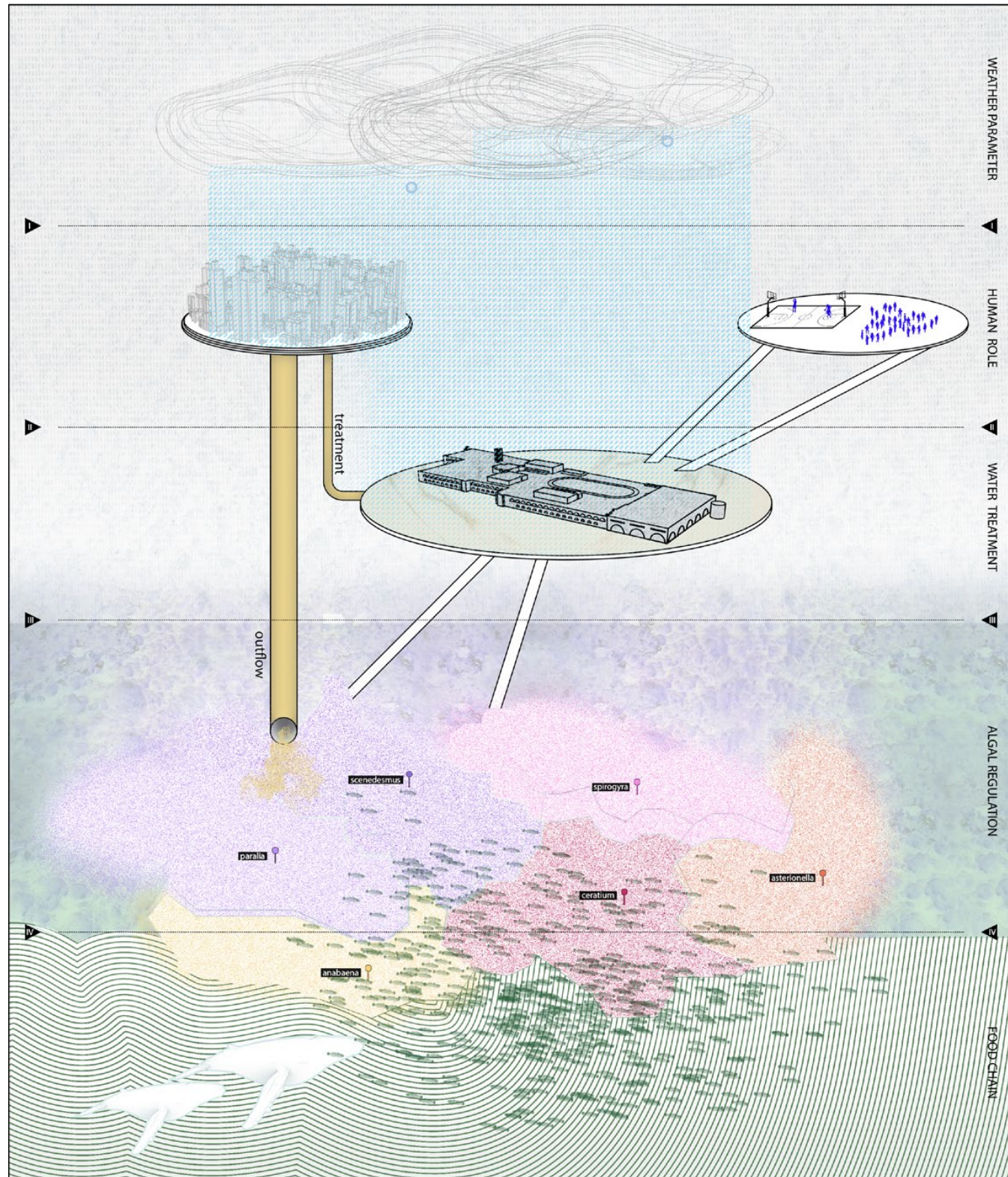## Operation Timeline

When it rains, the runoff water mixes with sewage and outflows to the river, polluting it. By using algae, equalization of the ecosystem becomes possible. Algae cultivation is accomplished by pool systems and it is designed to occupy the voids between the fields. The rain water is collected and mixed with processed sewage to prevent polluting the river. The Collected water is directed to the designated containers and circulates over the facility through pipes to the algae cultivation ponds. Cultivated algae then circulates over the facility through pipes and poured into the river by cascades and pipes and attracts marine life. Oxygen sensors around the facility measure the dissolved oxygen levels so controlled amount of algae is being released.

The project serves the neighborhood by providing waterpark-like facilities shading the existing facility alongside producing bio-products which can be used as bio-fuel and in cosmetics. Moreover, involving people in the recreational-educational activities would enhance the experience besides providing benefits to the community. However there are possibilities that the cursor might slip away of the gradient causing unexpected consequences. Over time, the dried algae might start covering the infrastructure creating a singular nature and a new aquatic landscape to Harlem.
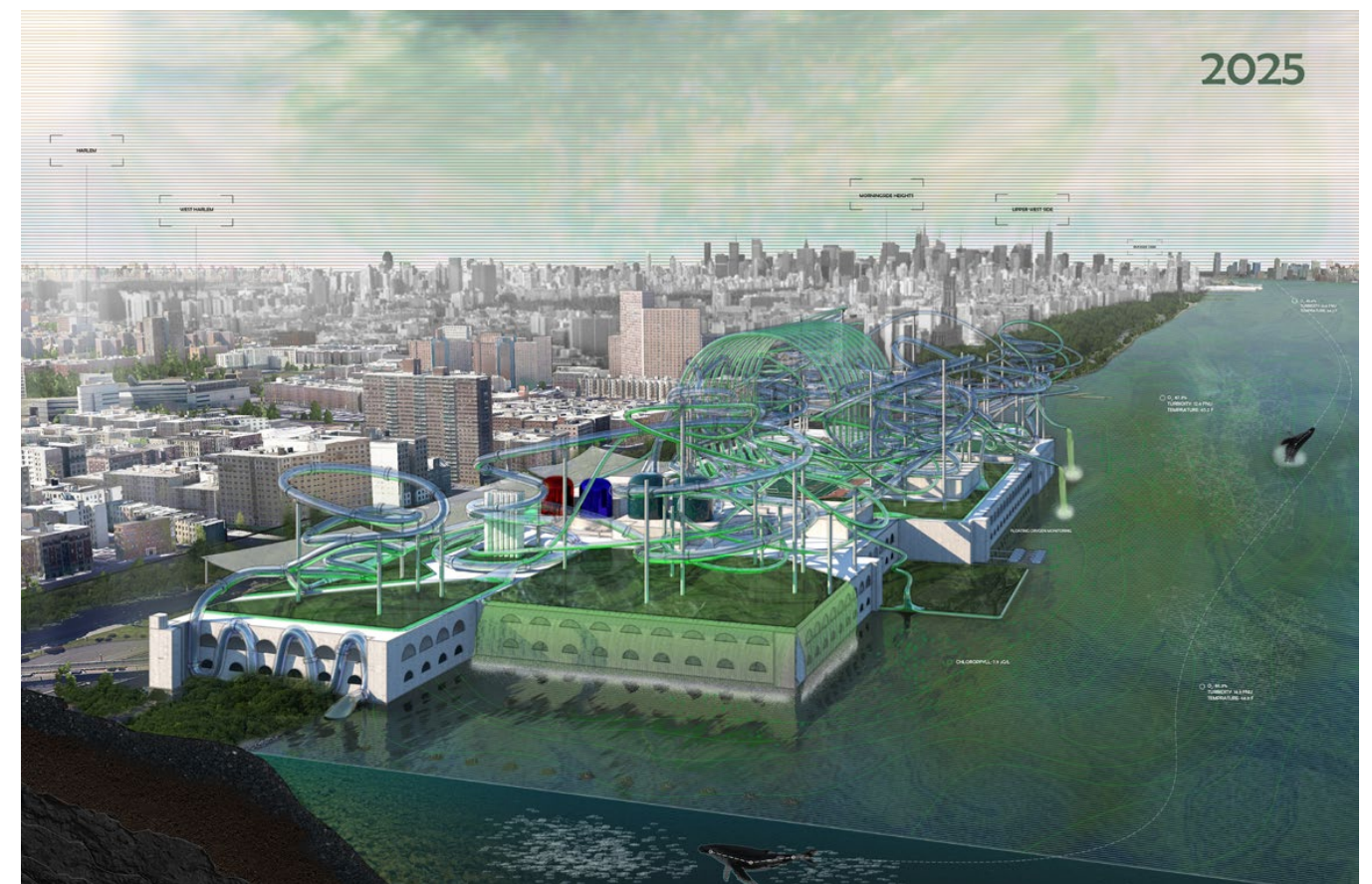
# 2030
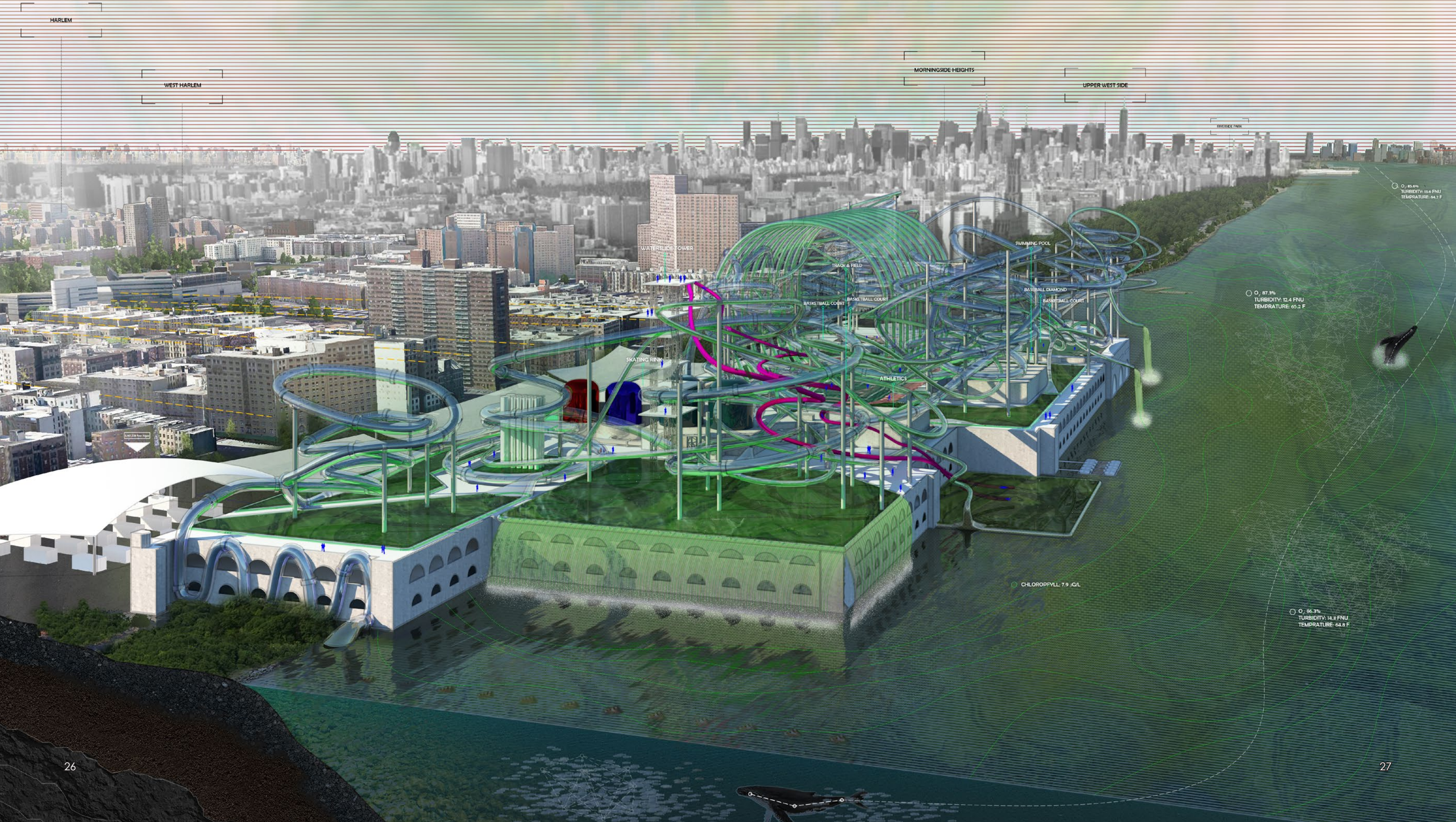
# 2060



HARLEM

WEST HARLEM

MORNINGSIDE HEIGHTS

UPPER WEST SIDE

RIVERSIDE PARK

O₂ 12.6%
TURBIDITY: 13.6 FNU
TEMPRATURE: 64.2 F

O₂ 10.3%
TURBIDITY: 12.4 FNU
TEMPRATURE: 65.2 F

CHLOROPHYLL: 27.9 µG/L

O₂ 11.3%
TURBIDITY: 14.3 FNU
TEMPRATURE: 64.8 F

# Transscalarities
## Summer 2019

Professor: Andrés Jaque
Instructor: Ife Salema Vanable

Group Members: Arvin Mirzakhanian
Maria Macchi
Hanseul Jang

## Bewilderment in Developing a Community

Arvin Mirzakhanian, Maria Macchi & Hanseul Jang
Professor: Andrés Jaque
Instructor: Ife Salema Vanable

NYU Housing, a three tower residential development near Washington Square Park has been a substantial part of the University's ongoing development and expansion. At first, NYU had been present in the site with various schools such as law and medicine. But around 1850, the neighborhood experienced some social and demographic changes. Tenement construction expanded and existing row houses were subdivided into multifamily dwellings.[1] Enrollment decreased and NYU found itself at risk of closing. In 1891, responding to undergraduate needs, the institution decided to build a campus in the Bronx. This one functioned until 1920, when NYU began to reclaim buildings already owned downtown, as undergraduate enrollment increased and neighborhood dynamics began to shift.

By 1949, NYU with the help of the Slum Clearance project and its director Robert Moses, was able to purchase land in the Washington Square area. Hiding behind the excuse of the Clearance project, which stated that educational institutions serve a greater good for the neighborhood, the institution purchased desired lands at a huge discount. The immediate context of the place was full of warehouses, lofts and light industry distributed in 173 buildings of 5 to 8 stories tall. These structures lacked fireproof construction and were deemed obsolete with deep and narrow lots and almost 100% lot coverage, which restricted or eliminated ventilation and natural light. Consequently, the site was declared a slum and the project was able to be developed.

The institution needed to acquire more land in the area in order to expand their domain due to the increase of students and was in no financial position of purchase expensive land. So with the passage of the National Housing Act in 1949, which provided deep federal subsidies for clearance of slum areas in order to stimulate their reconstruction by private developers, the transaction was made.

The only stipulated condition, was that one-third of the units would be designated for middle-income housing under the Mitchell-Lama program. Through the application process, the program aimed to provide affordable housing for the site's relocated tenants. When this project was inaugurated in the area that was already integrated, the result of the development was the re-segregation and the expulsion of the minorities.

The project itself consisted of three towers that would harbor faculty members, students and middle-class workers. Towers 1 and 2, as named, were designed to have studios for graduate students and different sized apartments for faculty and graduate students. Whereas, the 505 La Guardia Place provided the affordable housing for middle class which were intended to come back to the city.

The architect, I.M.Pei, had the intention of making the three towers identical, 30 stories high centered on a 100-by 100- foot lot. The combination of them formed what was called a superblock, a visually unified block that constitutes a single urban space. The towers have a matching gridded facade with four or eight deep-set window bays on each floor to maximize the interior views, positioned away from the surrounding streets. These constructive operations impacted the way people perceived the towers from the outside and the inside. An exclusive place within an already developed neighborhood, the design approach segregated the development from the whole site.

The ground level scale, aims to have a much more distant connection with the pedestrians, while the one within the apartments is more thoughtful to be cozy and comfortable. The different scales and controversy can still be felt and sensed in the present. Current tenants like Jean-Louis Cohen who has been living there for 22 years, not only acknowledge the beauty of living in a unit which you can have a unique view of New York without interruptions, but also the non relation of the building with the city grid in the adjacent context.[2]

Moreover, the site was slightly elevated, creating a platform that reinforced the idea of separation of the new development from the neighborhood; enclosing the site for the privileged ones such as NYU and

1 Bühler, Peter, Patrick Schlaich, and Dominik Sinner. "PDF-Erstellung." PDF Bibliothek Der Mediengestaltung, 2018, 12-37. doi:10.1007/978-3-662-54615-4_2.

2 Bengal, Rebecca. "Living on an NYU Superblock." Curbed NY. August 15, 2018. Accessed July 11, 2019. https://ny.curbed.com/2018/8/15/17689054/silver-towers-washington-square-village-nyu-expansion.

the middle class tenants living in the towers. Through it's thick facade, the people walking by the square plaza were not able to see the interior. This condition emphasized the idea that the ones who were not part of the enclosed community were not even able to look into it from far away. Although this could seem as a mere strategy to give the tenants more privacy, there seems to be a much more complex within the matter. The thickness of the facade also responds to the necessity to separate the people living in the apartments from the ones walking by, as if the height was not differentiation enough.

Examining the floor plan of each tower, there is evidence that it was intended to maximize the space in height rather than the floor. Also, it can be pointed out that the exclusiveness in the floor plans and units was to fulfill the needs of Manhattan's business men that were the target for this housing project.

The intended material for the development was the use of smooth exposed concrete which represented modernism in the flesh. Showing the process of construction and materiality in each tower, made an impact in the distinction of what was beneath them. Housing was the first project in the area to use this type of material. The choice of materiality within a homogeneous brick neighborhood also seemed to point out this separation of the ones living up from the ones living down. The process of creating this smooth material was also an innovative move. Instead of using plywood boards to form the exposed concrete structure, fiberglass molds were employed. This meant a rapid assemble, strip and re-use in construction process.

The NYU Housing project showed how architecture can develop the goals and aims of a private organization with the help of political power without minding the impact on communities and neighborhoods in which they are settled, and create a whole new site within an already existing one.

