Misalignment and Disposition

Architecture's potential revealing by everydayness

Zhongyuan Liu
December 2021

Master of Science - Advanced Architectural Design

Cornell University
College of Architecture, Art and Planning

ACKNOWLEDGMENTS

I want to thank all my professors who supported my study in the past challenging year. I have felt endless love and care in Cornell University following the faith "Any person, any study." These past three semesters divided in Beijing, Ithaca, and New York would be the most precious moment of my life, giving me the courage to pursuit architecture and whatever unknowns in the future of life.

Zhongyuan Liu
December 2021

There will be two sections to this book. The first section focuses on the relationship between architecture and its surroundings. Architecture is a field that lies between engineering and art, combining diverse aspects such as social philosophy, policy, and capitalism. The relevant surroundings and demands at the time of design are reflected in architecture. Architecture may become out-dated or fail to meet all requirements in the long run. This deviation from design and intricate surroundings is referred to as misalignment in this work. How do these misalignments occur? Is it possible to be avoided or predicted? This essay will present many misalignments, investigate the reasons for them, and examine these misalignments in a non-architectural context.

The second section includes design projects and research that corre-sponds to the misalignment in architecture. There are four different stages. The degree of architecture involvement is getting stronger in these four stages while they are all revealing different strategies when architecture dealing with different misalignments.1. Architecture as a measurement 2. Architecture as a mediated framework 3. Architecture as a building technology 4. Architecture as a self-'misalignment'

Abstract

Misalignment, or lack of perfect fit, happens within every part of life and events; therefore, architects cannot create perfect designs that satisfy all requirements simultaneously and indefinitely. The more complex the situation and the larger the number of relationships involved, the more misalignments may occur. Also, when there are such misalignments, some of the secondary design strategies may become evident, i.e., if there is misalignment, there could be a "disposition" implying an unfolding relationship, an oriented tendency, and a set of developing possibilities that are temporarily blocked by other dominant factors. The sense of the word 'disposition' here is adopted from Keller Easterling's Active Form and is taken to represent potential tendencies and 'a conditioning substrate' that is used as a guide to developing architecture and infrastructure. This concept will be discussed in this document, and examples provided.

Architectural design is how architects fulfill their subjective intentions and ideas about form and aesthetics into an existing built environment, during which misalignments will always occur. Easterling talks about the disposition of infrastructure in her book 'Extrastatecraft,' illustrating how the actual location of infrastructure causes and influences the resulting design process to be adjusted and reconsidered. While infrastructure seems the most logical and rational building type to make this argument for, other building types and designs could also contribute even more complicated and productive misalignments. For example, we could find misalignments through the relationship of existing buildings and urban fabrics to abandoned infrastructure, decaying neighborhoods, and graffiti statues.

In short, observing and recognizing misalignment is a prerequisite to start using misalignment as a productive design strategy.

Observation of misalignment: the everydayness

The city we live in, the street we walk, and the building we pass by every day is the apparent physical sample for us to drift and feel, during which we immerse ourselves into one and another situation without noticing it. The most of time, we take the daily routine and environment of our life for granted. Moreover, only when some awkward phenomenon deviates from daily norms can we realize that the physical environment and facility are not preset at the beginning. The disappearing scaffolds in the street corner make us realize they used to exist; the waiting ships outside Los Angeles harbor make us realize how many containers and trucks we need for the supply chain. People are used to taking existing technology as default, while misalignment and hiding factors can only be seen through a period's observation.

Misalignment will be revealed through these awkward, non-daily events. However, to observe and acknowledge such strange mutation, architects must first have a frame of reference, knowing how many behaviors and events architecture needs to undertake. Architects also require being immersed in everydayness and time, measuring the slight difference in different situations. The 'Modernology' and' Street Observation Society,' started by Terunobu Fujimori in 1974, had exposed numerous abandoned building fragments and informal buildings in Japan's Urban environment. Until now, Atelier Bow-Wow is still using a similar methodology to document and use misalignment in the design practice. Specific methods could be various, but the point is to recognize everydayness as an indispensable resource to refer to.