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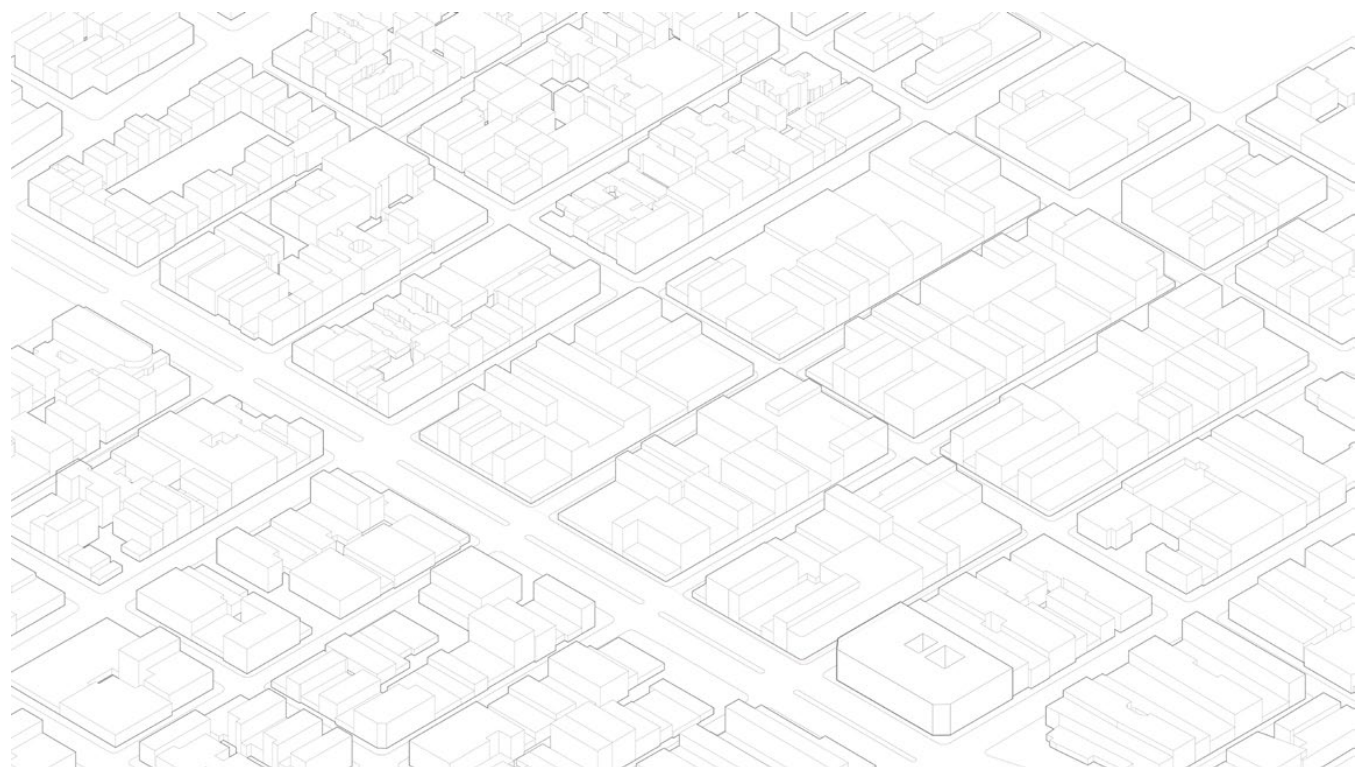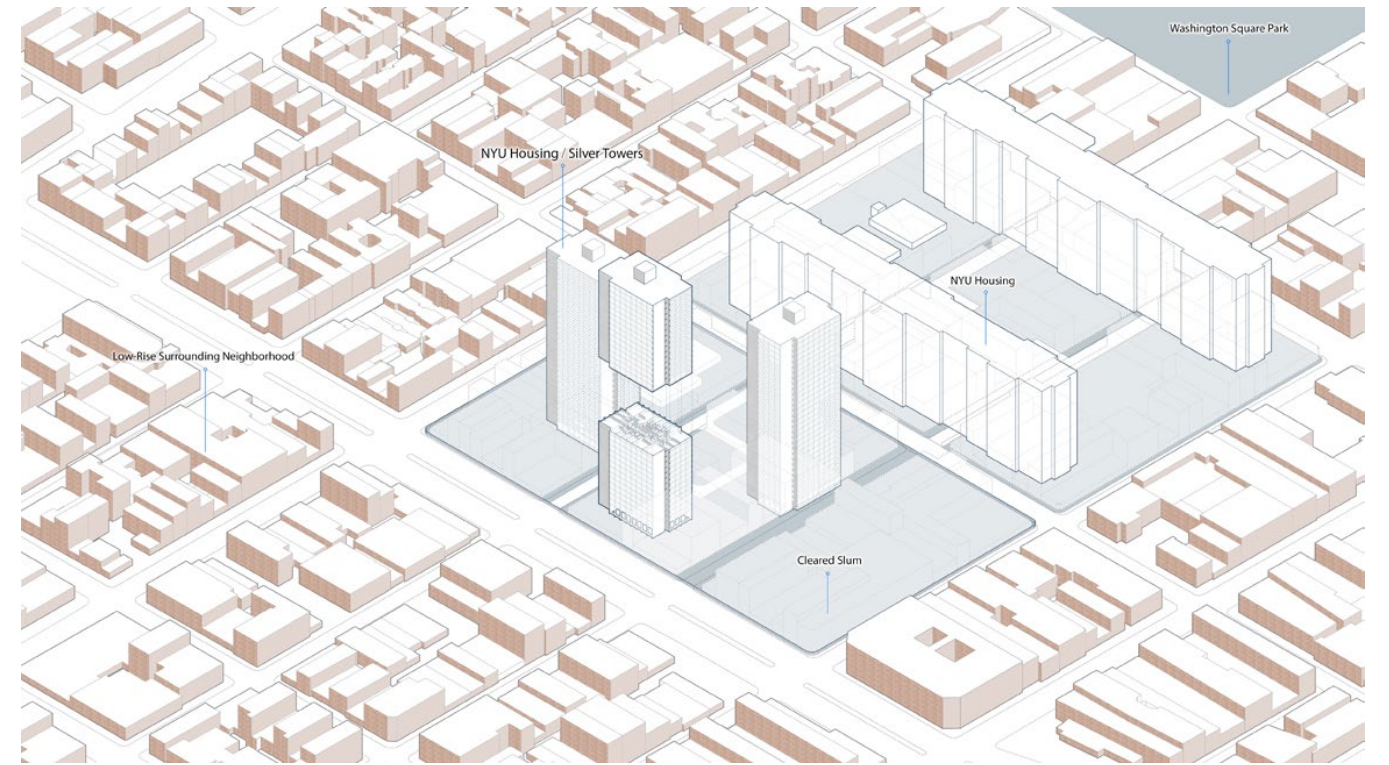
Washington Square Park
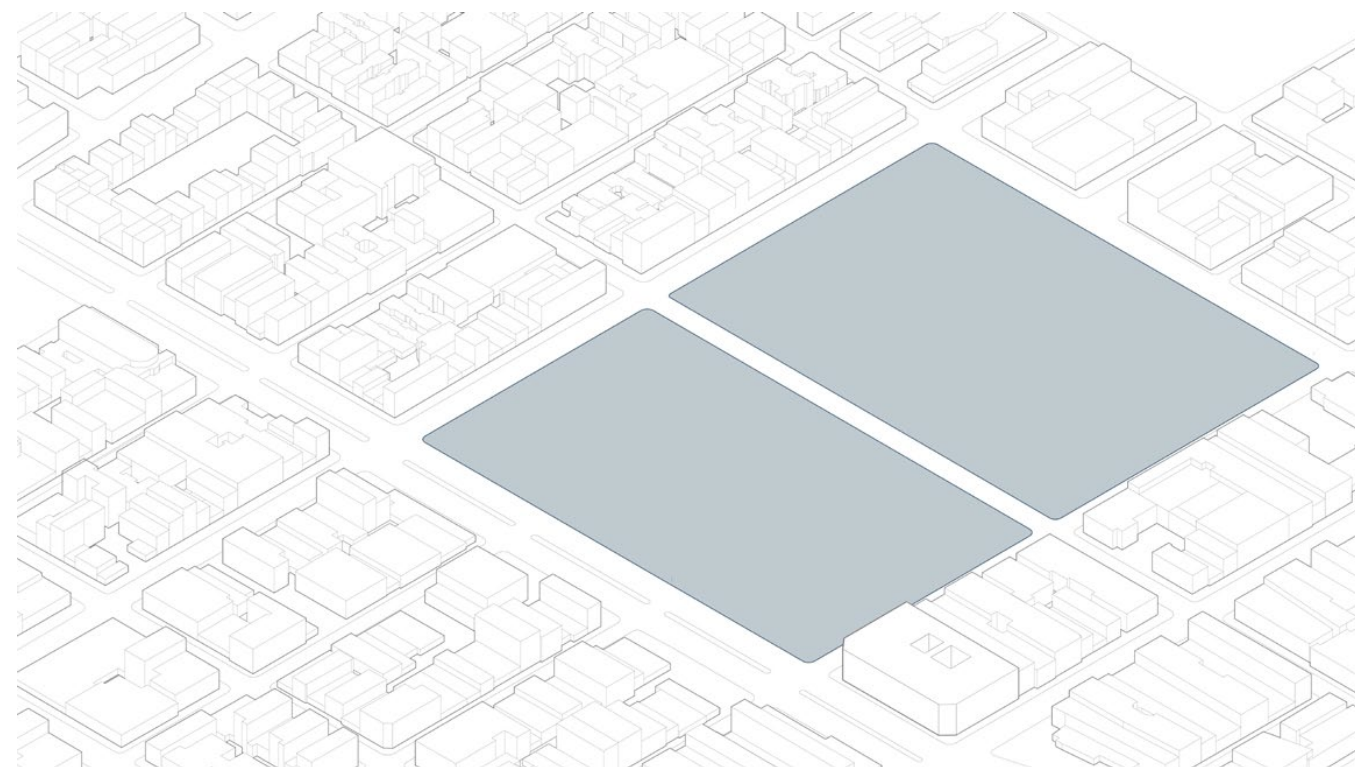


Slum Clearance
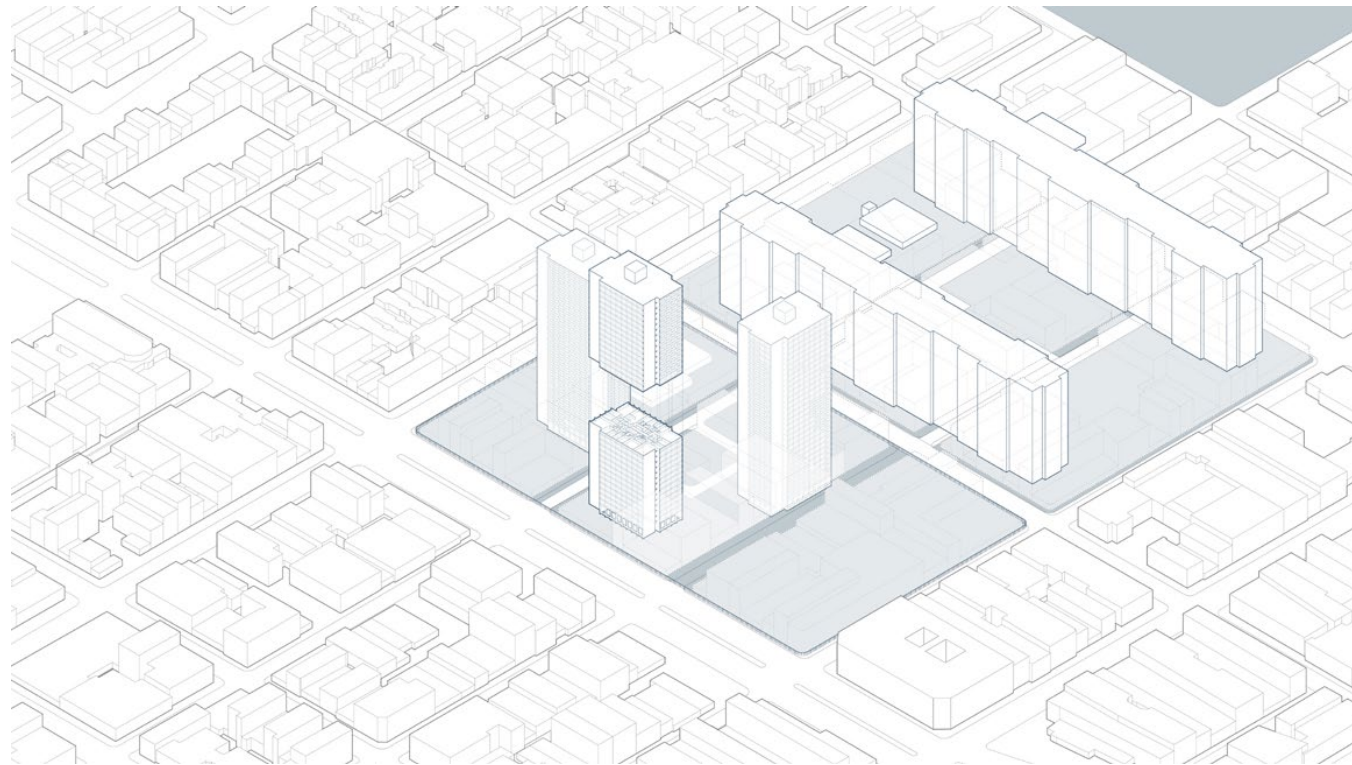
New Development



Contrast with The Neighborhood

# Arguments
Summer 2019

## Bewilderment in Shaping Athens

Arvin Mirzakhanian
Professor: Andrés Jaque
Instructor: Jana Berankova

Who is a better architect? Politics or culture? Architecture as a social communication medium is a tool to resemble endowment and success along with advancement in society. "Architecture is perhaps the one art most subject to the overpowering influence of economics, legislation and the random personal preferences of the commissioning party".[1] External sources such as geopolitics, profiting and government corruption can have a huge impact on a city and its architecture. This was the case that happened to Athens in the 20th century. Architecture can lose its power to political fluctuations and mutations. To what extent, architecture is submissive to these variations? Are the political events the only major game-changers in the field? Angelidakis believes that political conditions are the main factors that shaped Athens, but how is this related to the residents themselves? Were these developments towards an adaptation or a response to the needs of the society? Did politics change people that they behaved in a certain way to develop the city and their apartments or they were more fundamental factors that rooted deep into the culture and their beliefs? Did political circumstances cause concrete slab buildings that resulted a family-centric society in Athens or since the people were family-centric, they developed and completed the building through time and lived together?

Waves of immigrants that entered Athens in 1920s after the Greece-Turkey war, transformed the city forever. Those people were in harsh conditions and residing in the camps around the city in the suburbs. Housing demand was extremely immense and construction of new building begun. The government announced that the buildings which were constructed outside the designated areas of Athens, were not part of the city and labeled them as "unauthorized"; in other words "afthereto". This was the government's strategy to confront the situation. After the government realized that they can take advantage of the situation, they passed a law

that unauthorized buildings can be legalized after paying some fees. This was a huge source of income for the government. The law regarding this condition is one of the most revised laws in Greek history. "A city where it was ok to be illegal as long as you bribed the state".[2] Then the second wave of immigrants entered Athens from the countryside since those areas were destroyed after World War II. Yet again the housing demand was high and the Greek government had already expanded Athens boundaries to include all the suburbs; unauthorized buildings. Then the city started to grow by a trend called "antiparochi" which was an exchange program sponsored by the city. "With antiparochi, all you had to do was give your land to a civil engineer who would build a polykatoikia - a small apartment building - within which you would be given two apartments. The rest of the other apartments would be split up between the civil engineer and the financial backer. Thus, as if by some Jesus fish magic trick, single-family homes became polykatoikias, ready to host the new population of Athens".[3] The government was not planning for the development of the city at the time and the residents were left on their own; therefore a lot of engineers were benefiting from antiparochi. It was inexpensive and fast and feasible with small lots. Instead of becoming a proper modernist city like other European cities, Athens was heading towards an unpleasant future. The city was developing in a visually inhomogeneous manner. The city seemed like a patchwork without any harmony. Some of the problems lied in the legislation. People of Athens were not finishing the buildings they lived in order to save some money. Greek government only collected tax and fees only for the completed parts of the building; therefore, people were completing only the segments that were necessary to live and let the rest for later. After a couple of years, their children continued and completed the building after they got married. Consequently, apartments were being completed in different time periods with the style and materials specific to the time; therefore, an unharmonious pattern was becoming the identity. Angelidakis believes that as much as politics formed Athens and its buildings, the buildings formed the society. He believes that these circumstances and conditions built the family-centric Athens and those were the reasons which transformed their behavior.

1 Andreas Angekidakis, 2019, A Submissive Acknowledgment of Powerlessness, Athens, Exhibition at The Breeder Gallery

2 Andreas Angekidakis, 2019, Unauthorized, New York City, e-flux architecture.
3 Ibid

Can actually political conditions result in cultural transformations? Culture by itself is rooted in identity, but how is identity defined when it comes to a physical environment such as a city? "When we talk about place identity we may mean very different things. We may refer to the ways in which people (groups or individuals) identify places, understand and recognize them, as they do other objects, assign to them characteristics and particularities. This is also called place image, when it refers to collective mental representations of a place".[4] Another definition of place identity is the ways in which people are identified based on their relationship to the place. For instance, people are being recognized by specific characteristics based on their origin. Also, another definition of place identity is when people define and introduce themselves based on their place of origin and explain how the place shaped their lives and themselves. Per Angelidakis, the last type of the place identity is the one that shaped the identity of Athenians; buildings shaped people. This definition could be an incumbent factor but not enough to shape a culture. In Greek culture, family has always been a crucial part of their identity. Close relationships, respect and family-oriented life have been present in the culture from ancient times. "Most Greeks live as nuclear families in a single household; however, the extended family is kept close and visited often. In some cases, more than two generations may live together. This usually occurs when aging grandparents have moved in to live and be cared for by the core family unit. Nursing homes and residential care are viewed negatively; if Greeks must live in a nursing home, their children are expected to visit them often and make all arrangements for them".[5] Therefore, living together is not only derived from the political or economic conditions that families need to adjust with them, it is rooted in their origins. Moreover, Angelidakis believes that the conditions were the reason which shaped the city in that way, but would the same conditions have the identical impact on another culture? Absolutely not. Conditions are not the core reason. People would respond and react to the circumstances based on their mentality and character. There are different habits and approaches to the problems in societies based on their culture and beliefs. Therefore, Athenians were the main actors who shaped the city.

4 Ares Kalandies, 2012, The many Faces of Athenian Identity - Made in Athens, 13th International Exhibition of Architecture- la Biennale di Venezia, Pages 68-71
5 https://culturalatlas.sbs.com.au/greek-culture/greek-culture-family

Consequently, the transformation of a city or urban space is not derived from a single reason. Various elements can play a role in the development. Based on the circumstances and the conditions, the development may shift in a certain way. People and their characteristics are the ones who have the most important role in shaping their environment. Of course, the conditions impact the process, but the roots in the habit and culture of its residents derive the path to the development.

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● https://culturalatlas.sbs.com.au/greek-culture/greek-culture-family

# Advanced Studio V
Fall 2019

Critic: Andrés Jaque
TA: Marylynn Pauline Antaki

Group Members: Arvin Mirzakhanian
José Luis Vintimilla

**Transscalar Towers** | The Ultra Clear Glass Plan

This studio interrogates the current obsession for ultra-clear glass (also known as low-iron glass) in contemporary high-end apartment and office buildings in globalizing urban settings, and the way its use is rhetorically presented as a contribution to the process of turning cities into environmentally sensitive floor-to-ceiling architectural schemes. UCG is known for its capacity to intensify the blue part of the spectrum of sun light, which makes the sky look bluer and turns invisible the band of yellowy air that results from NO2 manifesting in skies.

More than 200 towers with UCG envelopes are being constructed in New York City now. The network of locations in the city these buildings occupy, and their larger transscalar footprint, will be the studio site. We will stop the construction in these sites and we will design an alternative equity and commons-based alternative scheme in order to intervene/complete their construction.

Andrés Jaque
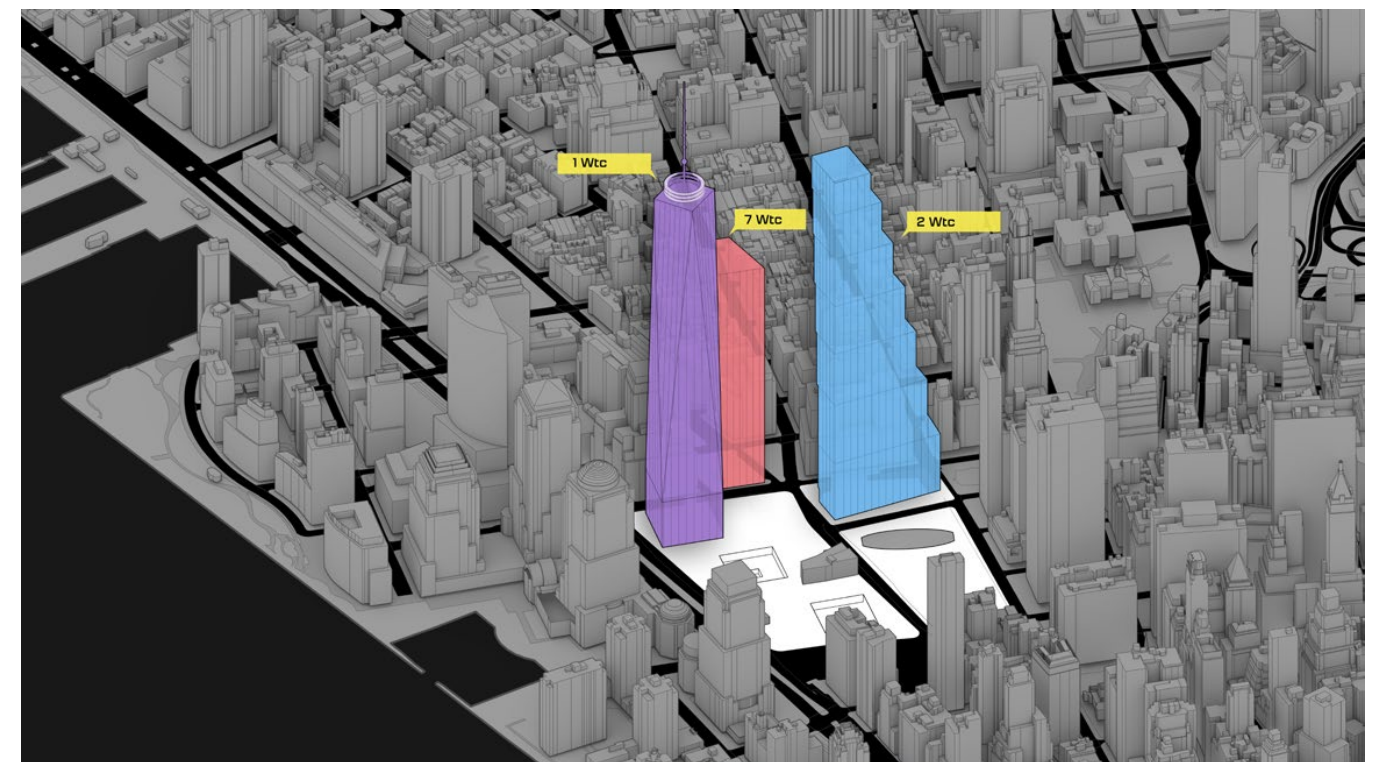
# Symbiotic Counter Commuting Urbanism

Port Authority of NY & NJ, is in charge of transportation infrastructure of NY & NJ States. They also develop high-end office spaces such as WTC Complex to attract substantial companies. As a result, land values housing prices grow. Consequently, people move to less expensive areas and commute for their jobs. On average, Lower Manhattan & Battery Park area, sees a 432% increase in population during business hours. As a result, 15.4 Million Tons of $CO_2$ emissions are produced by transportation infrastructure which is accountable for 29% of the total greenhouse gas emissions in NYC.

The strategy is to settle working professionals around the areas they work, to reduce the avoidable emissions from transportation infrastructure within city's mono-functional financial district. The site of this proposal is WTC complex in Lower Manhattan between 1, 2 & 7 towers. The surrounding buildings are over equipped with various systems that can be utilized. The new proposal is a symbiotic network of slender residential spaces within operating surrounding towers to avoid infrastructural redundancy.
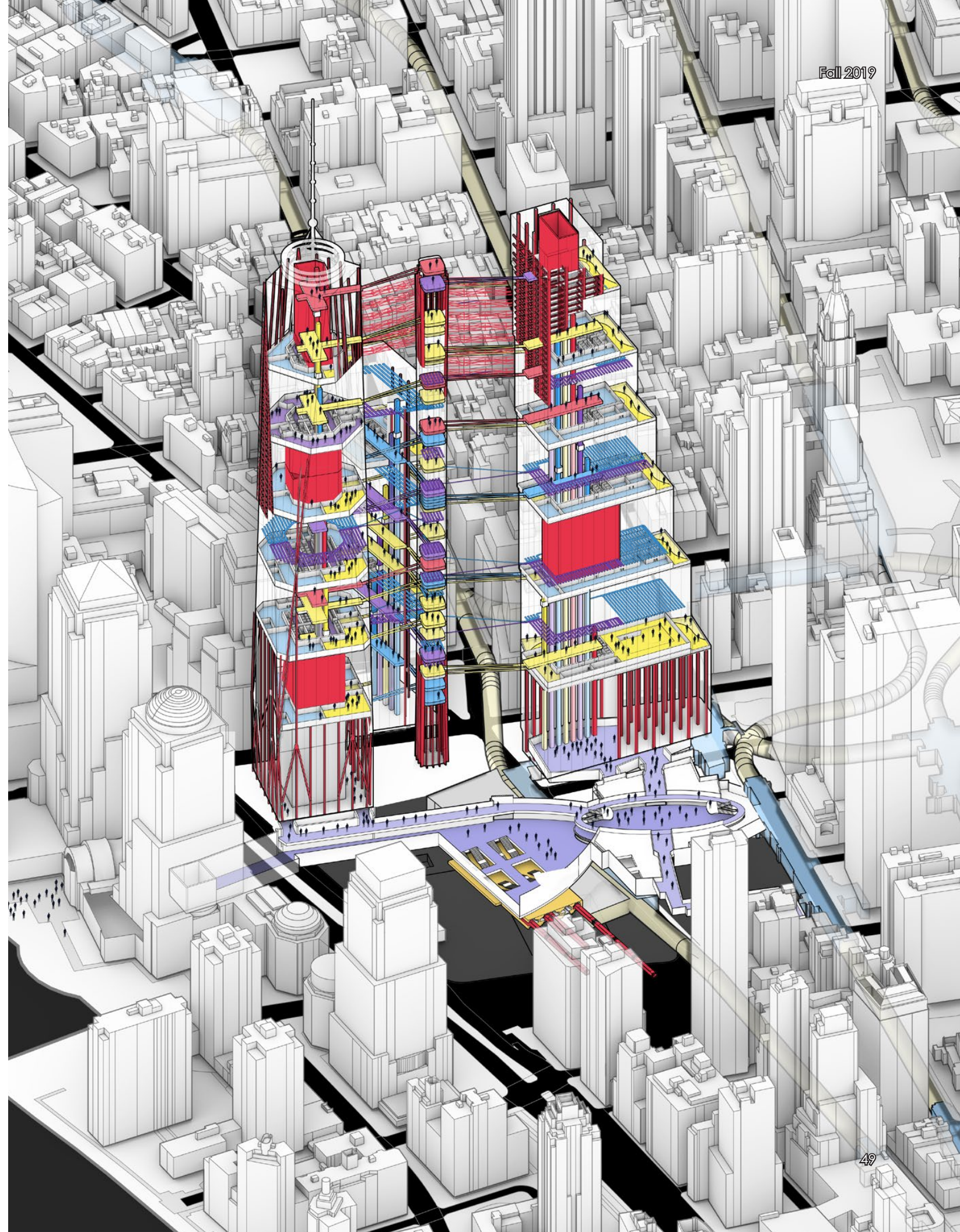
Transportation Carbon Emissions



Project's Location

**Prototype**
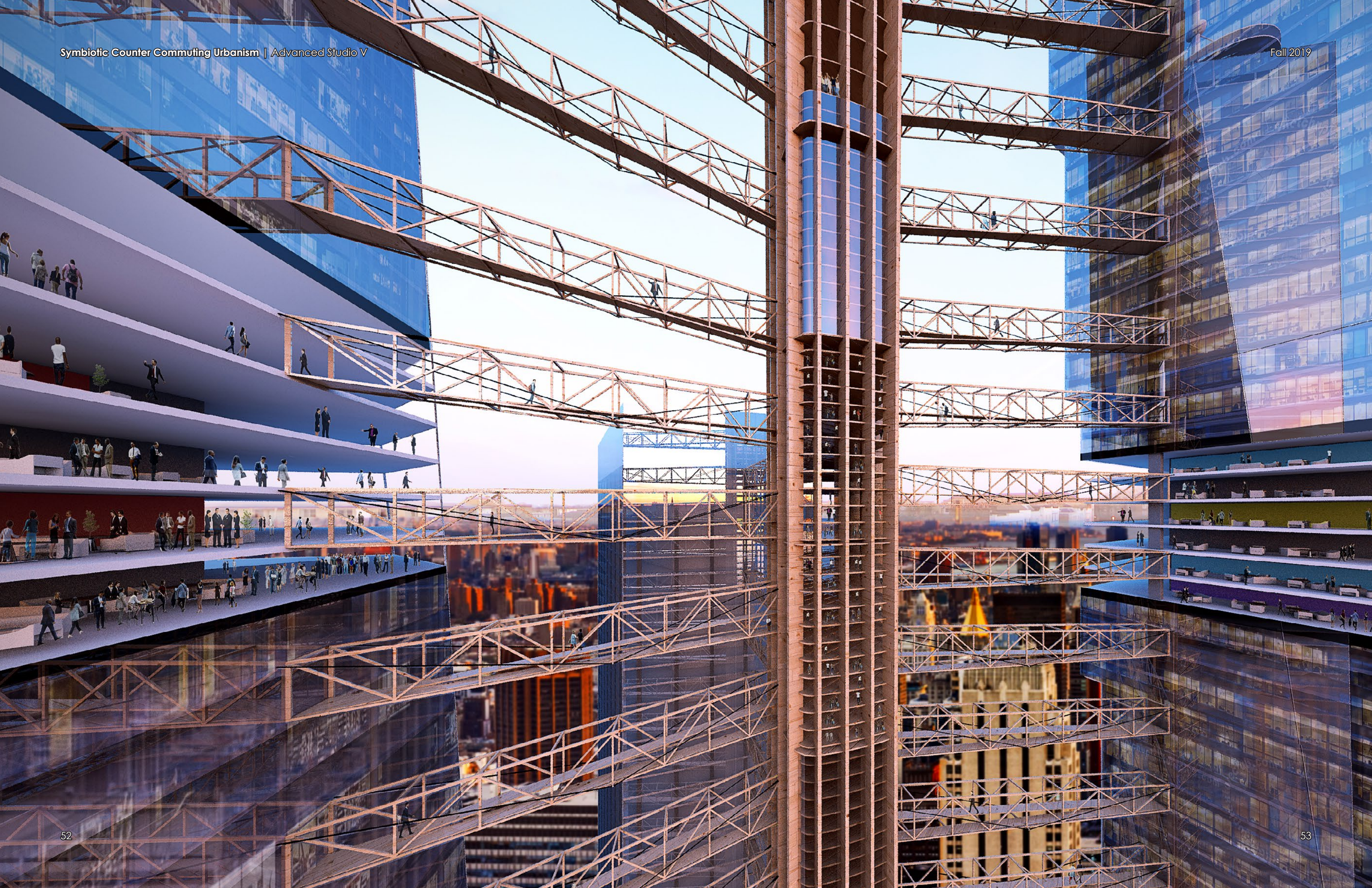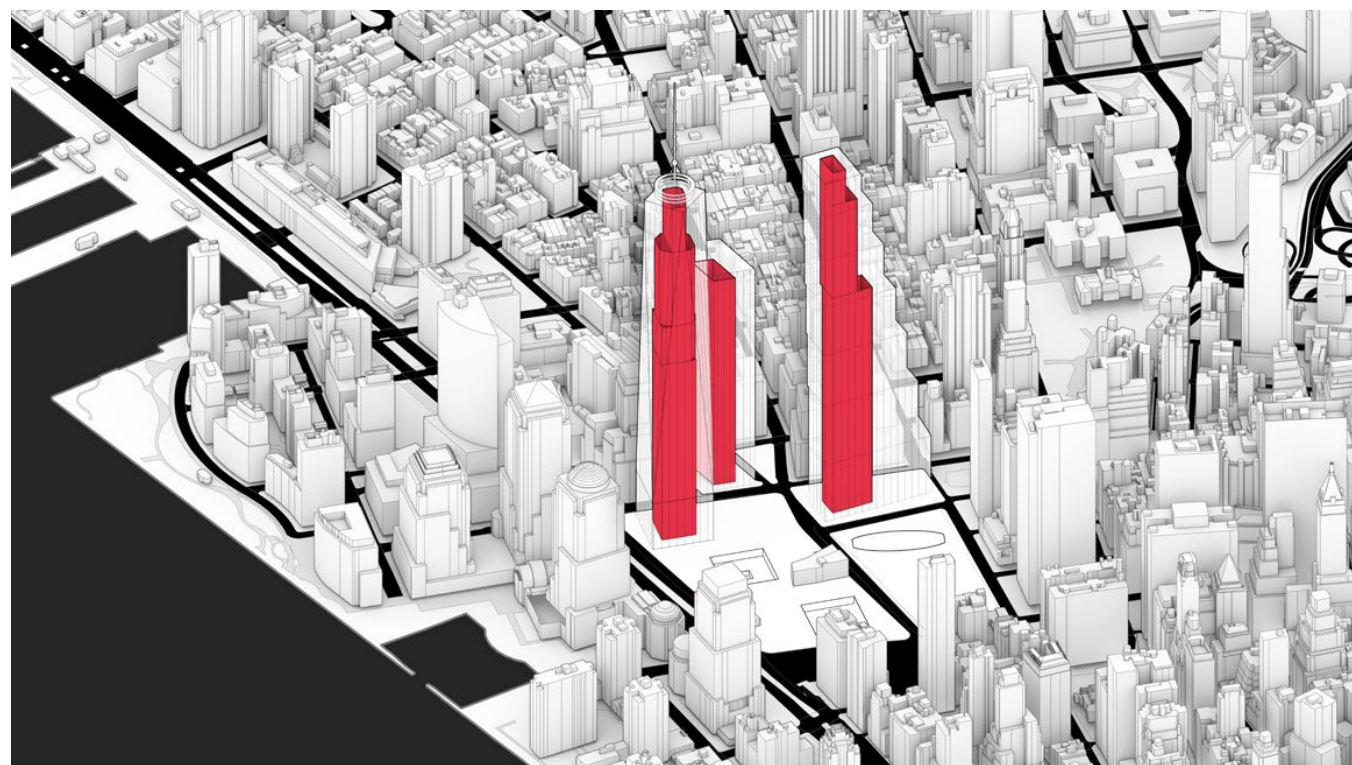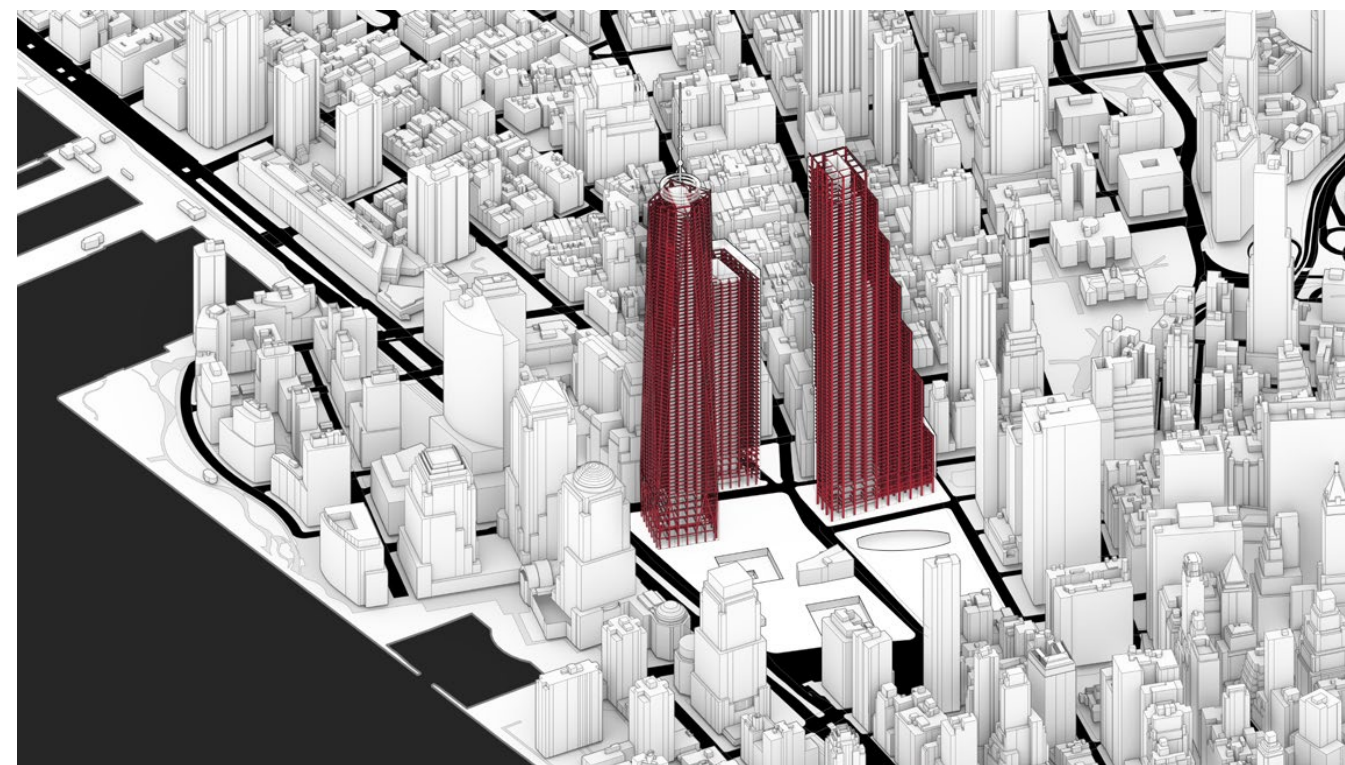
WTC Towers' Cores



WTC Towers' Column and Beam Systems

**Structure**

**Structure**

Tension Cable

Lightweight Timber Structure

Wtc Beam

Flexible Joint

Timber
Columns

Landing with Horizontal
movement capacity

Wtc Slab
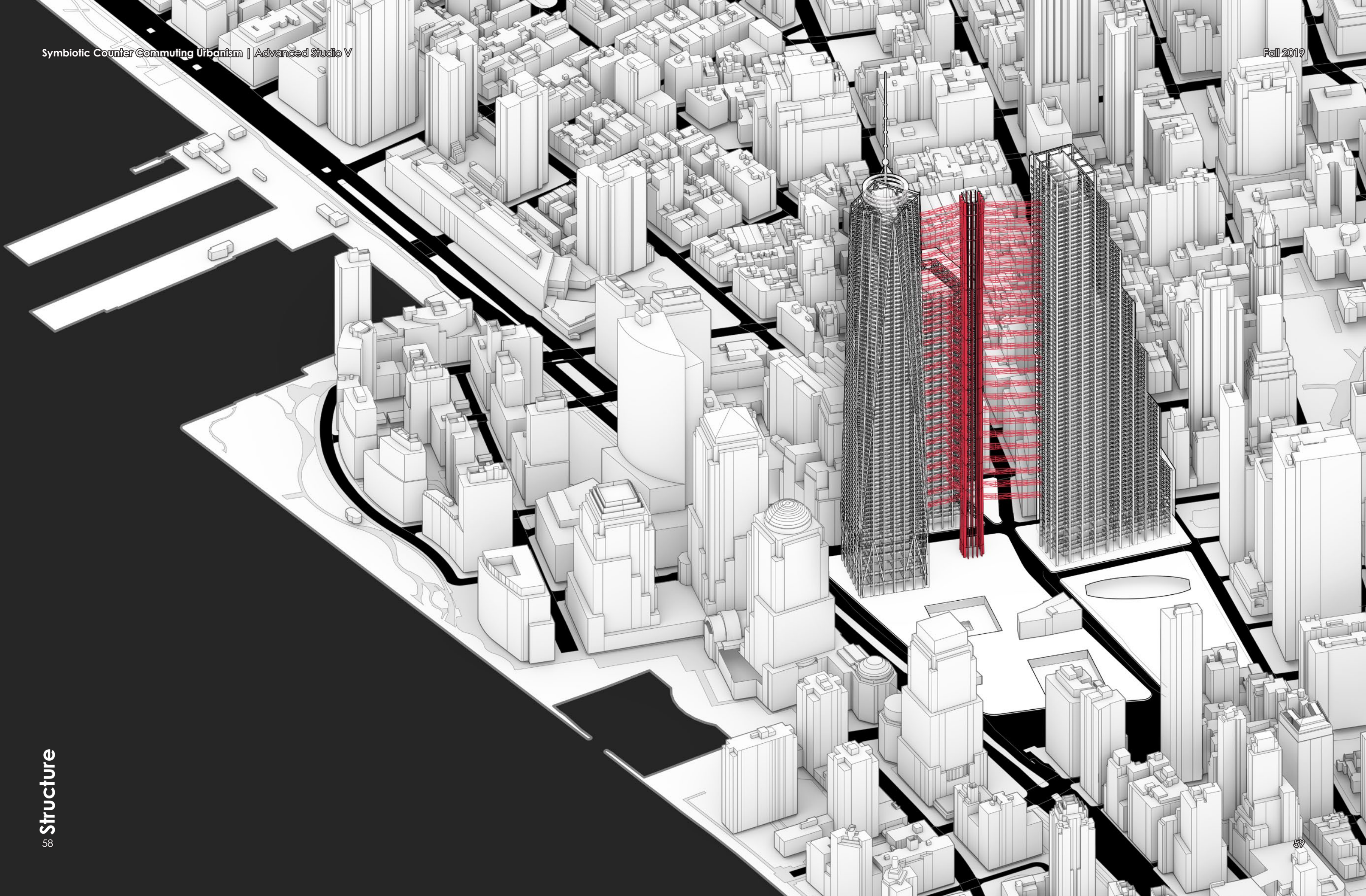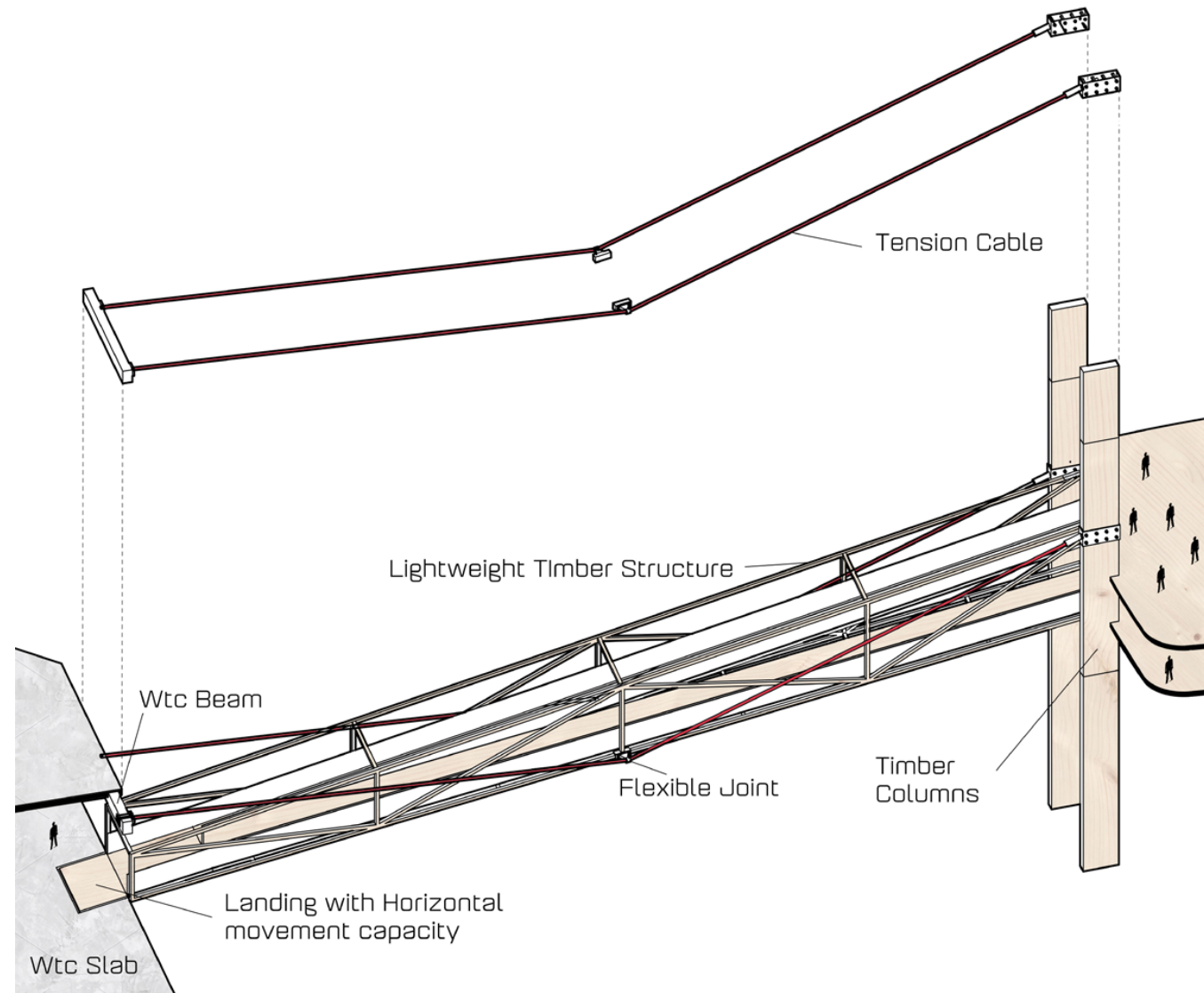
Lightweight Timber Bridge - Reinforced With Tensors

Bridge

Rubber Joint Filler
Wtc Slab

Slider

Flexible rubber joint

**Carbon Emission Reduction by:**
1 - 1.5 Tons of Co2
per every cubic meter of CLT

Global Warming, Carbon Dioxide, Buildings
and CLT, 2016, ELSEVIER
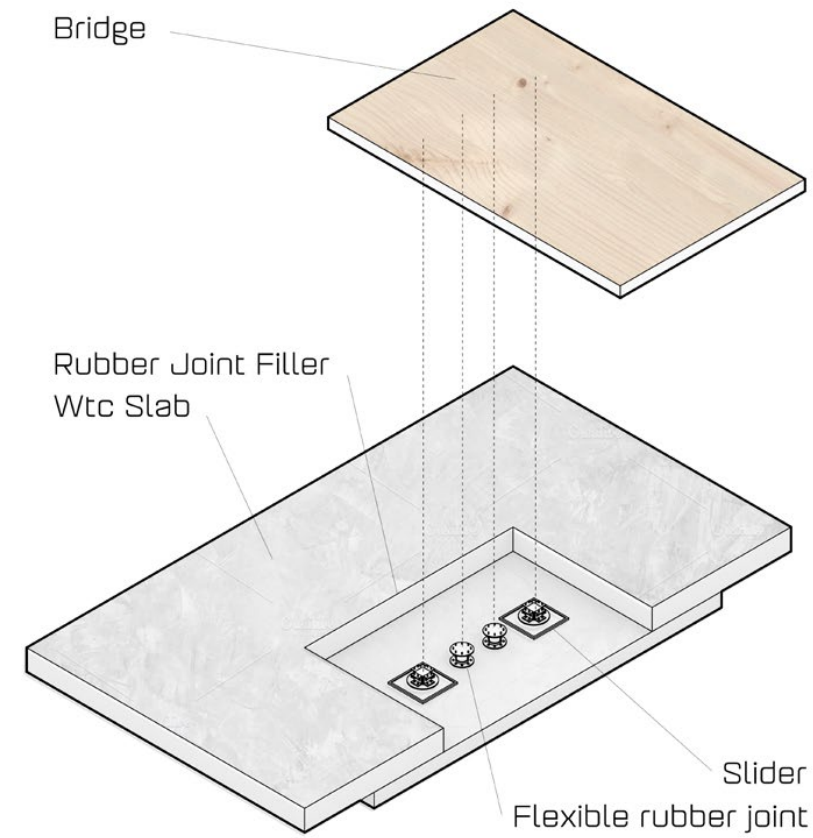
Bridge Horizontal Movement