Dominance behind misalignment and its disposition

Misalignment, like its spelling, contains a motion of inappropriate placing. It often occurs between conceptual definition versus reality, top-down urban planning versus the bottom-up neighborhood lives, and existing technical methods versus emerging needs. Sometimes, architecture-related misalignment is the cooperation failure of more than two participants, reflecting dynamic and changing external environment. Although the emergence of misalignment indicated the dislocation of resources and facts, different causes behind misalignment will lead it into different directions and have a different 'disposition' to unfold. The following categorization is several potential causes for misalignment with examples.

1. Technology: It seems to be the most practical anchor point people could rely on, but technology may include path dependence and further enhance misalignment without people noticing.

The paper size: The international paper size is developed with a ratio aspect of √2 so that contents can be scaled in different paper sizes without distortion. Although North American uses Letter size and Tabloid, they are still obeying the same rule. In this way, our daily writing and drawing scale is regulated by paper size. The scale of elevation and plan is also limited by it to accommodate the size of presentation boards. Even in software like Photoshop and illustrator, people still use paper size as a reference for digital drawing. The disposition to develop might be a no-limitation system to print and present.

The shipping container: Standardized 8 feet wide container has reshaped the size and standard of cargo and railway in many countries. It has also become a default requirement for product transportation, whether it is a prefabricated building fragment or a piece of Mechanical component.

2.Political/ideology: It provides a background and rationality for many big-scale and monumental projects and planning. It also might be unstable because of the fragile regime and policy. Misalignment could always happen as polarized propaganda. This kind of misalignment could maintain while the government still rules strongly. However, it will also be dangerous when it falls apart.

Beijing: As the capital of China, Beijing had been through many manipulations by generations of government. In the Qing Dynasty, Beijing was divided into two parts while one was for nobles another one was for common people. Commercial streets were also shifted for this segregation. The current government, in one way, broke down former feudal segregation by 100feet wide boulevard. In another way, it also built up high buildings along the boulevard as a symbol of governance and order. Many historical buildings had been demolished and then rebuilt. Misalignment of resources and capital occurred each time the upper level changed the planning. It is a real arena for ideology and policy. Informal installation is very common in Beijing as a mediator and repair between communist/modern high rise living modes between traditional Chinese daily life. That informal installation is the disposition developing towards the endless misalignment of ideology over people's daily life.

3. Capitalism: Capitalism may be the most powerful and efficient tool to coordinate resources worldwide. Under the big word capitalism, numerous subsequence systems pursue maximum profit. Most of the time, risk can already tell the inherent misalignment and accident. Nevertheless, the misalignment of capitalism would be more apparent during some dramatic time and situation.

Fresh food: The storage, transportation, and transportation for fresh food like milk have been shaped by capitalism to an efficient production line. When people could not purchase and consume milk like they used to, milk farms had to pour all the milk into waste rather than deliver or storage it since it would

cost more. A more serious situation also happened for the flour during the pandemic. The flour itself was sufficient, but the packaging material was running out. Distributors have no way to package and sell it. The same situations are still happening in the Global Supply Chain now.

There are more factors dominating misalignment like aesthetic, ecology, and regional difference, etc. Architects could unfold misalignment's disposition when familiar with these complicated factors.

1. Architecture as an observing measurement to reveal the existing misalignment

Definition, as a tool defining and regulating objects for discussion, is the first step in engaging with objective reality. Many architectural operations follow abstract definitions like 'heritage,' 'modernity,' and 'context' This process is the primary source for misalignment since all definitions might be biased. In the language system, similar nouns and words interweave each other to provide context and information in uncertainty and misunderstanding. However, when it comes to a physical environment, we often use a single word to define the object and topic we are about to involve. Whenever we use such a defined definition, we create some misalignment and deviation for the minority or enhancing stereotype.

To some extent, civil culture and human society that developed on abstract artificial definition and cognition is the most enormous scale misalignment we have made against nature. Trees lose parts of their identity when defined as timber and furniture. Water is no longer seen as part of the ocean when acknowledged as a food source. The actual physical environment, all the houses we live in, all the transportation we take, and all the digital equipment we use is the misalignment that we are redefining natural resources and turning them from mountains and rivers into an artificial standard. All this misalignment is a consequence of abstract definition.

Within this highest layer of misalignment, we created the word "heritage" to evaluate all the civilizations we had made. By this definition, artificial objects are divided into two categories: worth protecting or not. The riot and protest around the statue of Robert Lee in Richmond 2020 have shown us that

"heritage" can be a changeable and doubtful concept inside our society regardless of nature. Due to heritage classification, the protection and upcoming intervention will also be different.

In the book <Curated Decay>, Caitlin DeSilvey talks about how urban ruins can eliminate label identity and go through the decay process. This liberation of definition may help heritage keep from unnecessary preservation and help non-heritage from a wipeout. The Robert Lee statue may no longer be placed in the center of Monument Avenue, while graffiti above it may be valuable to document the protest. Heritage is only one example of how definition would affect our world. I want to achieve the following project: how to ignore stereotyped misalignment by definition and use architecture as a measurement to witness the value of objects before being defined. Architecture would only be a measurement in the Decay Evergreen Cemetery, while the extent of architecture involved in the misalignment will increase in the following four stages.

Decay Evergreen Cemetery

How human defined ruins turning back into undefined nature

In this project, I focus on an abandoned cemetery in Richmond, where used to be an important slave-trading center. The Evergreen Cemetery was first founded in 1896 for African American people. The cemetery start to desolate after its owner went bankrupt in 1949. My intention is to create some pavement overlapping pre-existing paths or crosses as a measurement of decay process without intervening it. The decay will continue while people can trace history on site. The architecture here is only an observer

Curated Decay

Owner company closed

1891

1949

1970s

1930s

1910y

1890s

1960s

1936

Families/Friends

Restoration   New volunteer group

Decay   Decay   ?

1970   1990   2000   2013   2020

1953   2008   2018

Nature
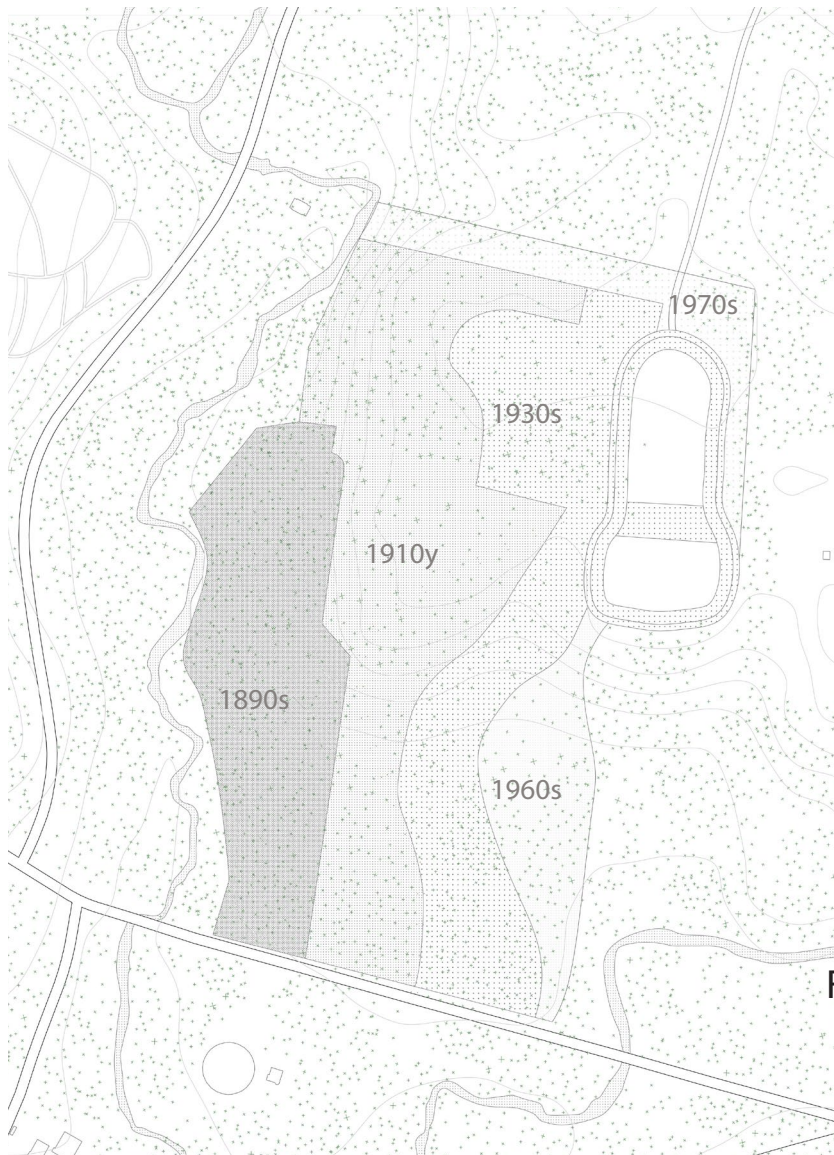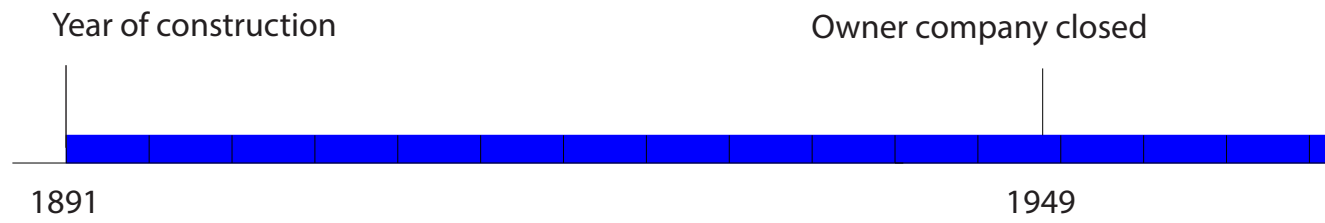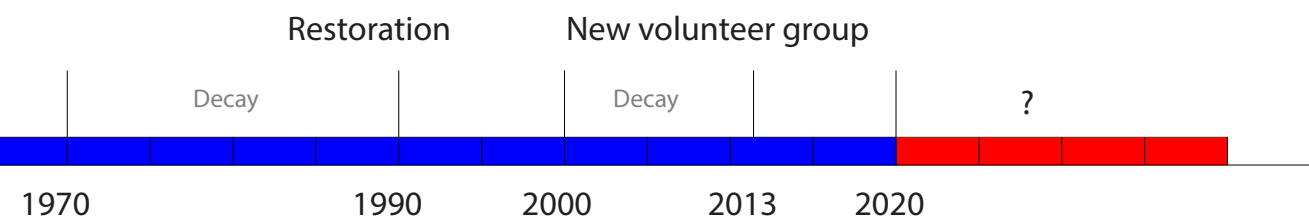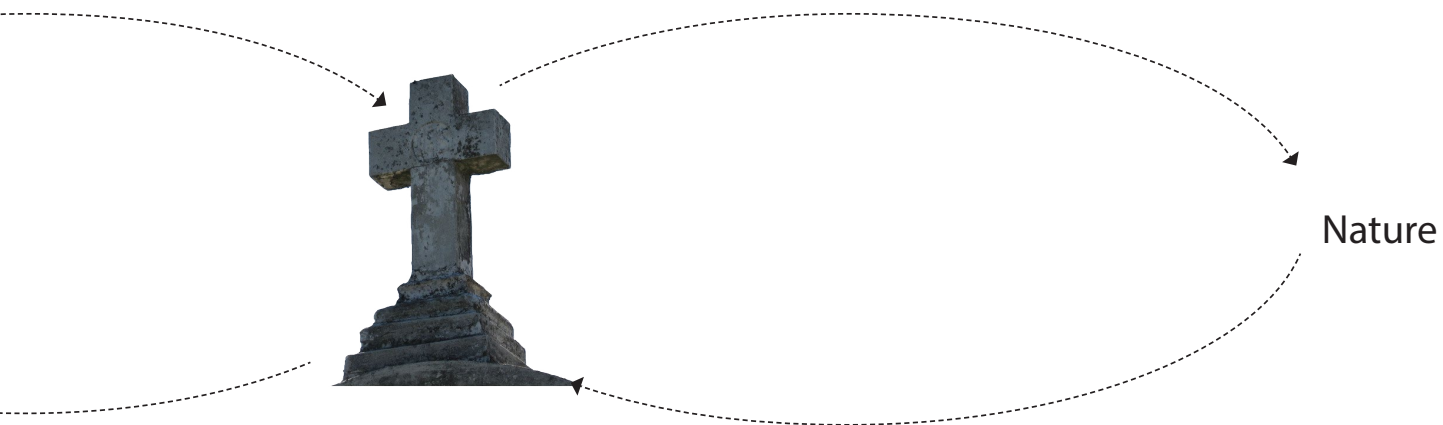
MEMORIAL STRATEGIES