**Structure**

Sky Lobby

Subway

Oculus

Ferry

Path

**Mobility** | Individuality
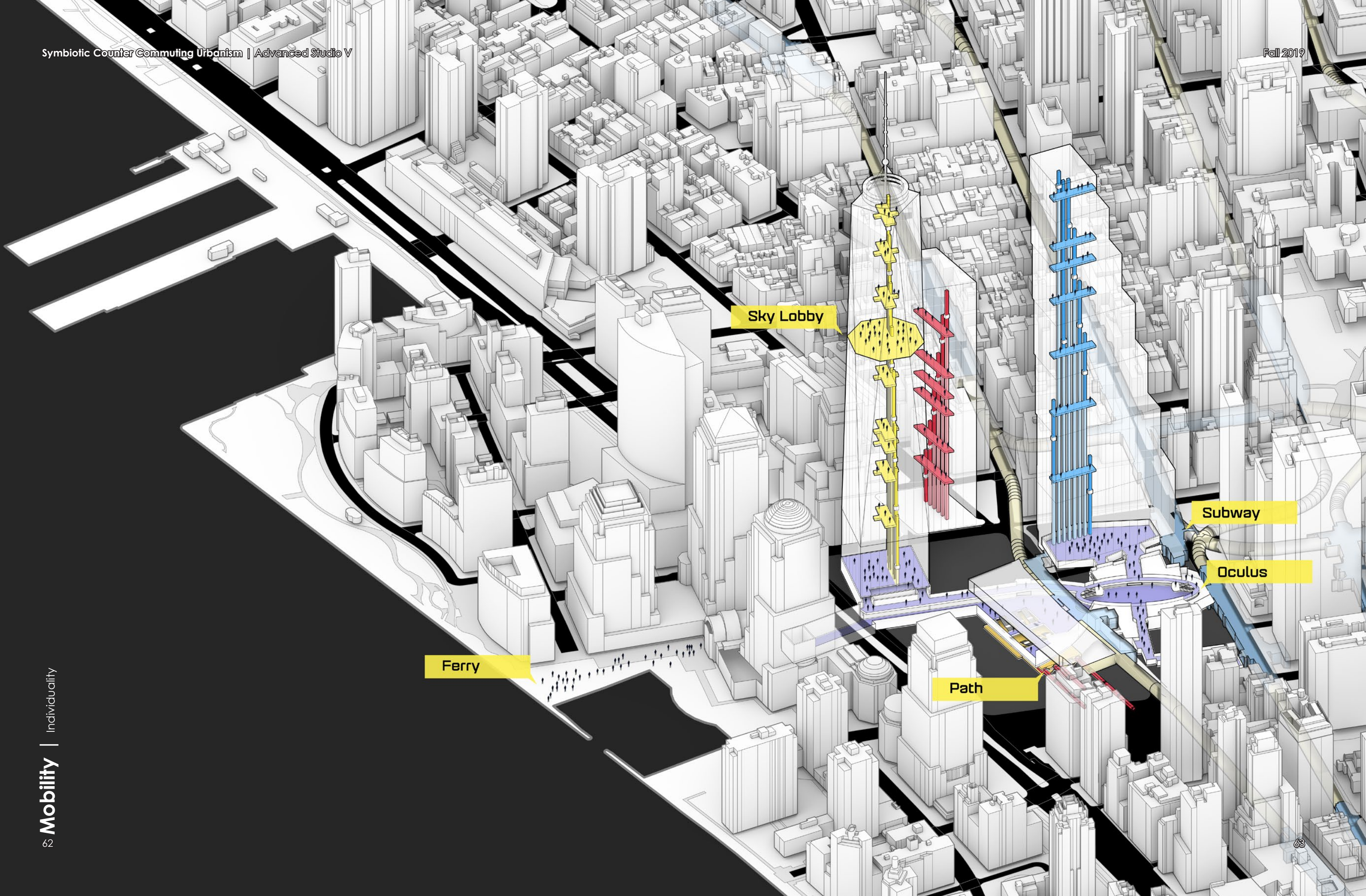
Sky Lobby

Subway

Oculus

Ferry

Path
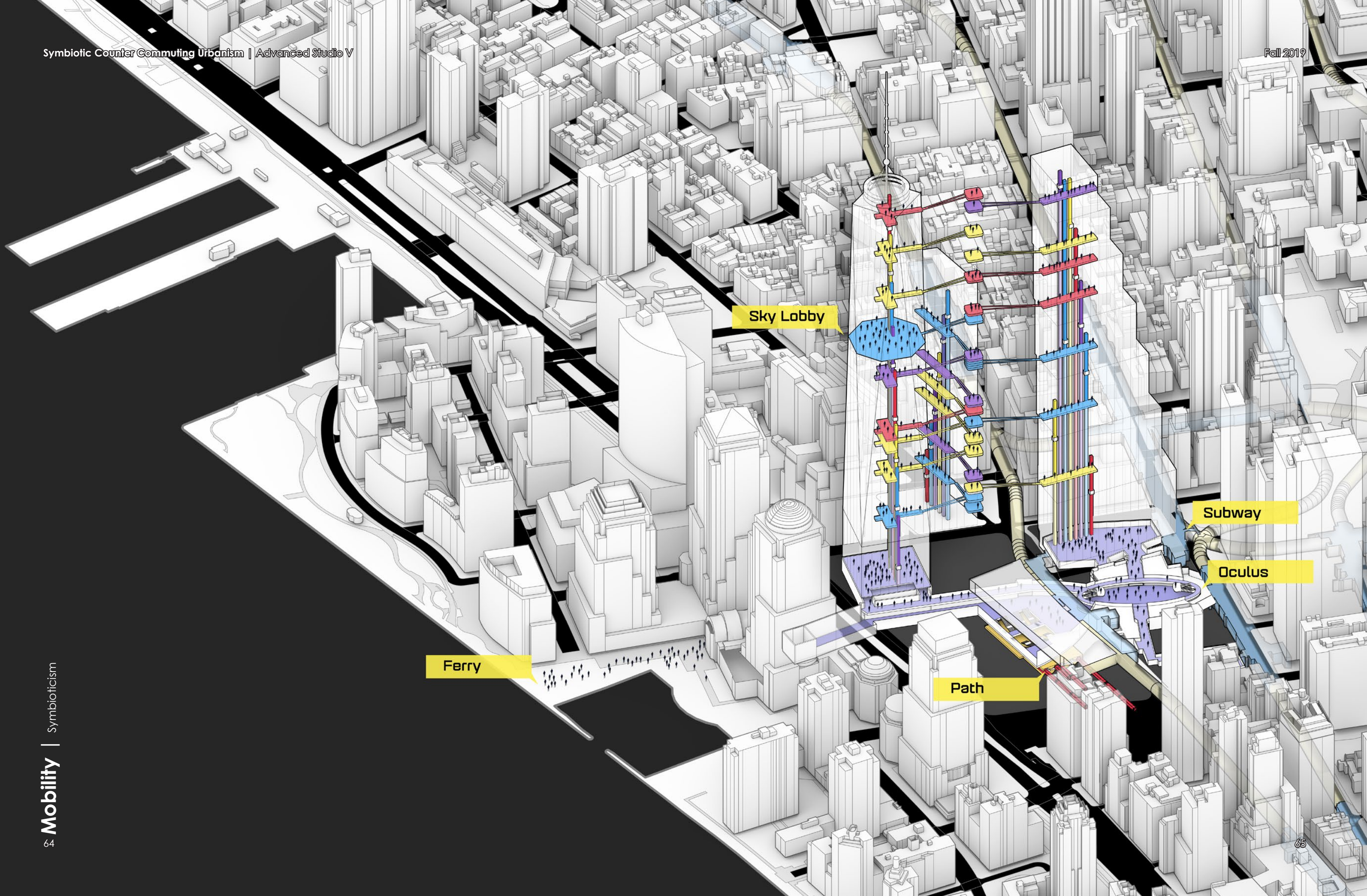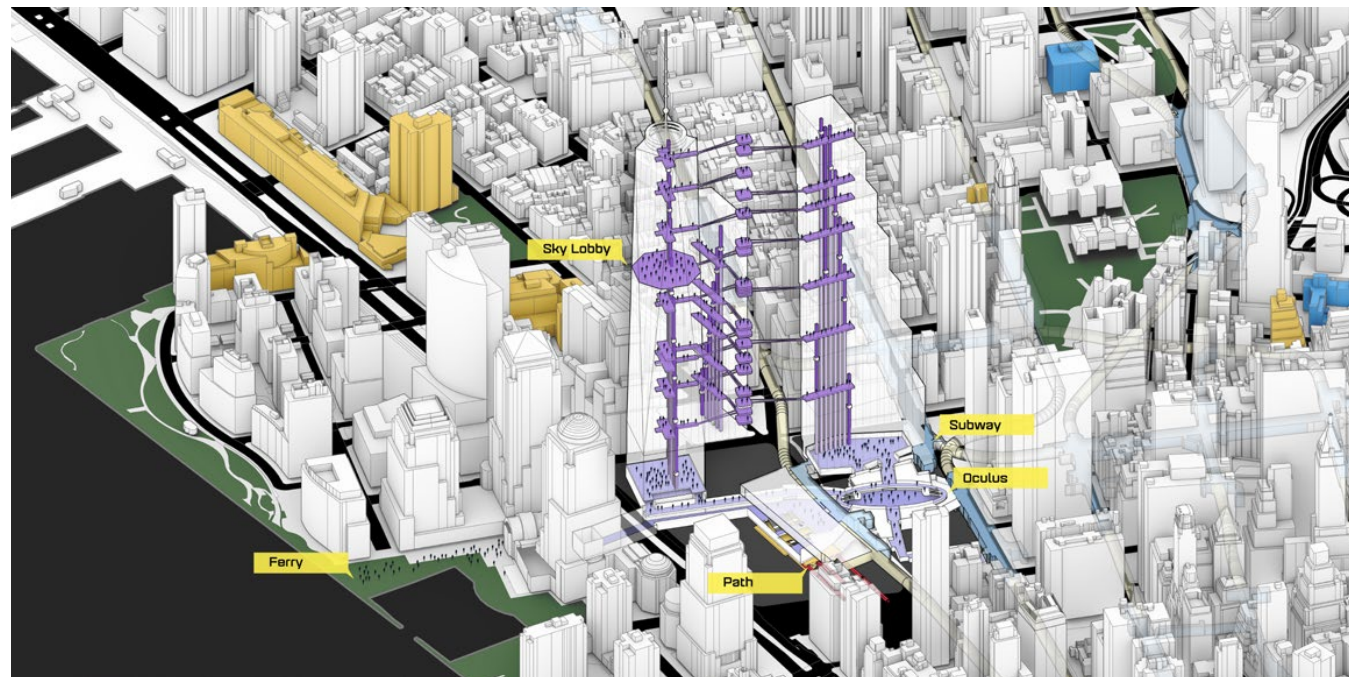
Amenities Accessibility



40% +2 Users
14% Shared Units
46% One Person Household

**Carbon Emission Reduction by:**
66 Tons of Co2
per year

Calculation based on 600 People
World Green Building Council

7 Wtc

2 Wtc

1 Wtc

Tower

Mobility Optimization

**Mobility**

**Temperature Transfer** with Water Inertia

Offices

Units

Upper Slab

Lower Slab

68° - 76° F

Business Hours

Offices

Units

Upper Slab

Lower Slab

68° - 76° F

68° - 76° F

Summer

Non-Business Hours

**Temperature Transfer** with Water Inertia

Offices

Units

Upper Slab

Lower Slab

68° - 76° F

68° - 76° F

Non-Business Hours

Carbon Emission Reduction by:

672 Tons of Co2
per year

Calculation based on 600 People
Emissions Source: Nyc Mayor Office
Population Source: US Census Bureau

Offices

Units

Upper Slab

Lower Slab

68° - 76° F

68° - 76° F

Winter

Non-Business Hours

Sky Lobby

Amenities

Terraces

Amenities

**Utilization of Common Spaces**
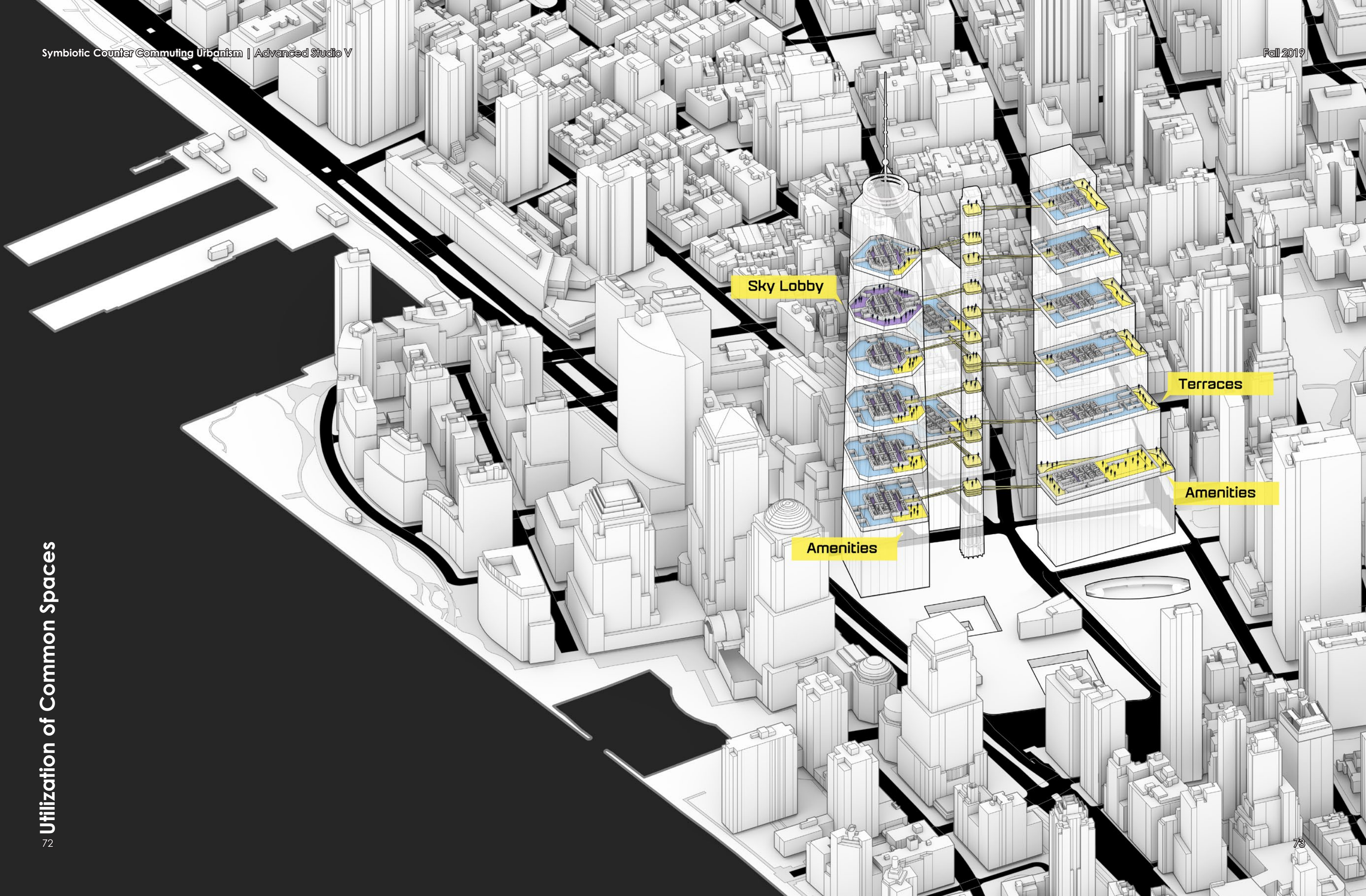
**Utilization of Common Spaces**
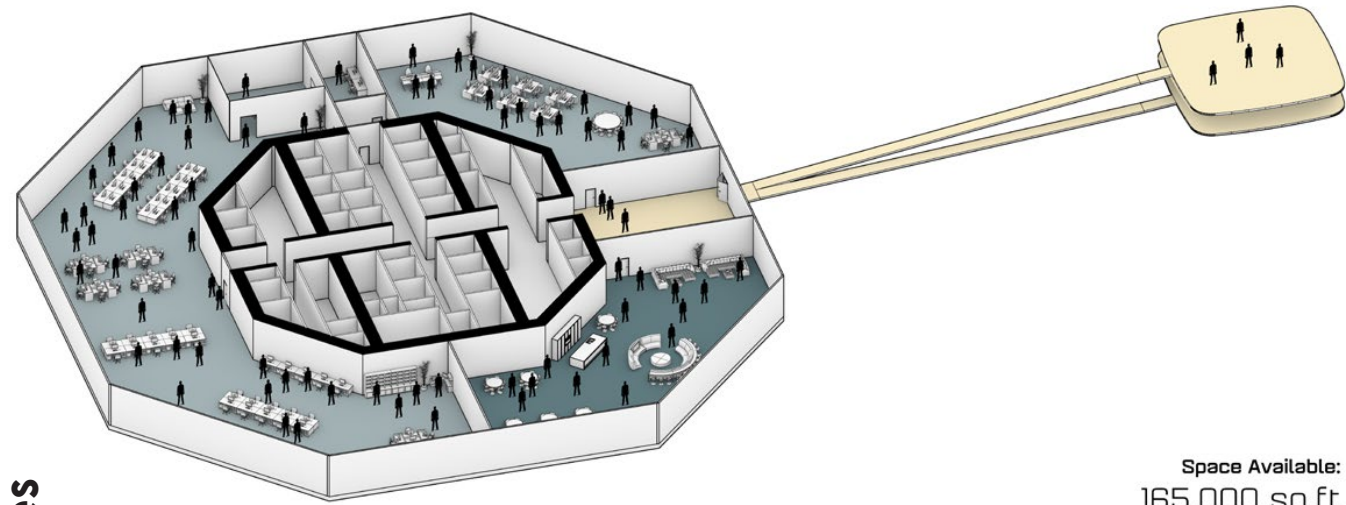
Business Hours

**Space Available:**
165,000 sq.ft

Total Common space between
1 wtc. 2 Wtc. 7 Wtc
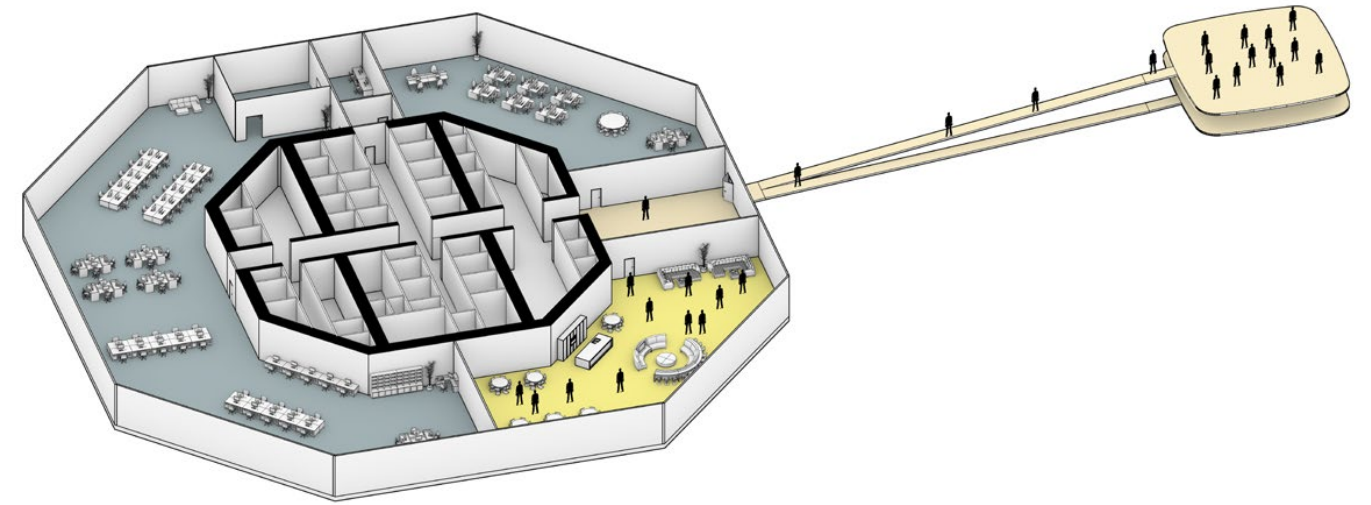
Non-Business Hours

This system will help working professionals to settle around the areas they work and reduce the emission produced by transportation infrastructure, heating & cooling, mobility and more. 3.02 tons of $CO_2$ will be saved per person per year and the tower can save up to 1,812 tons of $CO_2$ emissions per year.

Port Authority can promote public aspects into the city's compound with this prototype. This would be a new layer of their mission which they can manage the system in order to prevent it from being privatized and deviating from the goals. It will be operated on a rental based program for workers of WTC. This proposal is a method to transfer the financial capacities to provide general interests for the public.

This prototype would be a infrastructural system at city scale to avoid redundancy in various categories such as transportation, construction and operation. As a result this approach would enhance the environmental quality by reducing the $CO_2$ emissions through a socio-political approach.
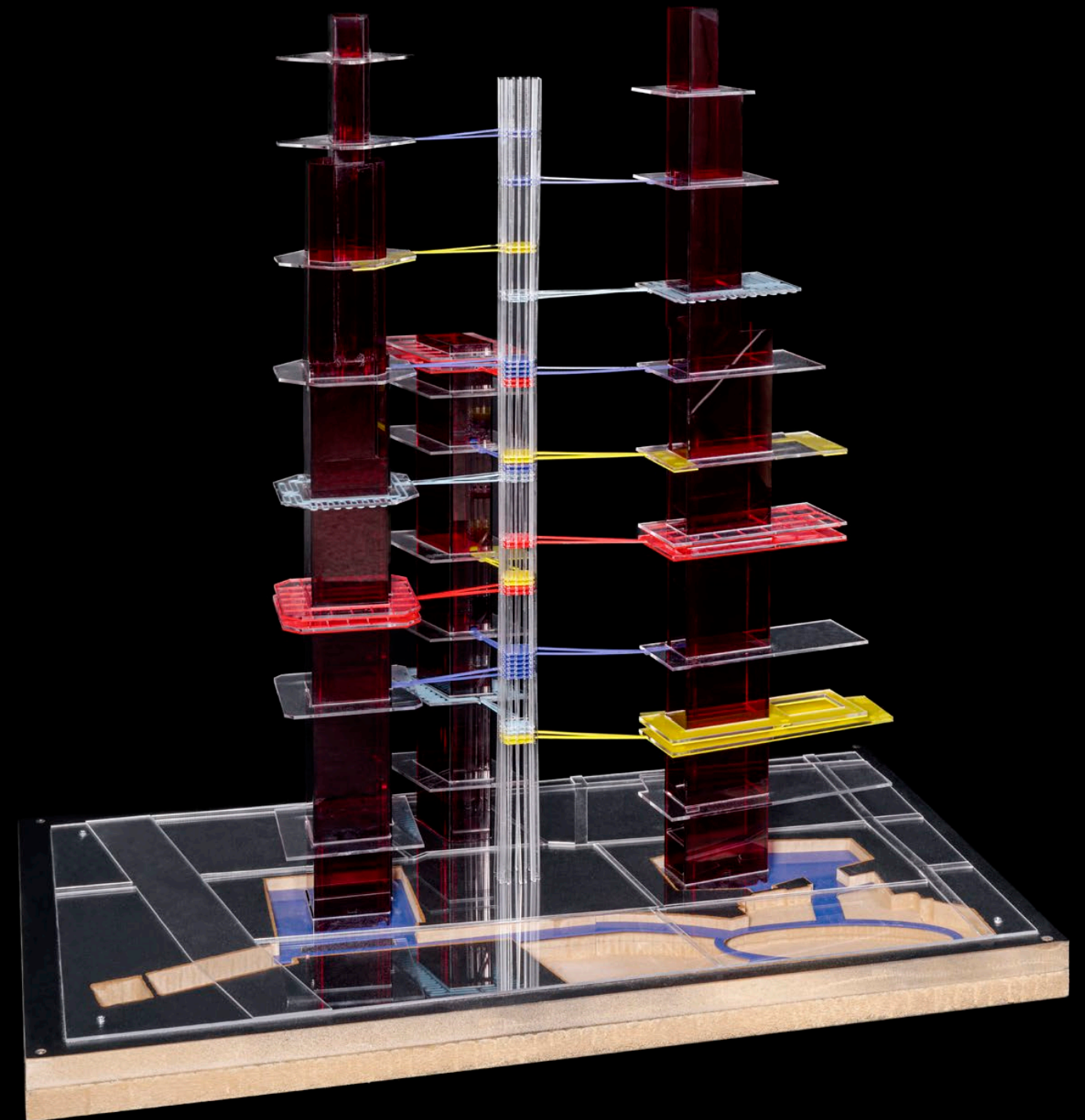
# The History of Architectural Theory
Fall 2019

Professor: Mark Wigley

## Post-Functionalism

Arvin Mirzakhanian
Professor: Mark Wigley

**Introduction**

Nowadays "post-modernism" is an extensively spread theory in architectural community and it was an answer in 70s to widely criticized modern architecture that some believed it lacked in originality and character. However, there are some questionable controversies in the development procedure of the theory that can be deliberated. Peter Eisenman is one the critics who has challenged the authority and authenticity of the current "post-modernism" and interpreted the frailties with a premise termed "post-functionalism". A discussion of Eisenman's "post-functionalism" theory will be presented in order to comprehend this argument and its intentions. It is imperative to break down its constituent structure and scrutinize the relevant concepts and theories that establish such a consideration.