100years Flood
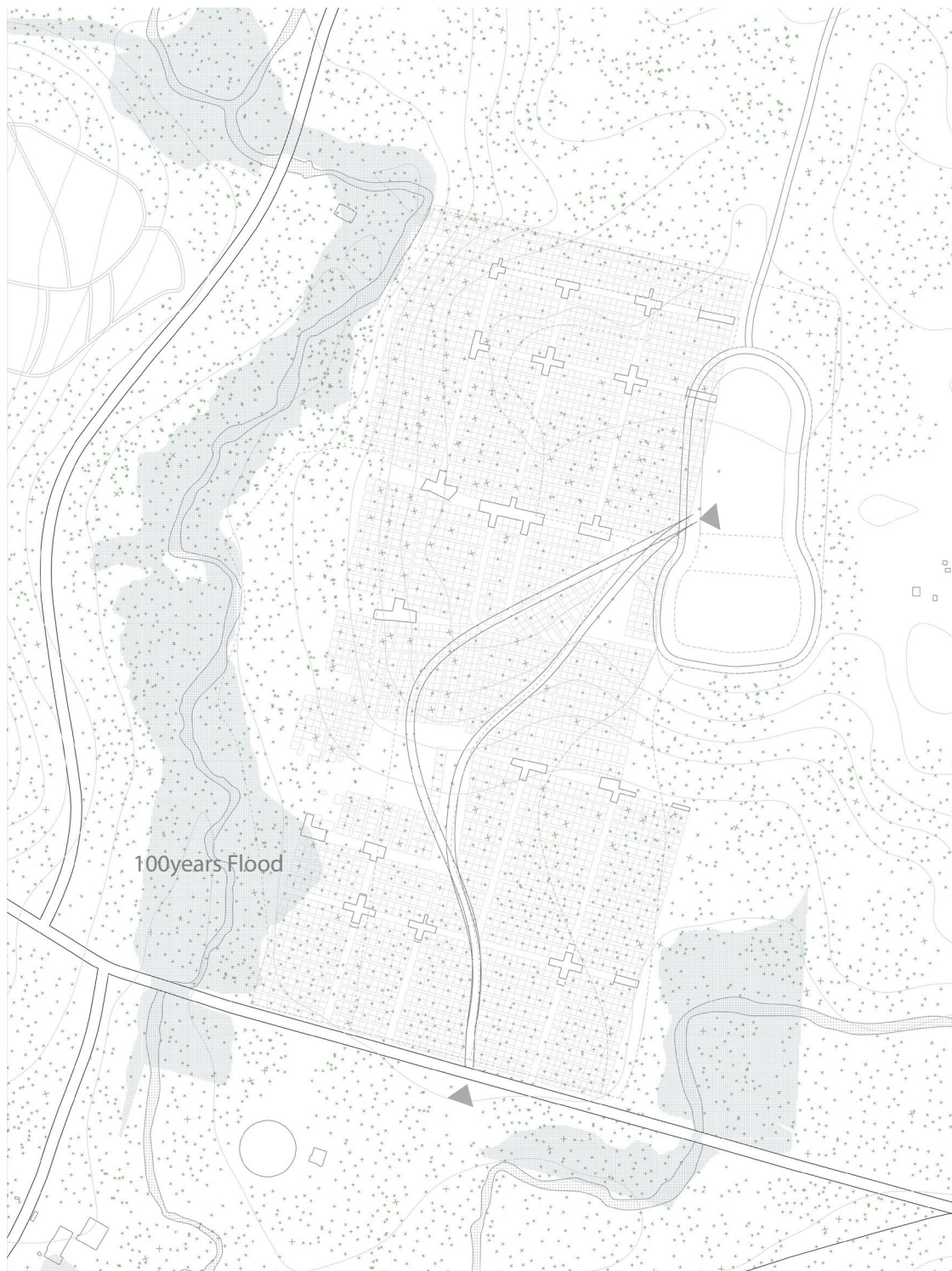
"As ruins,
how these

Gro
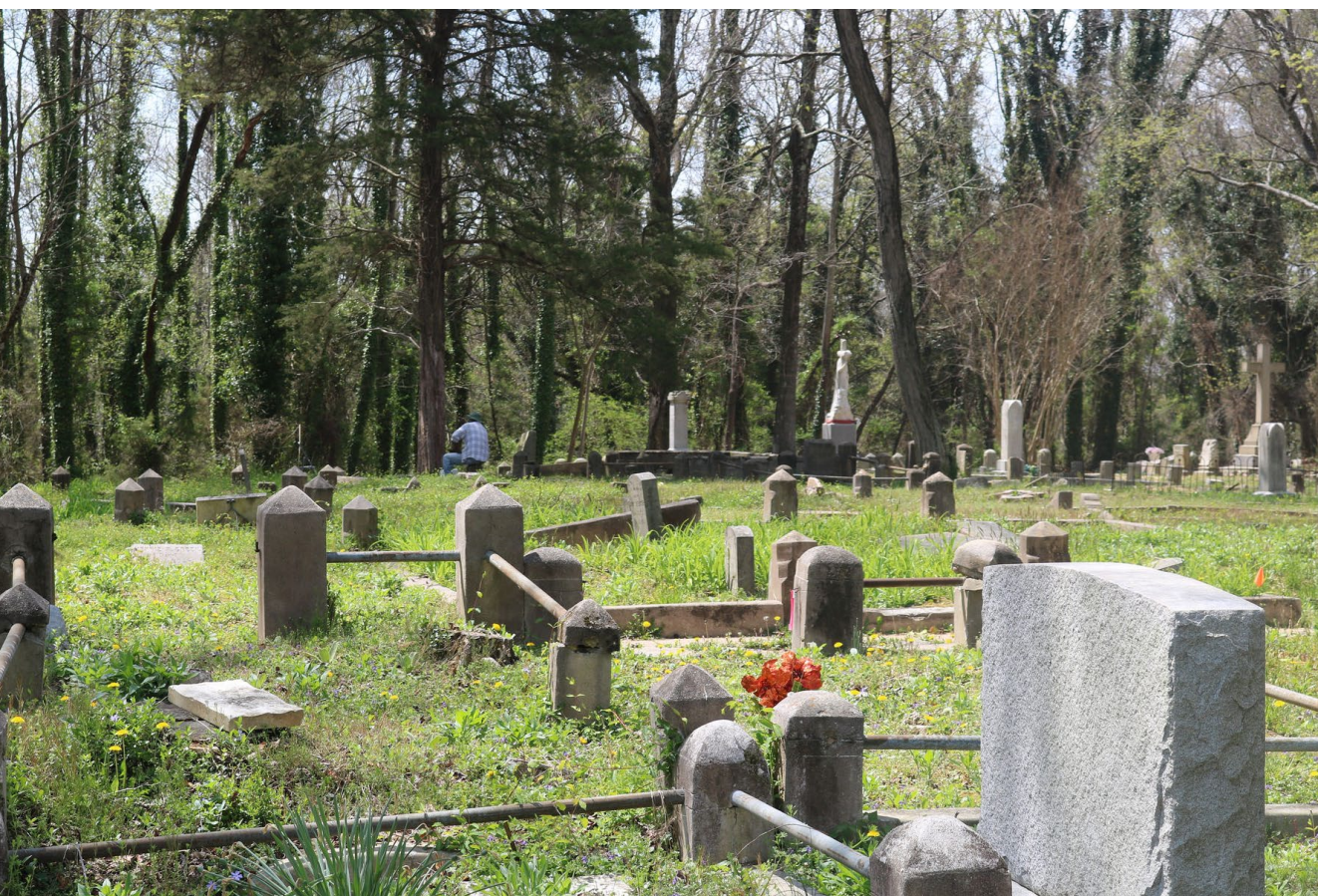
, partly because this label would fix their identity, and what I am most interested in is
e identities can remain unfixed yet still productive"

-- Curated Decay, Caitlin DeSilvey
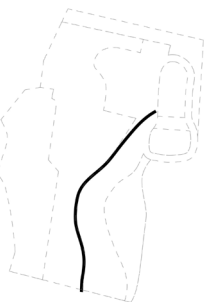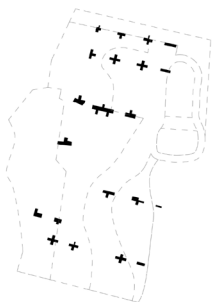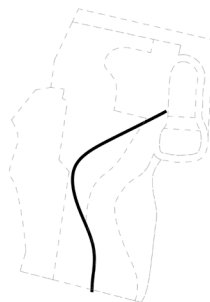
und Path   Crossing Pavement   Suspended Path