This essay will address the questions and arguments which can help to describe and explain this theory. At first, the role of "program" and "type" will be assessed closely in the context of modern era and the position of humans in these theories alongside their roles into shaping those ideas. Moreover, to what extent form follows the function and what consequences, either positive or negative, can emerge from such mentality and approach? Last but not least, why "post-modernism" is sometimes deviated and demonstration of ideas becomes more important than elaboration of them and turns into superficial approaches rather than being thoughtful? These arguments will delineate the establishment and development of Eisenman's "post-functionalism" theory in response to the "post-modernism", by an approach of a deliberate elaboration, instead of a superficial articulation alongside maintaining the form/function balance.

**Program or Type and The Role of Humanism**

Eisenman describes his standpoint by addressing some events and theories which can bolster identifying his perspective. He declares the transition of architecture from modern to post-modern by referring to the "Architectura Razionale" exhibition at Milan Triennale in 1973 and "Ecole des Beaux Arts", an exhibition at the Museum of Modern Art in 1975.[1]

As mentioned by Eisenman, "The former, going on the assumption that modern architecture was an outmoded functionalism, declared that architecture can be generated only through a return to itself as an autonomous or pure discipline".[2] In the span of modern architecture, rationalism was in climax. Architecture was embracing a functional process and confronting its historical roots. This mindset had been influenced by diversified indices; the most compelling one was the industrial revolution which was the advancement of technology that diminished the human limitations. The valuations were being defined by functionality of a phenomenon, since the industrial revolution was based on physical and technological realities rather than spiritual contemplations. The leverage was comparable in architecture. Functionality defined the versatility of an arena. This approach had been present for some time and served modernist humans by presenting architecture as a machine for living by addressing merely physical needs; but not the spiritual ones.

Subsequently, after a certain time, communities felt an absence of an unknown entity in their lives. After living the industrialized inspired life for a protracted time, people had been devastated by the pure modernism which lacked the human spirit. The missing puzzle and the solution to this situation, was the reattachment to past and the spiritual origins of mankind. Humans by default, have spiritual needs alongside physical ones.

The assumption of how this methodology operates, is apparent when humans are not spiritually stable and lost into the context; therefore, they cannot operate and function as intended. For instance, this situation can be described with an example of people who have mental affliction. There is no complication with their physical body. Every organ such as heart, brain, lungs, etc. are functioning flawlessly, but their mental plight prevents them from achieving their optimal capability. This phenomenon is comparable with functionalism in architecture. The essence and morality, which can be translated into reattachment to past, is essential to architecture. This temperament and character can be implied through diversified manners of formal, spiritual or cultural methods and each one has to be scrutinized

1 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 236.
2 Ibid

in the context compatible to the responding conditions.

Eisenman also illustrates "The latter, seeing modern architecture as an obsessional formalism, made itself into implicit statement that the future lies paradoxically in the past, within the particular response to function that characterized the nineteenth century's eclectic command of historical styles".[3] As deliberated earlier, the return to history in order to unearth origins, can be attained with disparate approaches and even their combination. In the case of Ecole des Beaux Arts Exhibition, this reattachment to history relies on the formal aspects and aesthetics of architecture which unquestionably is one of the integral parts of the field. Even though this reattachment can be conveyed with various methods such as rational, philosophical and other manners, based on humans' nature, visual implication is the most compelling way of making representation and perception of a phenomenon. By retrieving the aesthetics of the past, the spiritual and cultural needs and demands of human beings can be fulfilled.

In both cases, the intention is reconnection to the past. Predominantly, as a psychological fact, when people endure emptiness or a feeling of a missing piece in their soul and spiritual needs, they seek to renege to something familiar and feel sympathy. By doing so, a part of the brain activates and acts in a manner that the individual feels more secure and relieved. This phenomenon in architecture is not as conspicuous and discernible as in mental conditions and people may not recognize the situation at first, but indeed execute in a way to make the conditions comparable to their treatment of the soul. In these situations, architects can help to provide the cultural and spiritual demands of societies and communities to promote and reflect the realities and demands of their times through their roles.

These two diagnoses, "Architectura Razionale" and "Ecole des Beaux Arts" have one thing in common. They both articulate their interpretations by two indices; form and function. Form or type is the aesthetic aspect of the concept while function or program is the rationality of the design. In fact, as Eisenman states, "Architecture has been tied with these factors and maintained the almost same approach from the 500 year old humanism

tradition".[4]

After all, what is the role of humanism in this situation? According to Eisenman, theories around architecture that are considered as humanist, in fact, include some dialectical oppositions in them.[5] The humanist theory meant to serve humans in a way that put humans in the center and everything revolves around that notion. It is based on rationality of humans and their needs rather than superstition. Thus, inherently it serves the functional and spiritual commitments in a logical way. The opposition that Eisenman affirms is an oscillation between maintaining the balance of form and function since both of them are segments of non-contradicting human requirements, but in completion of each other; in other words, two poles of the same context.[6] He also postulates that this balance has been maintained adequately within the post-industrial period inasmuch that humans payed attention to both prospects with an idealist view based on human beings' relationship to their surrounding materialized world.[7] This relationship has been disturbed after industrialization since people felt empowered by their achievements in industry and they needed to reflect them in all their activities and accomplishments. Architecture has not been an exception. By radical influence of industrialization, functionality took over and disrupted the balance between program and type without taking humanism into consideration, only to reflect the attainments into the built environment.

For better expression of this fluctuation in balance of program and type, Eisenman illustrates the idea by referring to Colin Rowe's suggestion which is a comparison of two disparate buildings from the same era; the nineteenth century French Parisian hôtel and an English country house.[8] In each case, the approach differs. The French Parisian hôtel, tried to have the sequence and hierarchy in the design of the hotel infrastructure and shape the environment based on the necessity. It also reflected the rationality of function on the facade to empower the role of the program in its own way of expression. On the other hand, the English country house takes the

3 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 236.

4 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 236.
5 Ibid
6 Ibid
7 Ibid
8 Ibid

aesthetics and space uniqueness more into consideration by appreciating visual aspects of the design and its proportions.[9]

Essentially, both buildings are trying to attain the same goal, but their priorities are reversed. In the French Parisian hôtel, program rules the process while in the English country house the type is the one which shapes the totality of the idea. This is an adequate illustration of the oscillation between program and type. These kinds of controversies happened in the close time periods. The explanation can be related to the understanding of the public towards available concepts at the time. It may be a consequent of a misunderstanding of the industrialization notion.

People, especially the theorists and architects, had disparate understanding of the phenomenon at the time and those variations resulted in distinctive ways of expression of their perceptions. The concept of industrialization may seem simple but the consequences and its implications into humans' lives, can be intricate. Human beings are inherently organic thinkers and spiritual thoughts can be a relief to their mindset, but industrialization with its promising advantages, struggles to intercorporate properly into the nature of humans and creates controversies in their lives; therefore, operating within a gradient of the appropriate balance, would help them to achieve a more optimal approach and solution.

**Form Follows Function and Its Consequences**

As specified by Eisenman "This shift in balance has produced a situation whereby, for the past fifty years, architects have understood design as the product of some oversimplified form-follows-function formula".[10] According to Eisenman, until late 60s, it was still thought that modern movement can sustain architecture and one of the most crucial theories around that, was the "English Revisionist Functionalism" of Reyner Banham, Cedric Price and Archigram. In this approach, the technology and its influence remained as a priority in the same way of the prewar period, both aesthetically and functionally. On the other hand, the substitution of moral values for formal contexts, created a contradiction from functionalist

perspective.[11] According to this point of view, this approach could not sustain the contemporary needs of human beings. The time had been changed, so the human needs; therefore, an inconsistency in human values could be felt with a lost path in cultural and civilizational developments.

In the functionalist conception, the appearance and pretense is not the chief priority. Instead, the function and domination of technological advancements, shape the form and context of the notion. Forasmuch as this attitude is significantly disparate from the past methods, it seems that it breaks the connection to the past completely.

Every theory and approach had represented and reflected the reality and mentality of its time and it could vary in different periods. For instance, in Gothic domination era in Europe, the importance of religion and the superiority of the notion compared to humanism were in priority and translated into radically shaped architecture that amplified the power of divinity. The architectural form had been developed in a way that symbolically pointing to the spiritual and divine matter. At that times, the divinity was related to the sky and the architecture of the buildings from those eras were radically influenced by that mentality by pointing to the sky with sharp and extreme forms such as Notre-Dame Cathedral in Paris and Cologne Cathedral in Cologne. The form was following the notion of divinity.

On the other hand, the industrial era, had altered the architecture and the theories around it with the accomplishments and growth of industry and technologies in a way to show the capacity of human beings and their capabilities such as Eiffel tower in Paris. This context implicated into the architectural world and translated into bringing the functionality as a priority to shaped the community. Architects such as Mies van der Rohe and Le Corbusier were the leader of this movement. Seagram building in New York City by Mies and Villa Savoye by Le Corbusier in Paris are among the distinct buildings of this era. Form was defined by the notion of functionality.

Basically, what methodically had happened in the past, has stayed the in the same way. Every era's achievements had been reflected in the culture of its society, community and of course architecture. The difference

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9 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 236.
10 Ibid, Page 237.

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11 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 237.

among these two point of views, has been the resemblance of their particular time period. Mostly, in pre-industrial times, relatively everything was a resemblance of a spiritual or a higher power. Some of them originated from religion and culture, and some others had been related to a higher power due to limited knowledge of humanity at the time. In that manner, the unknown could be justified by associating it to a superior being.

However, after the industrial revolution and the progression in technology, some aspects of unknown arenas became more transparent to humans and were justified with the freshly acquired knowledge; therefore, the priorities shifted from spiritual inspirations to the industrial ones. That shift did not mean the denial of divinity; it meant new methods and techniques to articulate the human needs, both spiritually and functionally, in a disparate manner to show the human achievements as well.

All theories in the history tried to reflect the contemporary realities according to their time and of course, priorities of their society and culture. In modern era, they have shifted tremendously. As pointed earlier, the approach of the theories stayed the same throughout history and the only difference, had been their articulation specific mentalities based on the time periods and culture.

Nonetheless, the problems and controversies rely somewhere else. As Eisenman states "Functionalism is really no more than a late phase of humanism rather than an alternative to it".[12] By this statement, he tries to imply that this theory is a continuation of the former one, instead of proposing a new approach, in a non-adolescence manner.

According to Eisenman, based on "Triennale" and "Beaux Arts Exhibition", the main contradiction and complication lies somewhere other than the functionalism theory itself. He believes that it can be found in modern sensibility; The implied revival of "neo-classicism" and "Beaux Art academism" tried to act as replacements of continuing modernism and the outcome deteriorated due to poor understanding of modernism itself.[13]

In the 19th century, a transition happened from humanism to modernism, but architecture miscarried the adaptation to the most

fundamental parts of the transition in a proper manner. Hence, there were controversies around the utilization of this evolution. As Eisenman mentions, there is a potential difference in the nature of modernist and humanist theories and are unnoticed among people who represent the theories such as eclecticism, post-modernism or neo-functionalism.[14] In fact, modernism is considered as a purely stylistic manifestation of functionalism without scrutinizing into the origins of the theory; the argumentation of form and function becomes a cultural based theory rather than exploring and examining the origins of such implementations into architecture.

Consequently, this approach has created a new culture among communities. A manner that has influenced not only the aesthetical aspects of architecture, but also the social, philosophical and technological realities. It has initiated a new approach and attitude towards a newly emerged culture out of both positive and negative aspects of these theories and their evolutions. This move, from humanism to modernism, reflected into various fields and effected them accordingly. Good or bad, intentionally or unintentionally, with awareness or ignorance, it has effected humans and their communities. These notions originated from the realities of societies and reflected the time and occurrences of their specific period. This occurrences and realities are not the main factors which define the theories, but human minds are the ones who perceive and analyze them differently in an appropriate or inappropriate way. These mindsets are the chief ones that shape the communities and their theories.

### Demonstration rather than Elaboration

According to Eisenman "Abstraction, atonality, and atemporality, however are merely stylistic manifestation of modernism, not its essential nature."[15] He also mentions that these approaches cannot be taken for granted as a methodology and they push man away from the center of his world.[16] In this context, objects become independent of man. They are intended to follow humans' demands. However, in the specified modernist theory, they actually get independent and come to the center of attention themselves.

12 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 237.
13 Ibid

14 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 238.
15 Ibid, Page 238.
16 Ibid

Eisenman illustrates his intention with Michael Foucault idea specified as a new epsteme. "Deriving from a non-humanistic attitude towards the relationship of an individual to his physical environment, it breaks with historical past, both with the ways of viewing man as subject and, as we have said, with the ethical positivism of form and function. Thus it cannot be related to functionalism. It is probably for this reason that modernism has not up to now been elaborated in architecture".[17]

Eventually this deviation is caused by misidentified approach towards the issue. Since man has been obsessed with his technological advancements and empowerment after industrial revolution, the perspective has been shifted unintentionally towards non-humanistic values and eventually ignoring the past to bring up newly adapted achievements. This approach has been in opposition with humanism in many situations.

Eisenman interprets his points and intentions with Mario Gandelsonas and his editorial "Neo-Functionalism" in opposition 5, that the need of theoretical investigation of the basic implementations of modernism is crucial. Furthermore, form/function opposition is not inherent to any architectural theory and fails to recognize the differences between modernism and humanism.[18] In fact, this opposition is inherent to the approach of the audience to the notions and can be implied in any theory. In order to illustrate the situation, interpreting the various indices that have been included in modernism hierarchy through time, would be essential.

As a reference, Industrial revolution, which had a huge impact on humanism, was not about a specific category or topic. It included different specialties and dragged into different arenas. Architecture was not an exception. Consequently, after adapting the techniques and technologies into architecture and its theories, more experts and critics have entered the field as well; intentionally or unintentionally. Thus, more opinions and point of views have been embedded into the field. The operating area and territory of architecture expanded and as a result, more controversies have been emerged regarding architecture's approach towards utilization and adaptation of these technologies.

After the modernism period and industrialization, humans tried to

reattach to past in order to fulfill their spiritual needs, while maintaining the technological advancements they had achieved in the modernist era. In order to accomplish their goal, they embedded the aesthetics of the past into the new architecture. This approach came with lots of controversies since reattachment to the past was translated differently among disparate groups and theorists. Some critics such as Eisenman believes that this reattachment has been superficial instead of having a deeper understanding of the real situation. Thus, he classified this so called "post modernism", as "post-functionalism".

In contrast to the historical path of modernism definition, according to Eisenman, "post-functionalism" is an approach that recognizes modernism as a distinct sensibility. It can be called a modernist dialectic, as opposed to old humanist (functionalist) opposition of form and function. This approach changes the humanist balance of form/function to a dialectical relationship within the evolution of the form itself.[19] Based on this definition, the balance of form and function can be maintained within the elaboration of proper theory around the development and evolution of the concept, instead of demonstrating the context in an aesthetical and geometrical manner. What Eisenman tries to convey is a thoughtful understanding of humanism and modernism values instead of replicating the visual and conspicuous aspects of a theory.

Eisenman introduces two co-existing tendencies to this theory; non-corroborating and non-sequential. "One tendency is to presume architectural form to be a recognizable transformation from some pre-existing geometric or platonic solid. However, to this is added a second tendency that sees architectural form in an attemporal, decompositional mode, as something simplified from some pre-existent set of non-specific spatial entities".[20] In the first tendency, there is a defined identity that humane and visual aspects are addressed in a properly balanced manner that can collaborate in the creation values. In the second one, the form is the result of simplification of various components of that approach. According to Eisenman, as these two tendencies combine, the new balanced theory takes shape so called modern dialectic.[21]

17 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Page 238.
18 Ibid

19 Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Pages 238-239
20 Ibid, Page 239
21 Ibid

From this point of view, objects are identified based on their authentic values and position, but not prior to human values. Every object or thought have their own identity and placed in the theory based on their importance. The fundamental challenge is to identify the authenticity of an item or thought, functionally or aesthetically, based on their valuations and prioritize them according to the human needs to maintain a proper balance with a deep understanding of the strategy. However, the properties of these theories are based on the users and they can be defined as a cultural value rather than a universal one.

Prioritizing the thoughts and approaches are not based on a general or a universal rule that can be applied in any situation or location. Each society and culture has its own specificity and identity that needs to be examined precisely. The users and people are the chief ones who prioritize them and define each item or thought's values. They might be different in various cultures and societies since the valuations are diverse amid them. However, the principle factor they have in common and can be accepted as a general rule, is the presence of humans as the main actors in these theories and approaches. In some portions of time, humans have got lost into the path and deviated from their original roots. These theories must be defined by humane needs and values of a specific society or community (both formal and functional), rather than just an over simplified demonstration of an idea or an application of a specific technology or thought.

**Conclusion**

"Post-functionalism" is a theoretical argument that questions the so called "post-modernism" by criticizing the accomplishment methods and misunderstandings of "modernism". After the modern era, humans felt a need to reattach to their past to fulfill their spiritual and cultural needs while maintaining the functionality. In the procedure, they got deviated in some cases since humans have been obsessed with their technological achievements. Instead of developing the theory based on humane values, the center of attention dragged into their achievement. Furthermore, the reattachment to their past was implicated as a formal return, instead of relevant elaboration of the situation. That is why this theory is called "post-

functionalism" in lieu of "post-modernism".

This theory is not a completely new ideology, but a criticized version of it with suggestions that can complete and revise the existing one. It proposes a profound approach that instead of replicating the formal shapes from past, study and interpret the inherent nature of the realities to resemble the actual demands both spiritually and functionally. Maintaining the balance within type and program with a profound perception is crucial. Paying excessive attention to formal aspects, would deviate the intention from its original function and would not serve humans properly as intended; therefore, functionality and usability would be disturbed. On the other hand, focusing too much on the functional aspects, would only serve the humans' physical needs, but not the spiritual ones. Thus, the moral and cultural desires of societies and communities would not be fulfilled properly.

Being too radical in each of these aspects without a deep-seated understanding of where the theory stands, would have consequences that could not operate within the gradient of authenticity of an architectural theory. The argument which is relevant, is to keep the balance of form and function to operate properly and also not be superficial when reattaching to history with a few formal implications to fulfill the cultural needs. Architecture is one of the most community and social based practices that involves the society at its large. It has a huge responsibility to represent the culture and also the society itself. The chief intention and objective is to not being distracted while keeping humans as the priority and center of attention when it comes to define a theory or an architectural ideology. The premise should be developed based on the mentality and culture of its specific era according to human values and needs.

Bibliography (Analytical Writing Based on One Piece of Theory)

● Eisenman, Peter, "Post-Functionalism", Edited by Hays, Michael, "Architecture Theory since 1968", Columbia Books of Architecture, 1998, Pages 236-239.
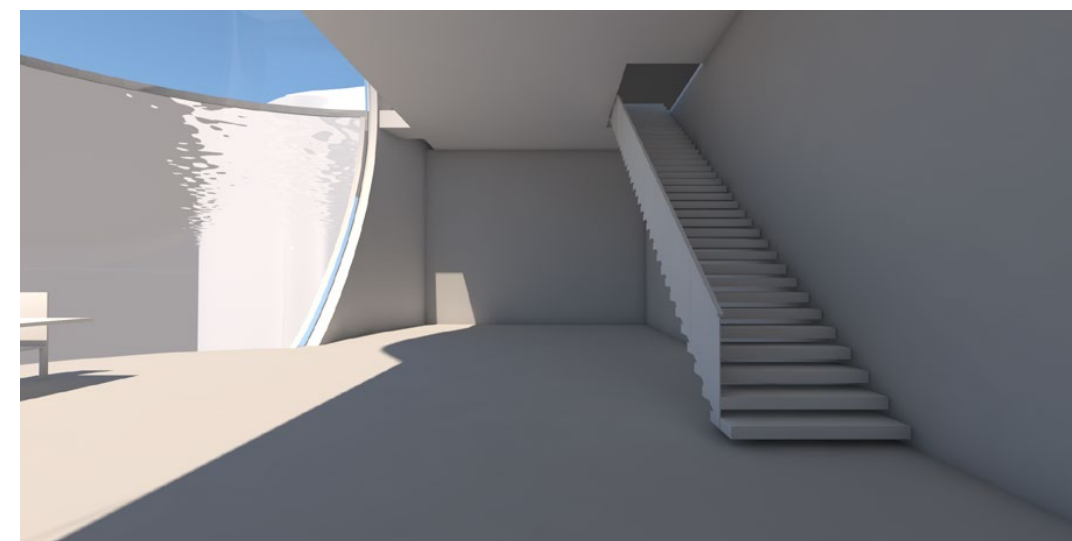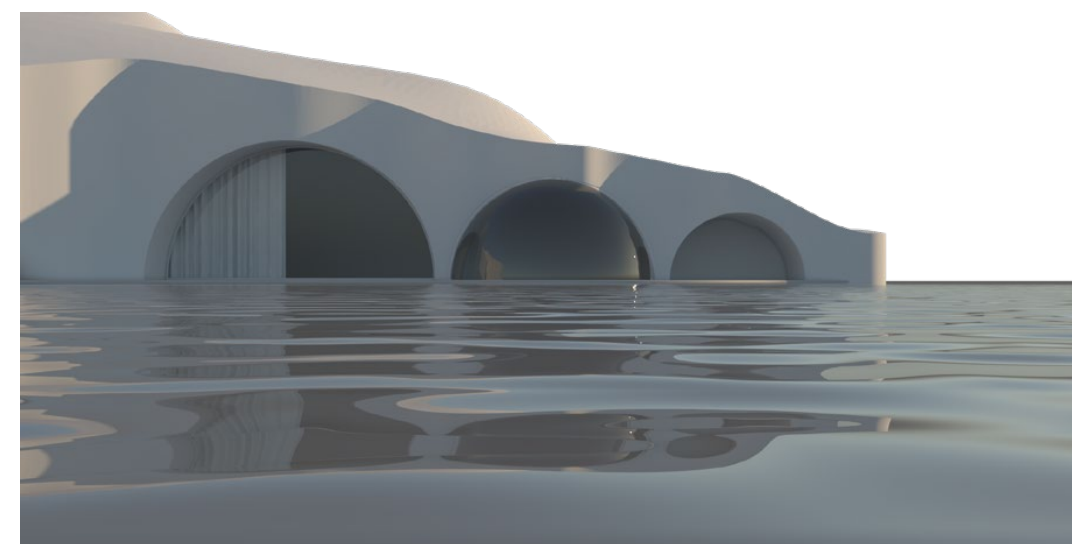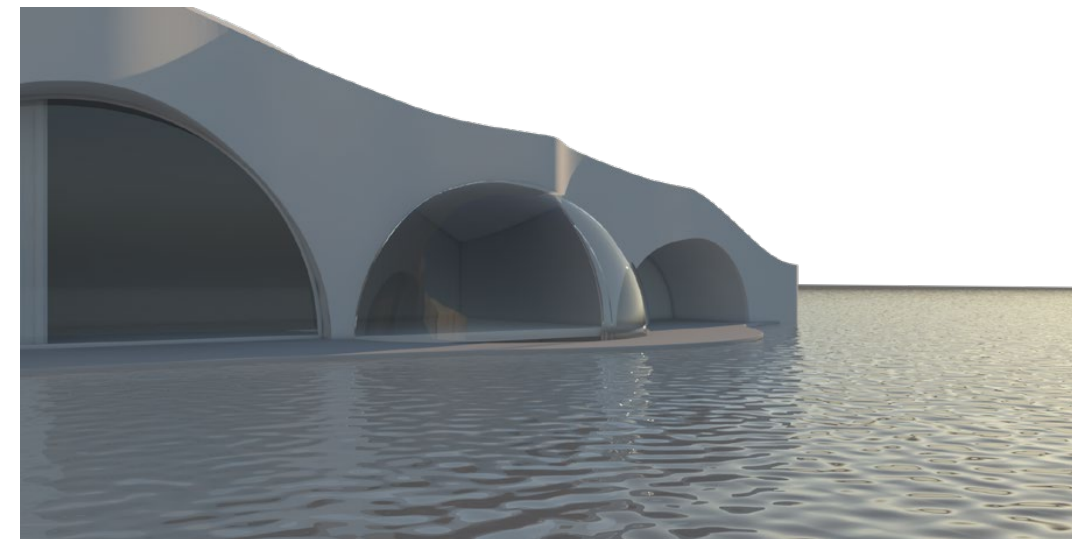
# Techniques of The Ultrareal

Fall 2019

Instructors: Phillip Crupi & Joseph Brennan
TA: Julia Marie Gielen

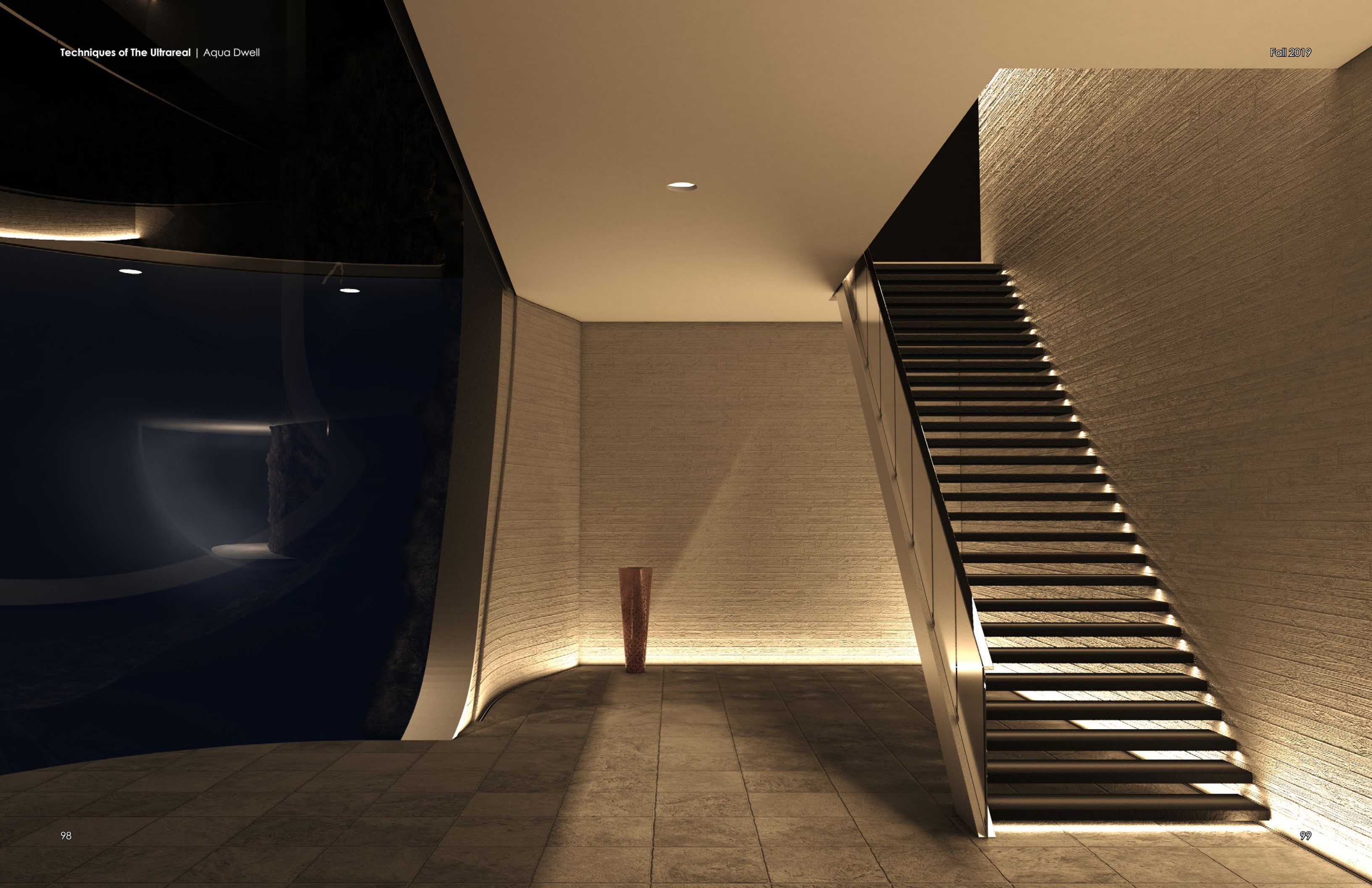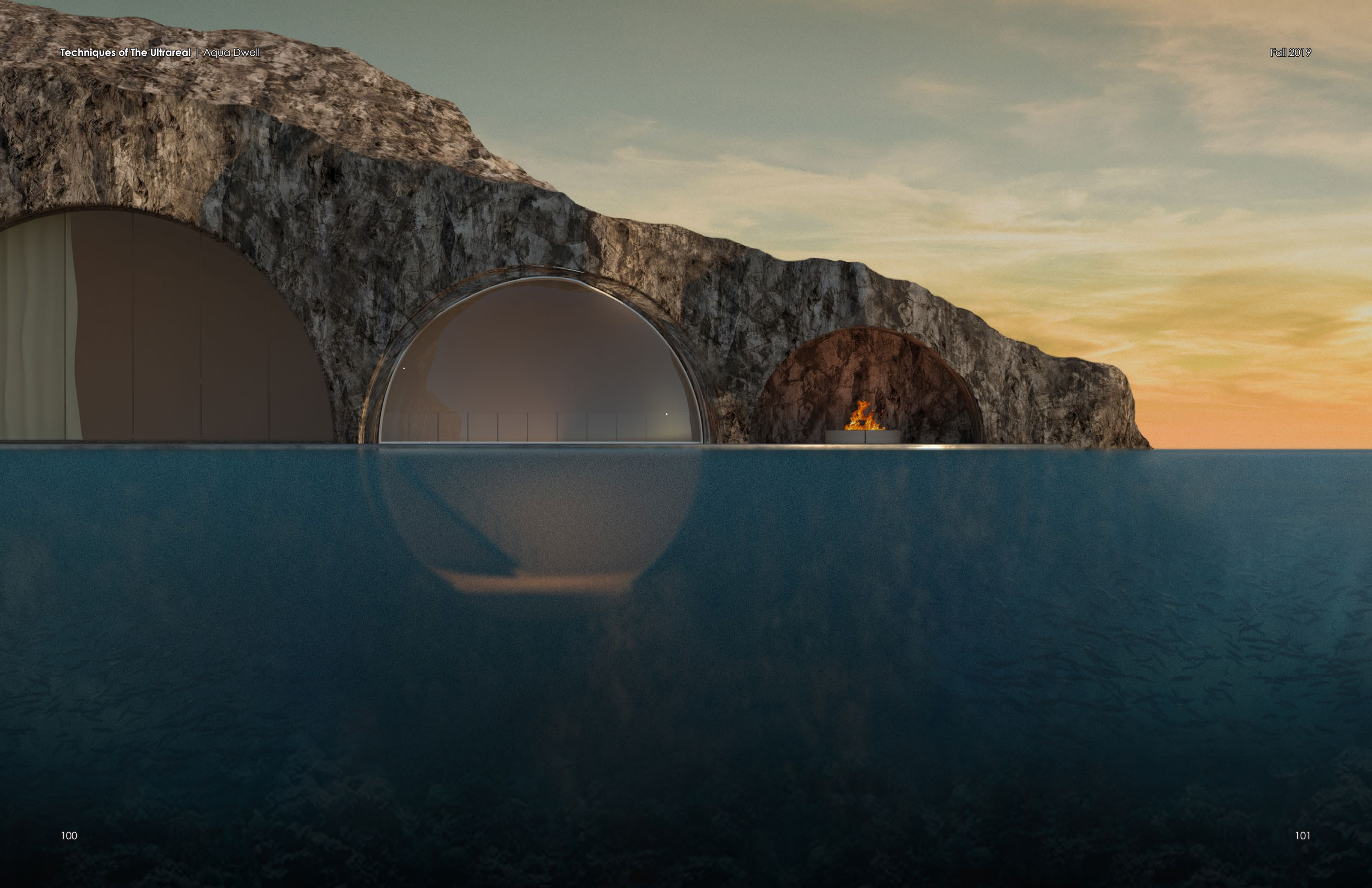Group Members: Arvin Mirzakhanian
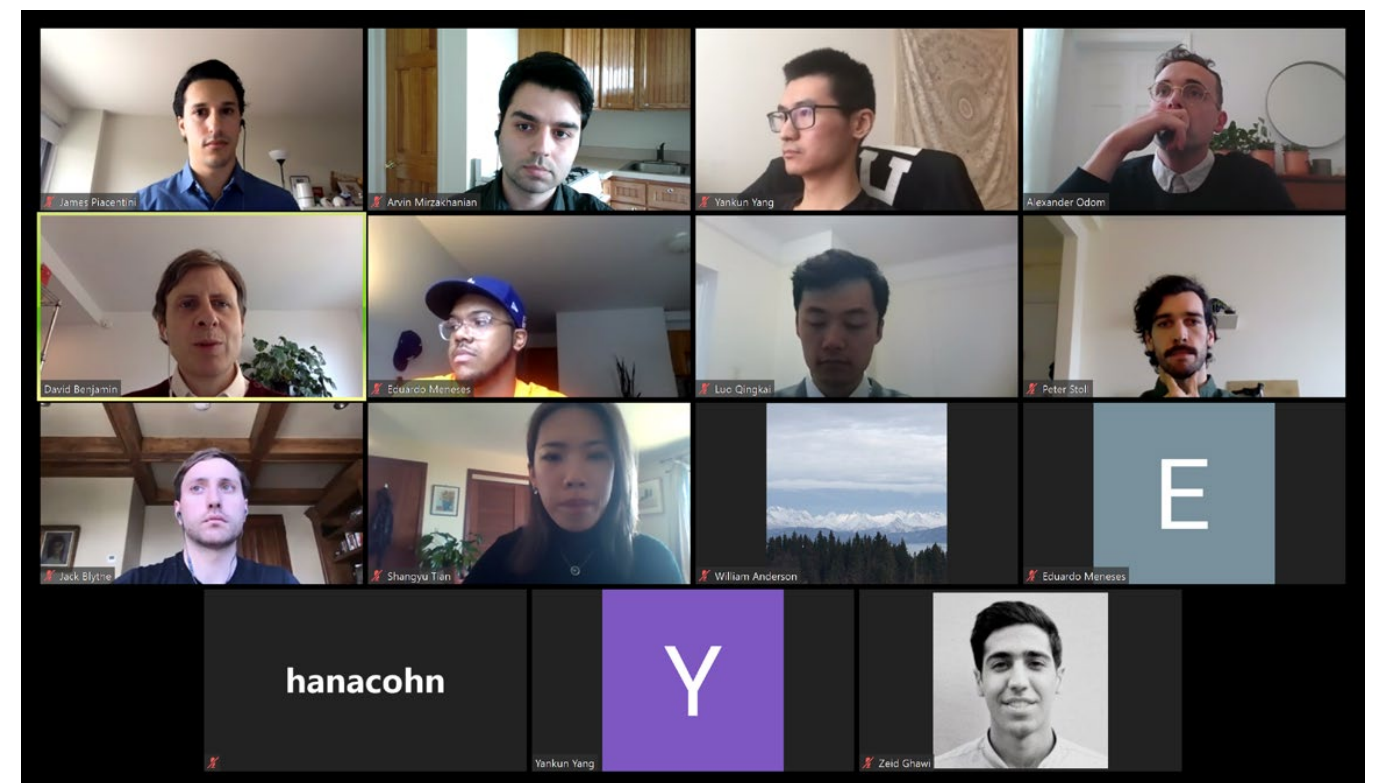Ambra Gadda
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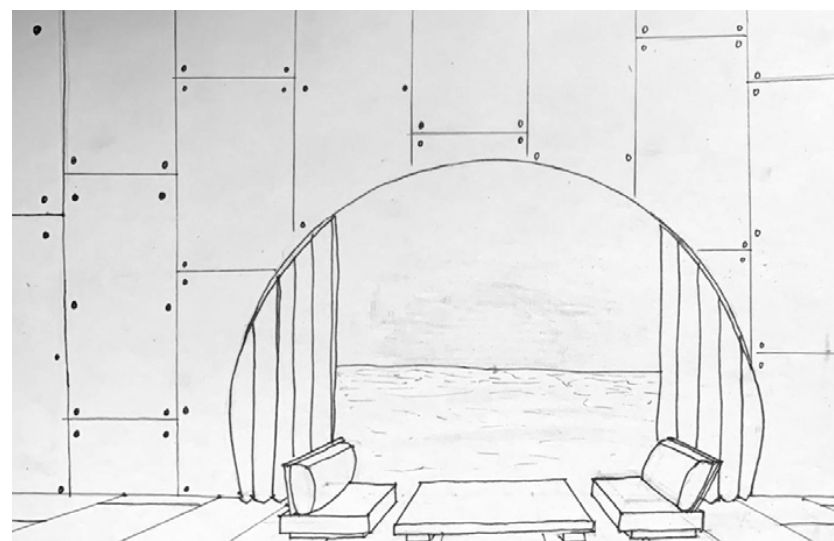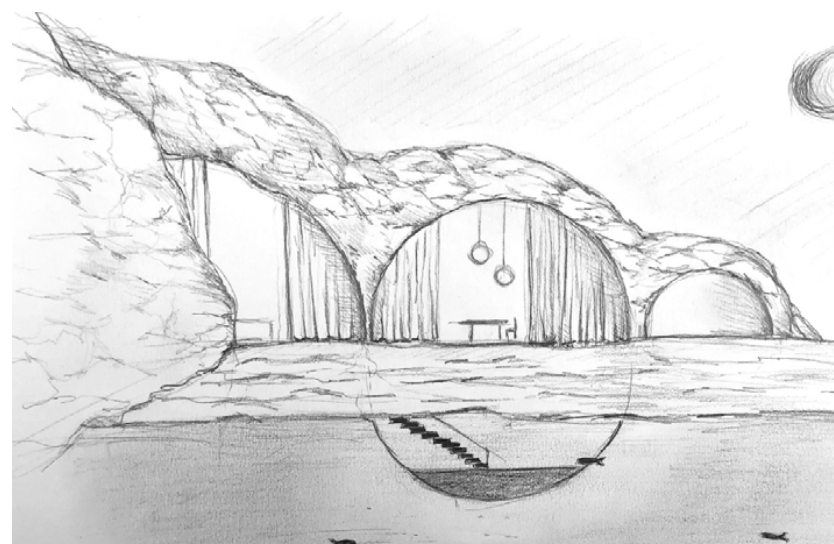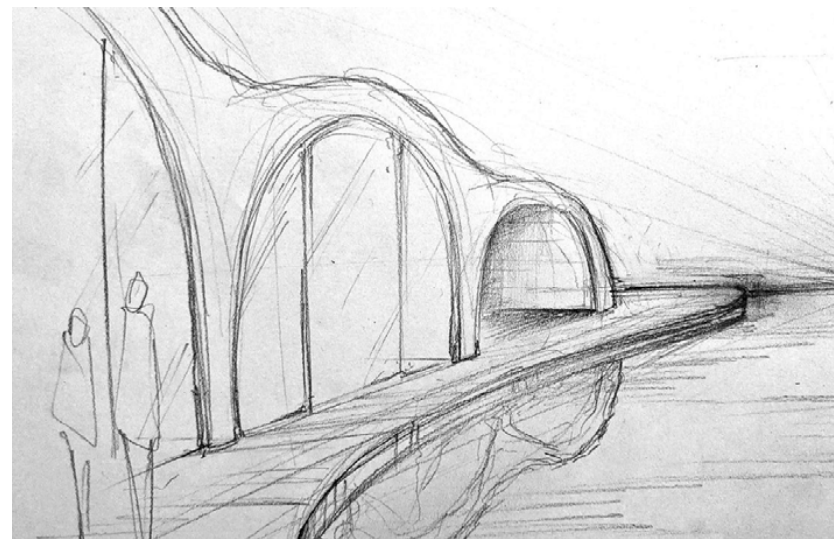
Preliminary Sketches







Preliminary Renders

**Advanced Studio VI**
Spring 2020

Critic: David Benjamin
TA: Alexander Van Odom

**Forest-to-City |** Architecture as Open System

By 2050, global population will grow from 7 billion to 10 billion. This will require the construction of 13,000 buildings every day for the next 30 years. And of the 20 largest cities in 2050, 15 of them have yet to be built.

Buildings contribute about 40% of global carbon emissions, and concrete alone makes up about 8%. Yet by many accounts, there is not enough sand of the right type to make even the concrete foundations for all of the buildings of the next 30 years. In other words, it is impossible to think about the climate crisis without thinking about architecture, without thinking about materials, and without thinking about scale.

It's tempting to look to single changes to fix the problem (technologies like carbon capture, or new ways of making concrete, or low cost solar and wind power, or even lifestyle shifts). But science indicates that a single fix is impossible. Instead we need a range of different climate stabilization wedges. And more fundamentally, single technology fixes and climate stabilization wedges should not be developed in isolation, because they may have unintended consequences.
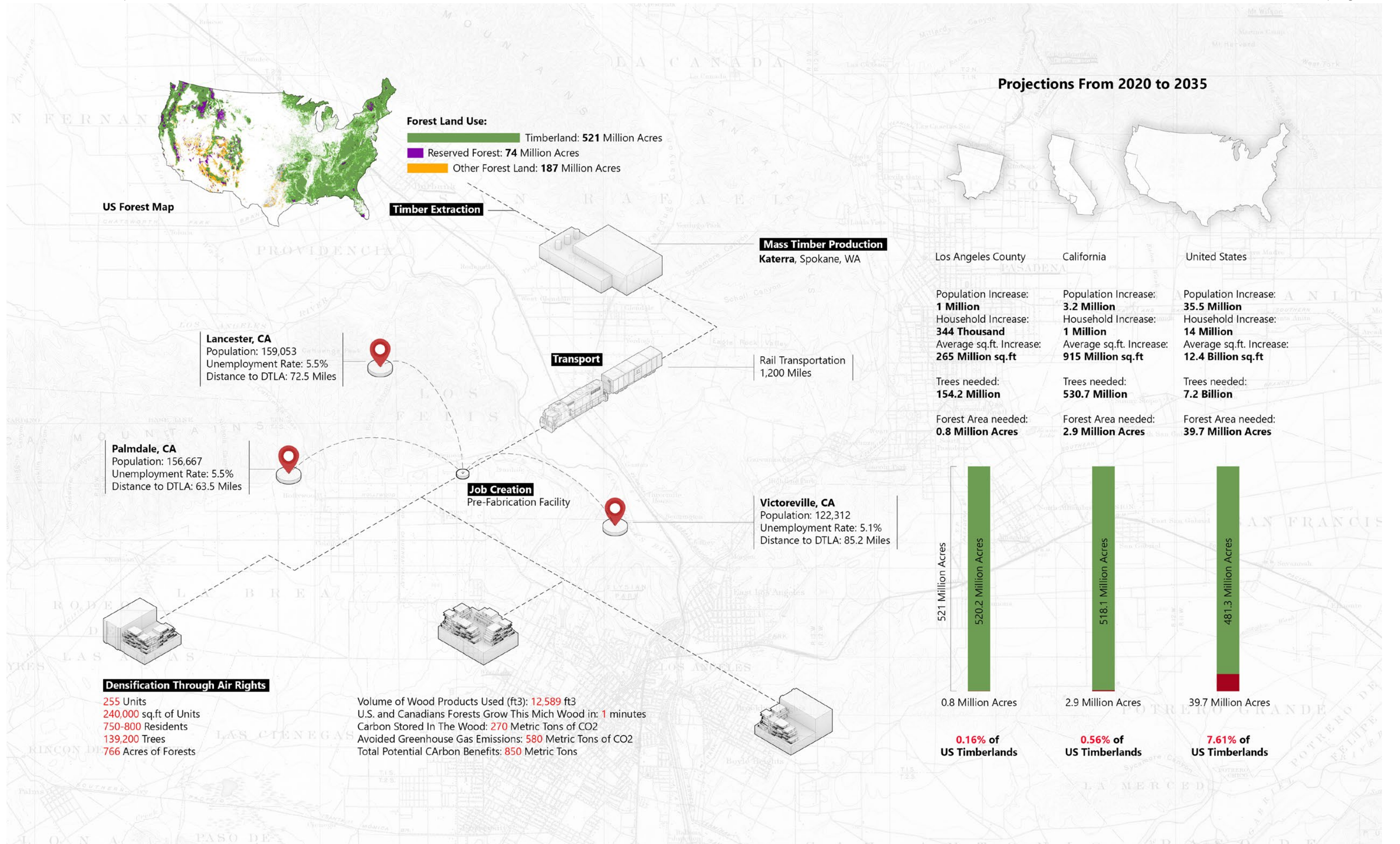
So instead of designing single technology fixes, what is more likely to address the problem is designing new systems. In other words, the design of single solitary buildings is insufficient in the context of the climate crisis. But there may be new possibilities in designing architecture as an open system.

David Benjamin

# Parallel Densification

Urban densification through overbuilding is a cost-reduction strategy for imminent population growth in metropolitan areas which will decipher the concealed potentials of the underutilized territories. This approach eliminates land purchase cost and reserves more resources to accommodate further dwellers. Adoption of mass timber for the development procedure reduces the total weight; thus, a more versatile and light project on top. Moreover, mass timber's carbon sequestration capability is an adequate apparatus for encountering climate change challenges.

**US Forest Map**

**Forest Land Use:**

Timberland: **521** Million Acres
Reserved Forest: **74** Million Acres
Other Forest Land: **187** Million Acres

**Timber Extraction**

**Mass Timber Production**
**Katerra**, Spokane, WA

**Lancester, CA**
Population: 159,053
Unemployment Rate: 5.5%
Distance to DTLA: 72.5 Miles

**Transport**
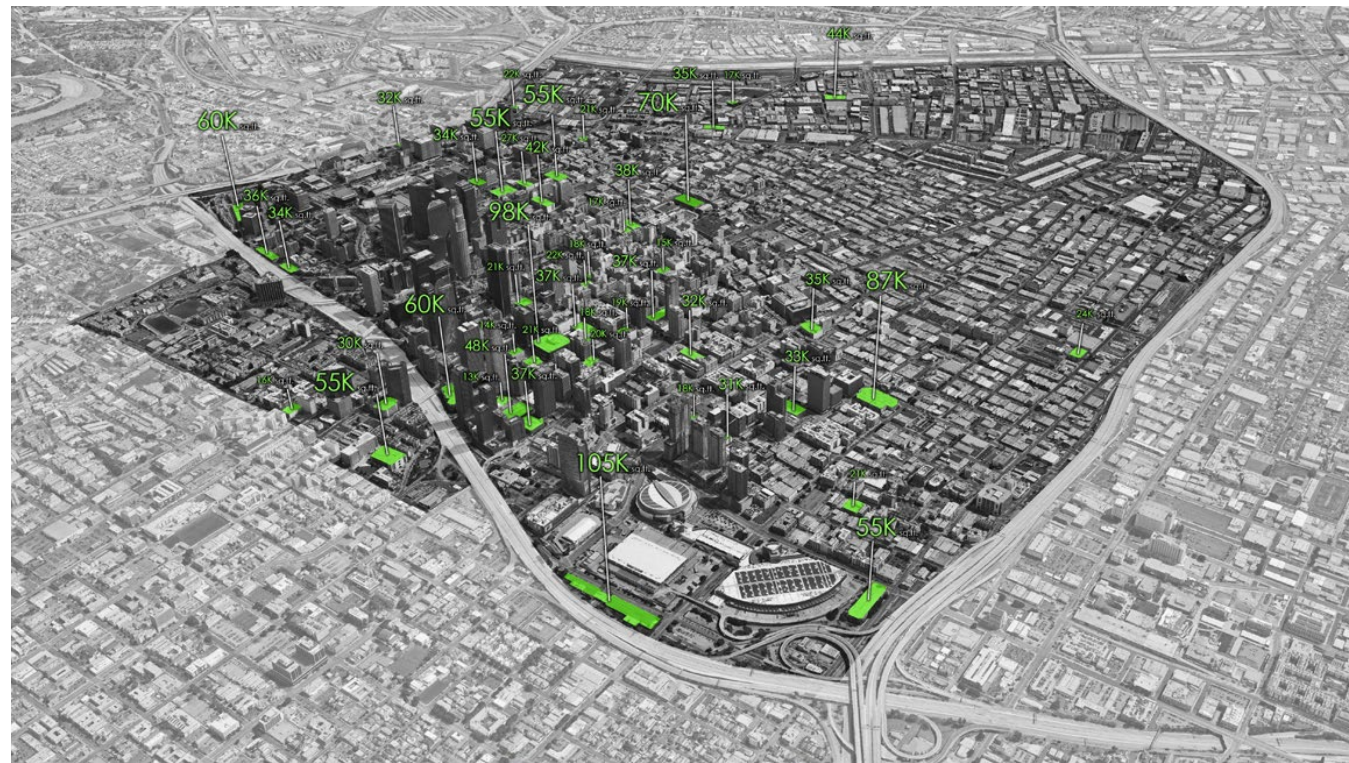
Rail Transportation
1,200 Miles

**Palmdale, CA**
Population: 156,667
Unemployment Rate: 5.5%
Distance to DTLA: 63.5 Miles

**Job Creation**
Pre-Fabrication Facility

**Victoreville, CA**
Population: 122,312
Unemployment Rate: 5.1%
Distance to DTLA: 85.2 Miles

**Densification Through Air Rights**

255 Units
240,000 sq.ft of Units
750-800 Residents
139,200 Trees
766 Acres of Forests

Volume of Wood Products Used (ft3): 12,589 ft3
U.S. and Canadians Forests Grow This Mich Wood in: 1 minutes
Carbon Stored In The Wood: 270 Metric Tons of $CO_2$
Avoided Greenhouse Gas Emissions: 580 Metric Tons of $CO_2$
Total Potential CArbon Benefits: 850 Metric Tons

**Projections From 2020 to 2035**

| Los Angeles County | California | United States |
|---|---|---|
| Population Increase: **1 Million** | Population Increase: **3.2 Million** | Population Increase: **35.5 Million** |
| Household Increase: **344 Thousand** | Household Increase: **1 Million** | Household Increase: **14 Million** |
| Average sq.ft. Increase: **265 Million sq.ft** | Average sq.ft. Increase: **915 Million sq.ft** | Average sq.ft. Increase: **12.4 Billion sq.ft** |
| Trees needed: **154.2 Million** | Trees needed: **530.7 Million** | Trees needed: **7.2 Billion** |
| Forest Area needed: **0.8 Million Acres** | Forest Area needed: **2.9 Million Acres** | Forest Area needed: **39.7 Million Acres** |

521 Million Acres

520.2 Million Acres

518.1 Million Acres

481.3 Million Acres

0.8 Million Acres

2.9 Million Acres

39.7 Million Acres

**0.16%** of
**US Timberlands**

**0.56%** of
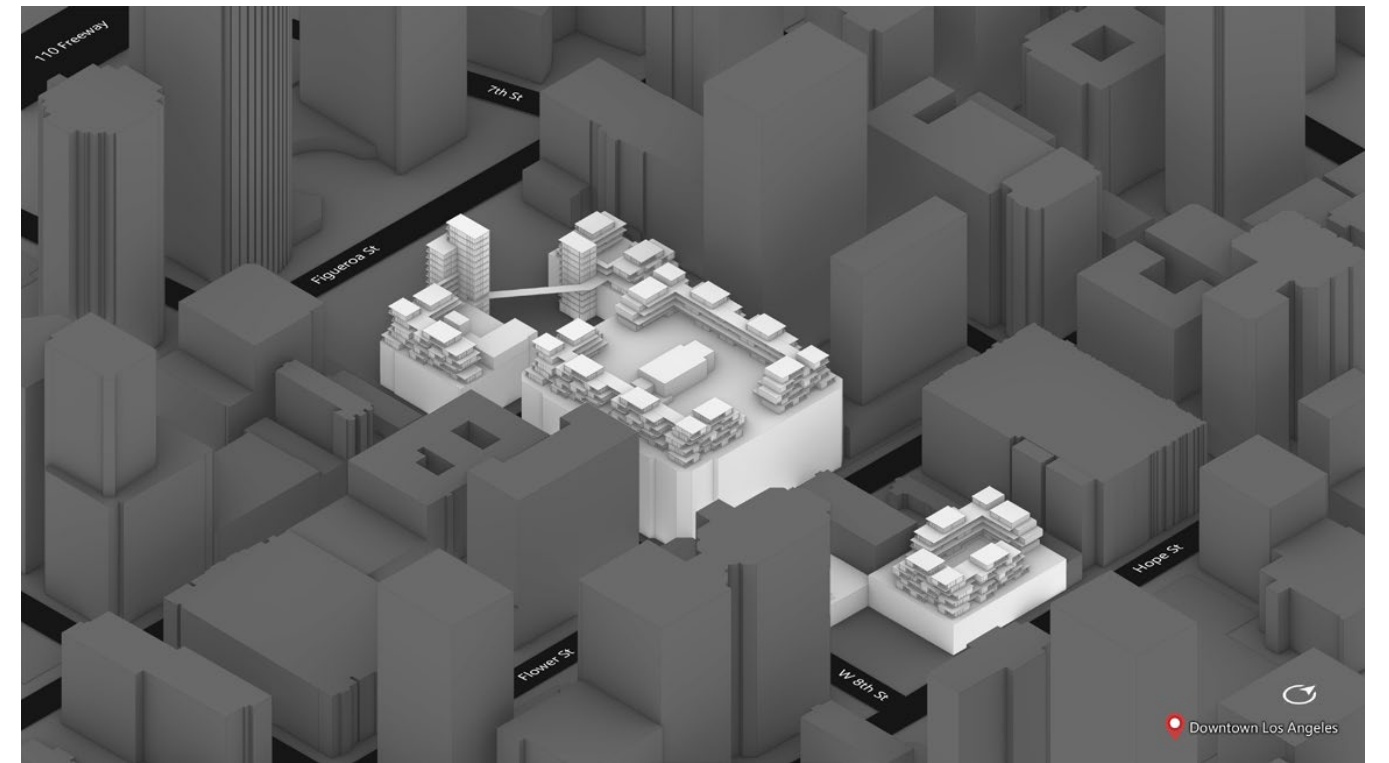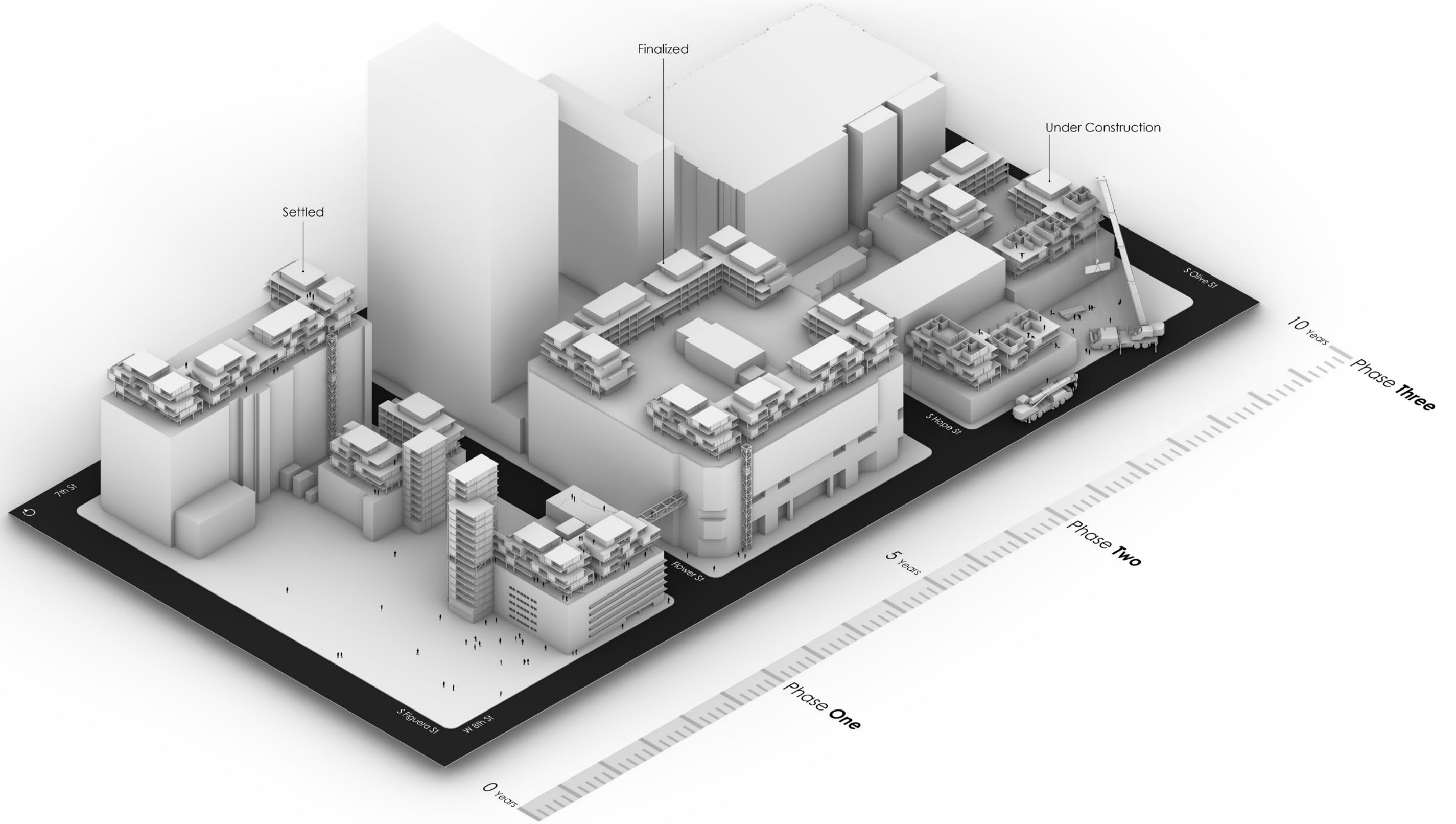**US Timberlands**

**7.61%** of
**US Timberlands**

Mass Timber Transportation by Rail
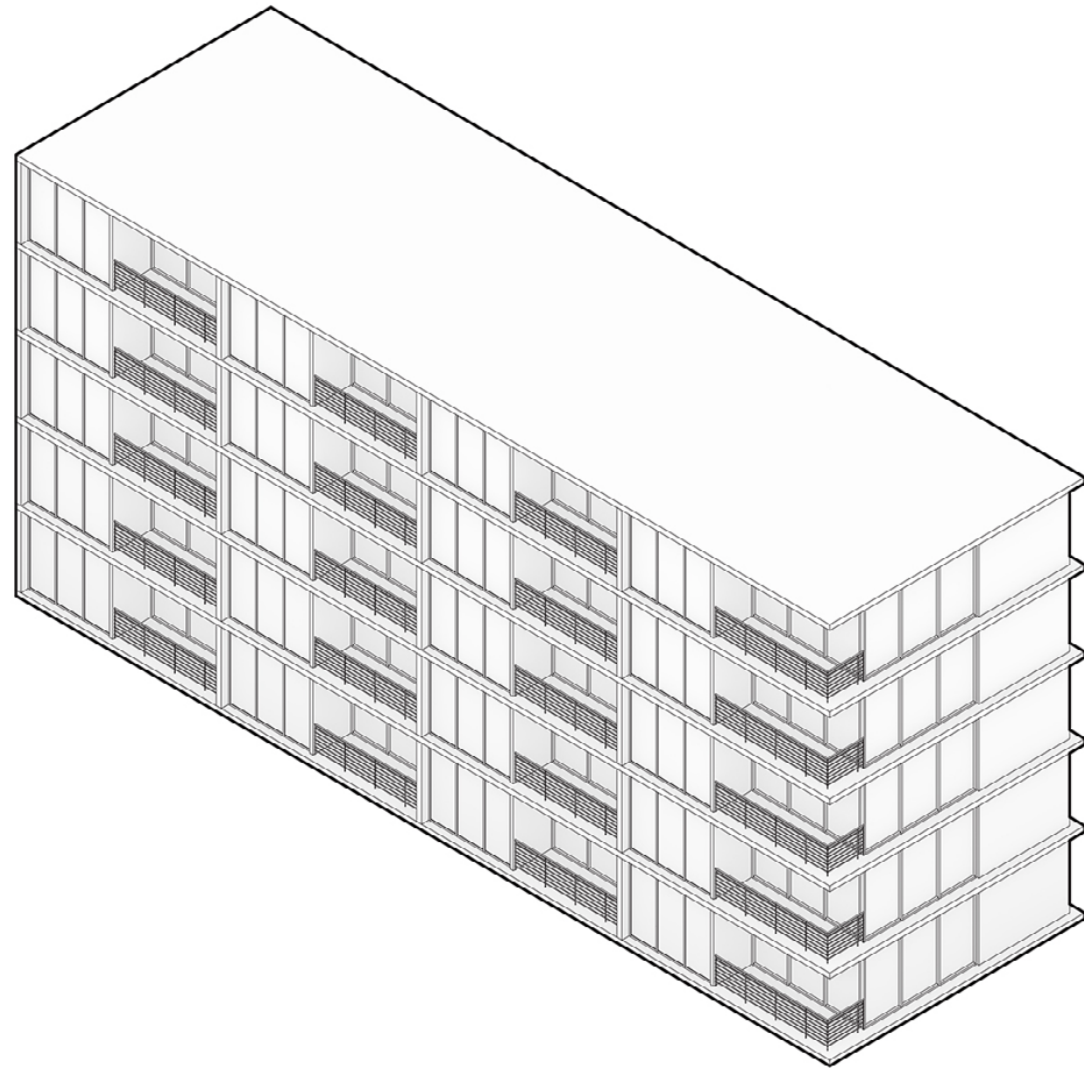


Pre-Fabrication Facility for Job Creation

Available Parking Structure Roof Surfaces



Project's Location
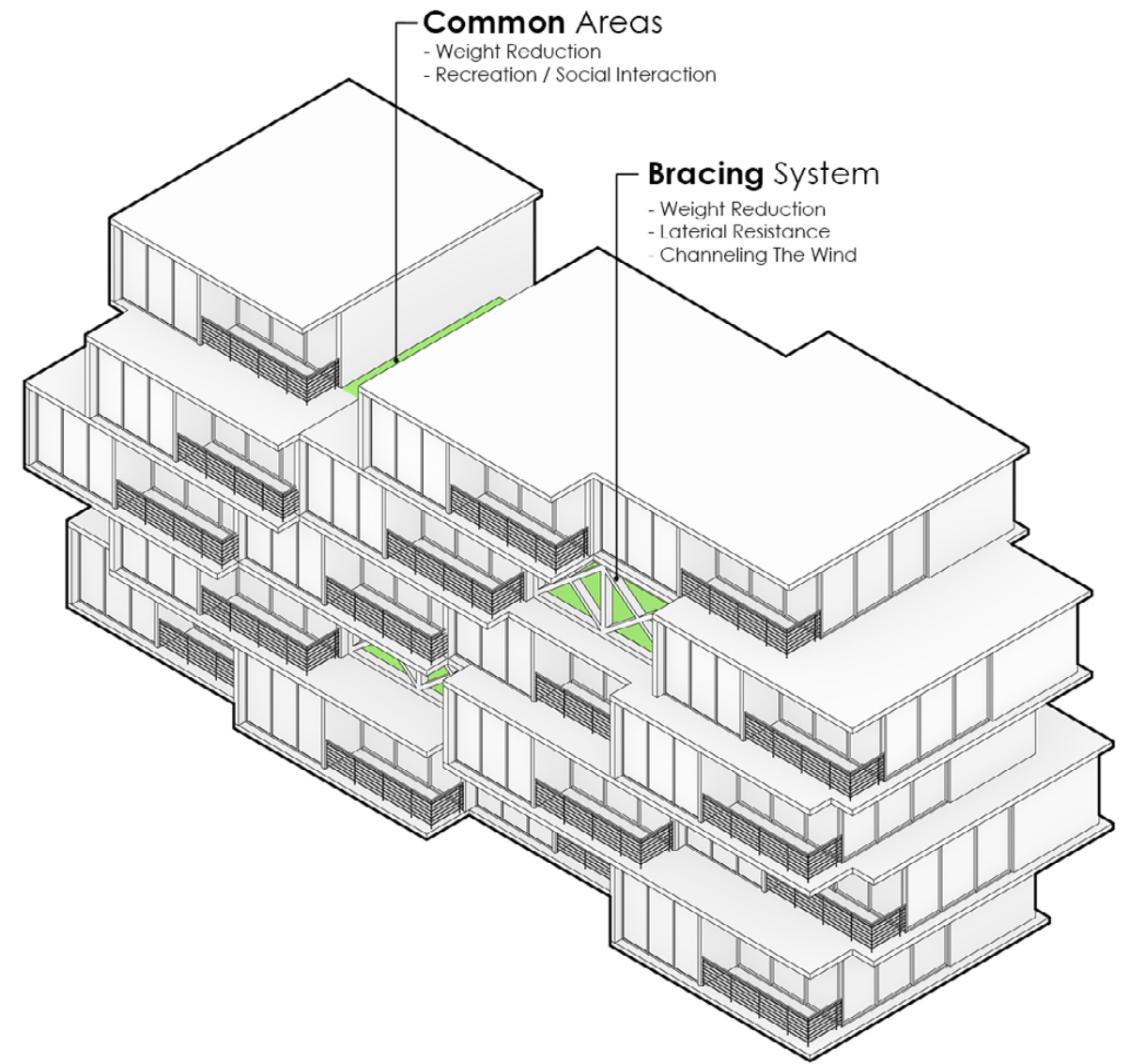
Finalized

Under Construction

Settled

S Olive St

S Hope St

7th St

Flower St

S Figueroa St

W 8th St

0 Years

5 Years

10 Years

Phase **One**

Phase **Two**

Phase **Three**

**Common** Areas
- Weight Reduction
- Recreation / Social Interaction

**Bracing** System
- Weight Reduction
- Lateral Resistance
- Channeling The Wind

**Conventional** Configuration

**Proposed** Configuration
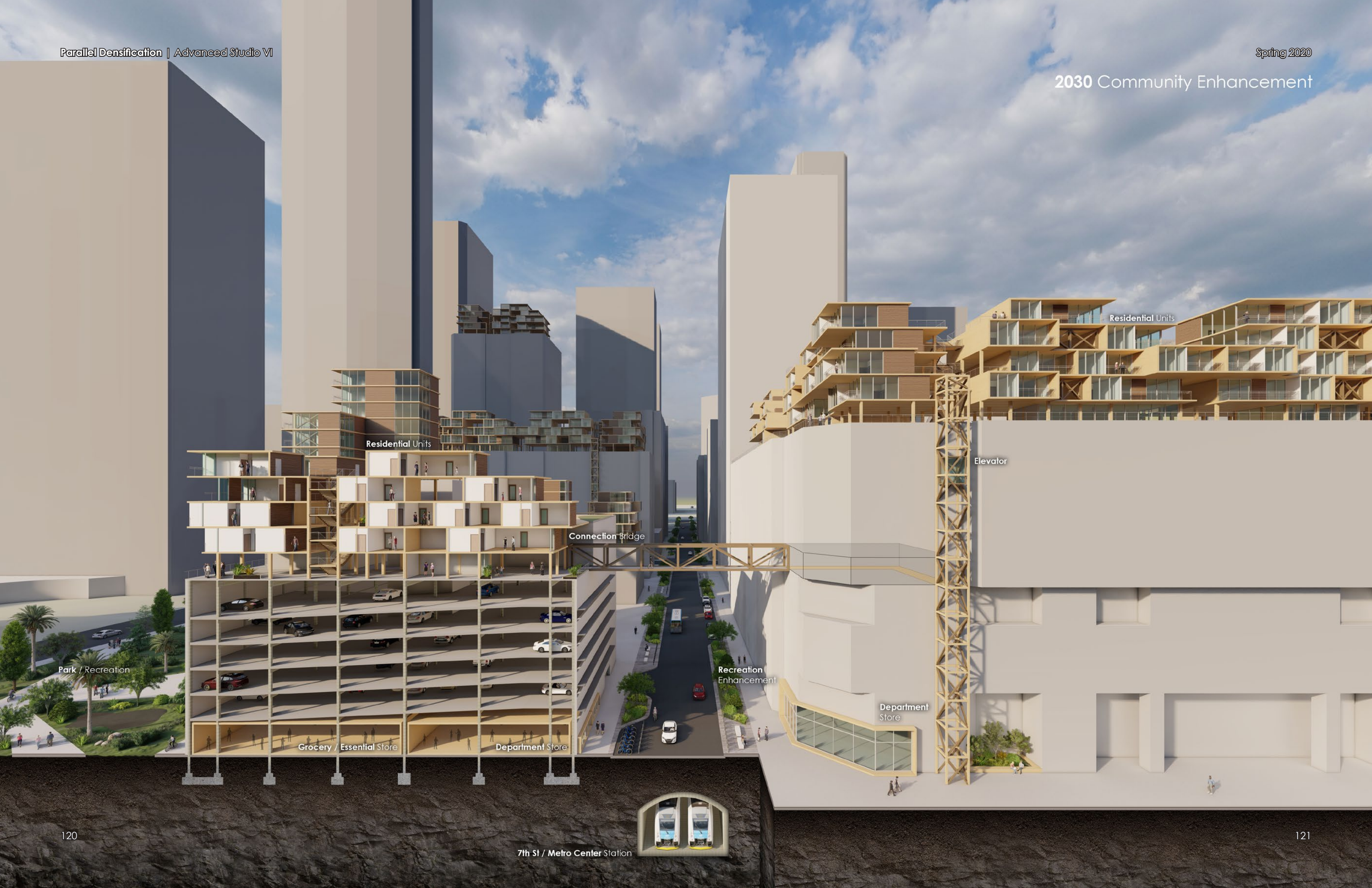
Residential Units

Residential Units

Connected Community

Elevator

Working Professionals
Local Residents

Parking Lot

Parking Structure
Host Building

3 minute walk from
Metro Station

Local Resident

Working Professional
Local Resident

Residential Units

Residential Units

Elevator

Connection Bridge

Parking Lot

Parking Structure

**7th St / Metro Center** Station

**2030** Community Enhancement

Residential Units

Residential Units

Elevator

Connection Bridge

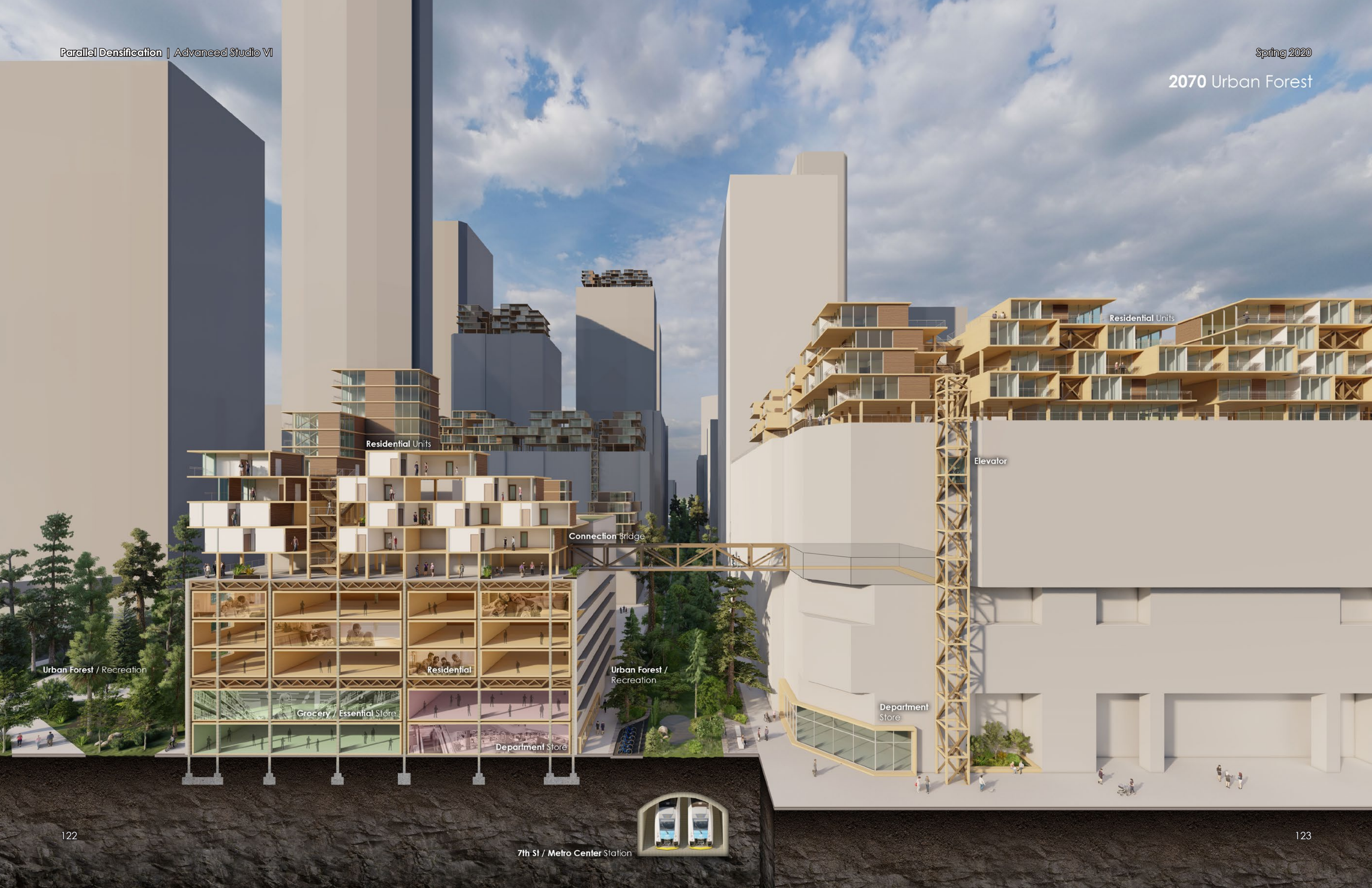Park / Recreation

Recreation
Enhancement

Department
Store

Grocery / Essential Store

Department Store

7th St / Metro Center Station

Residential Units

Residential Units

Elevator

Connection Bridge

Residential

Urban Forest / Recreation

Urban Forest / Recreation

Department Store

Grocery / Essential Store

Department Store

**7th St / Metro Center** Station

Connection Bridge

Residental

Residental

Urban Forest

Carbon Sink

Carbon Sink

# Architectural Daylighting
Spring 2020
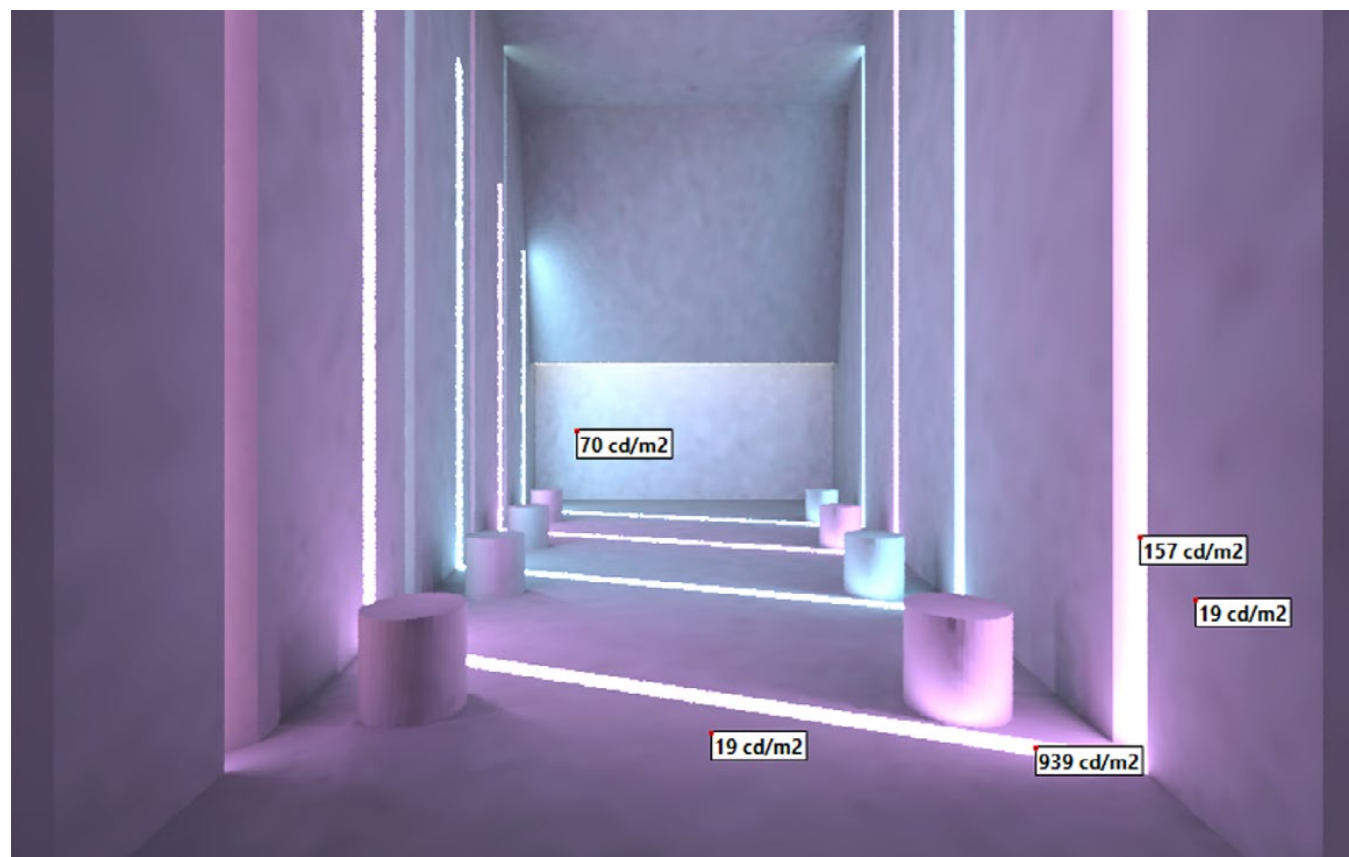
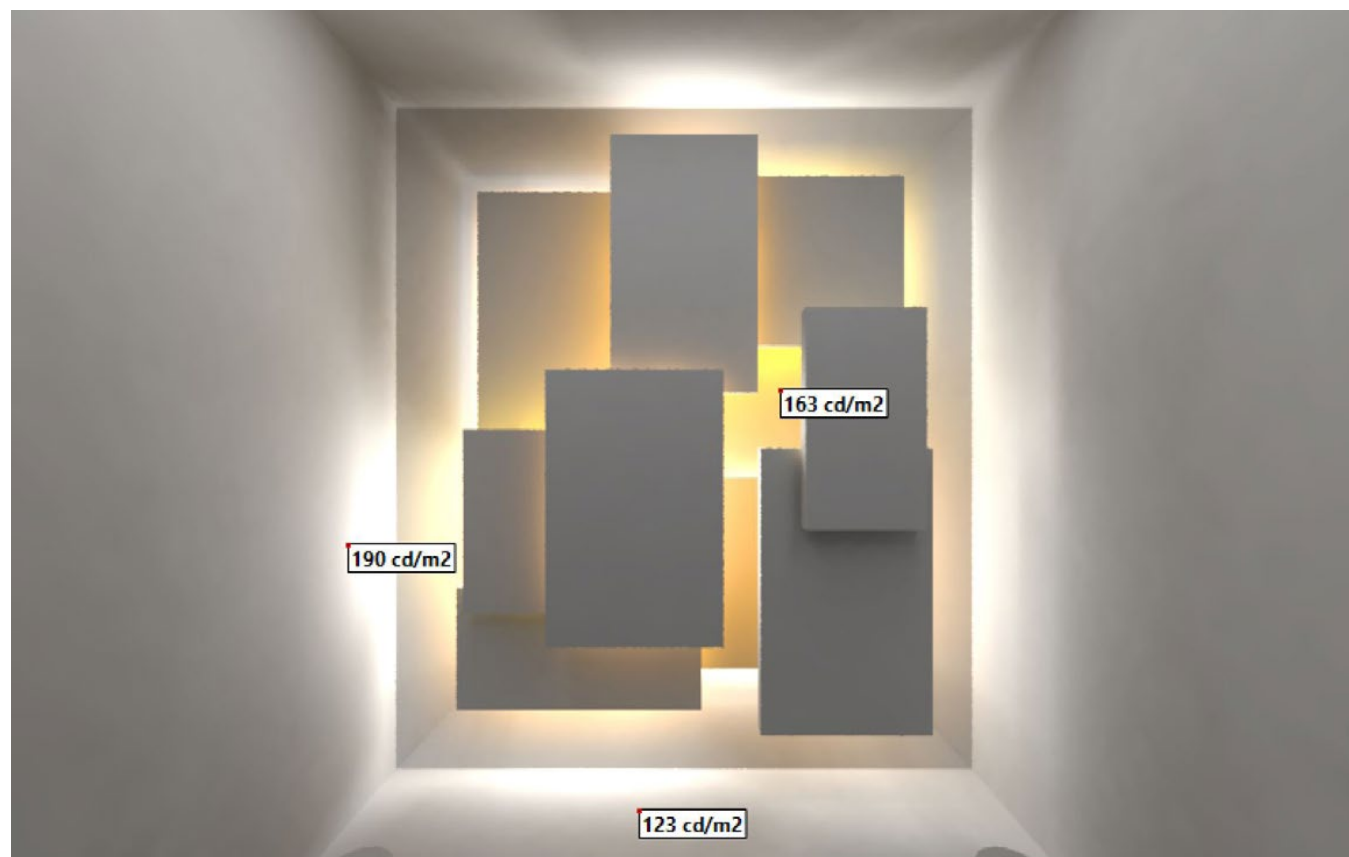Instructor: Davidson Norris

## Light Refuge Daylighting Strategies



3610 cd/m2
235 cd/m2
593 cd/m2
92 cd/m2
99 cd/m2

Atmospheric Silence



100 cd/m2
57 cd/m2
97 cd/m2
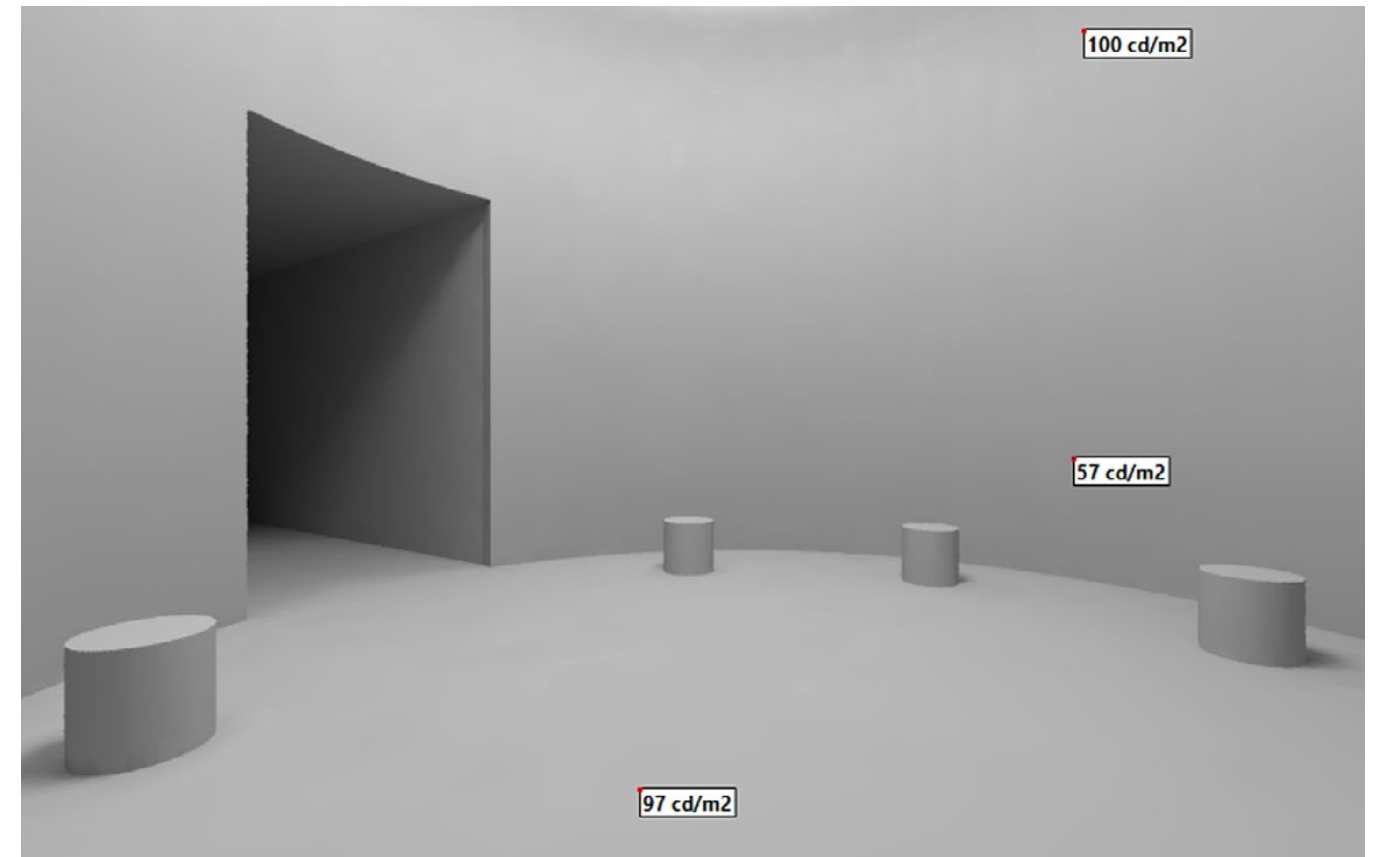
Atmospheric Silence

Evanescence



Evanescence

Luminescence



Luminescence

442 cd/m2

463 cd/m2

322 cd/m2

505 cd/m2

81 cd/m2

Canalization



605 cd/m2

255 cd/m2

496 cd/m2

81 cd/m2
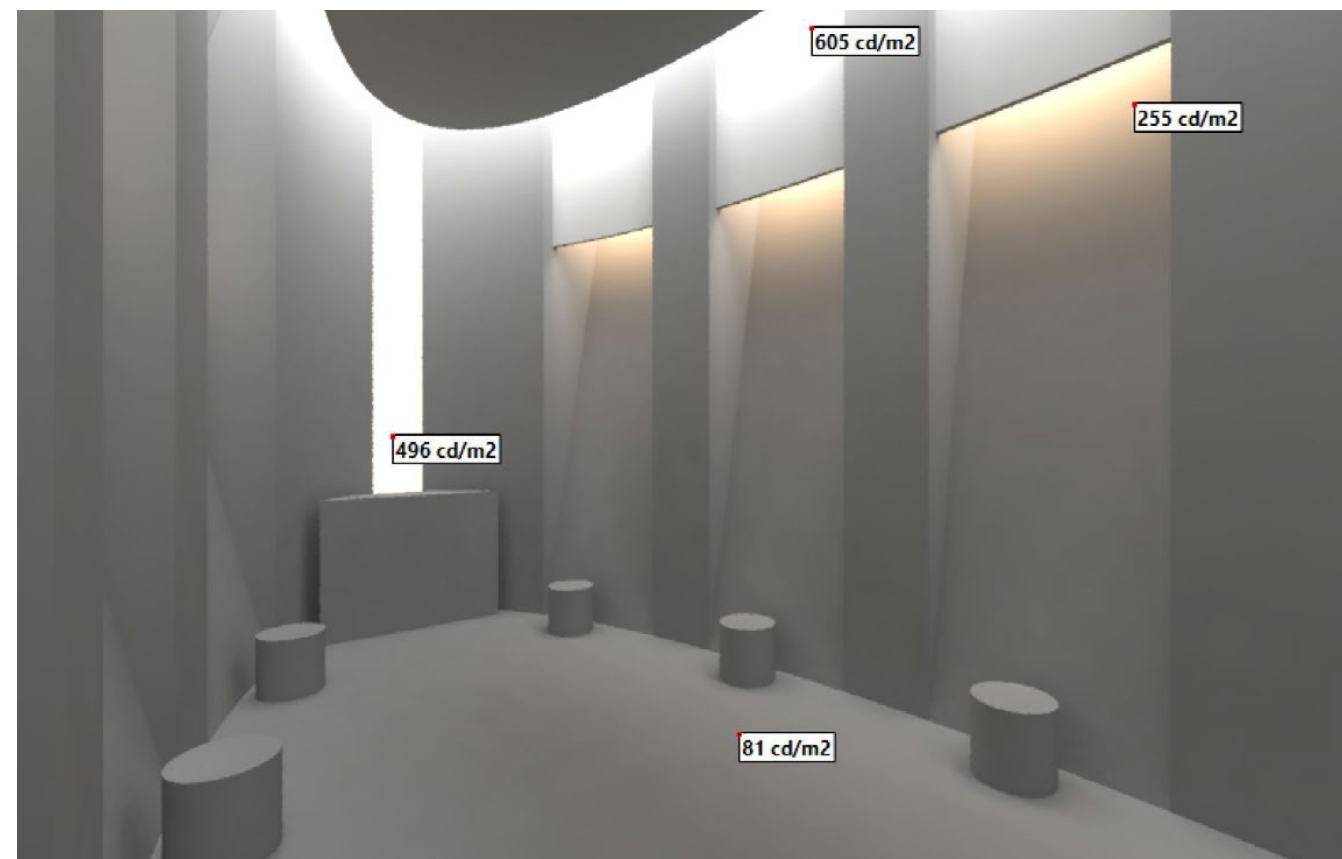
Canalization

# Architectural Photography
Spring 2020

Instructor: Michael Vahrenwald