SITE AXON
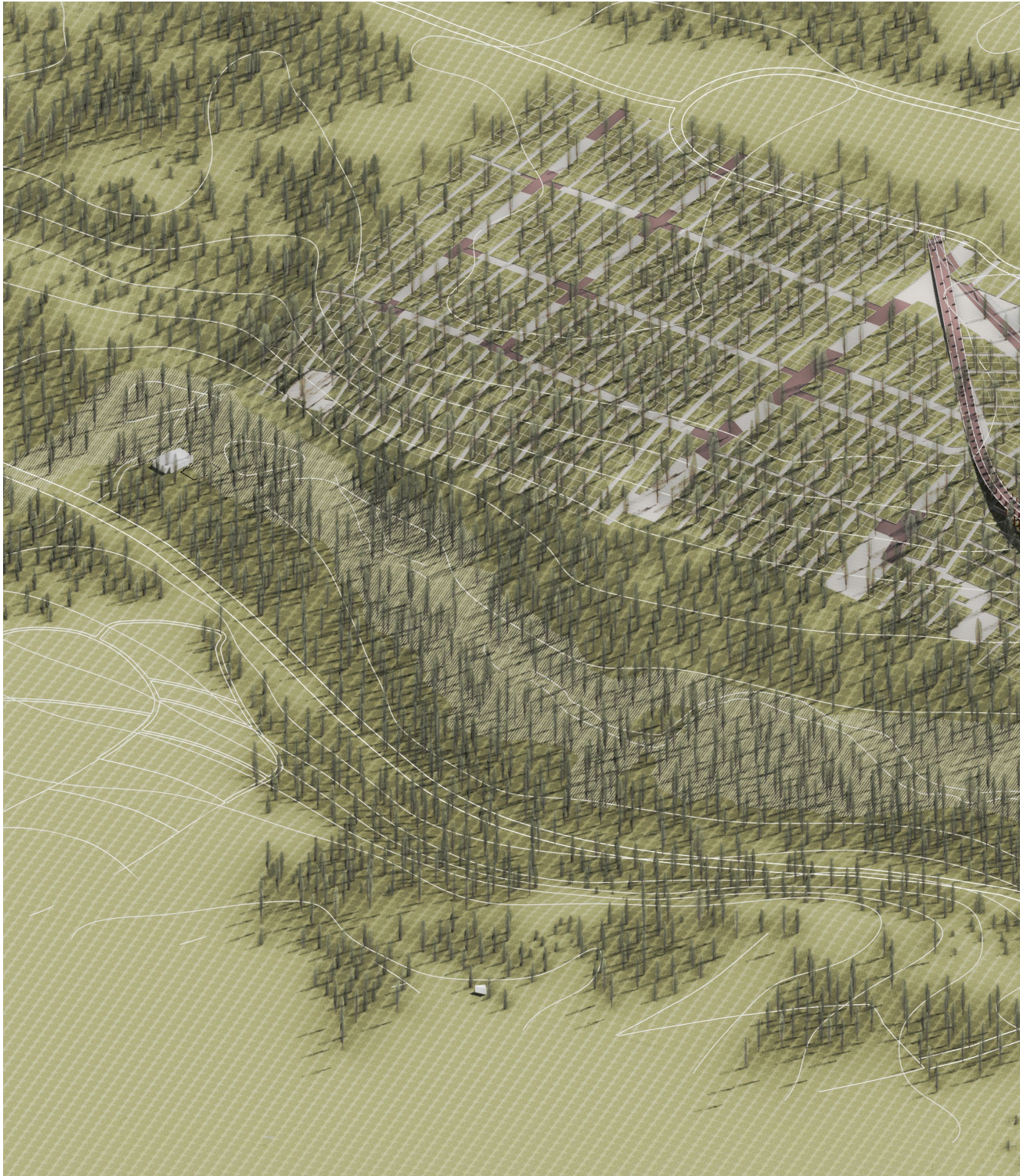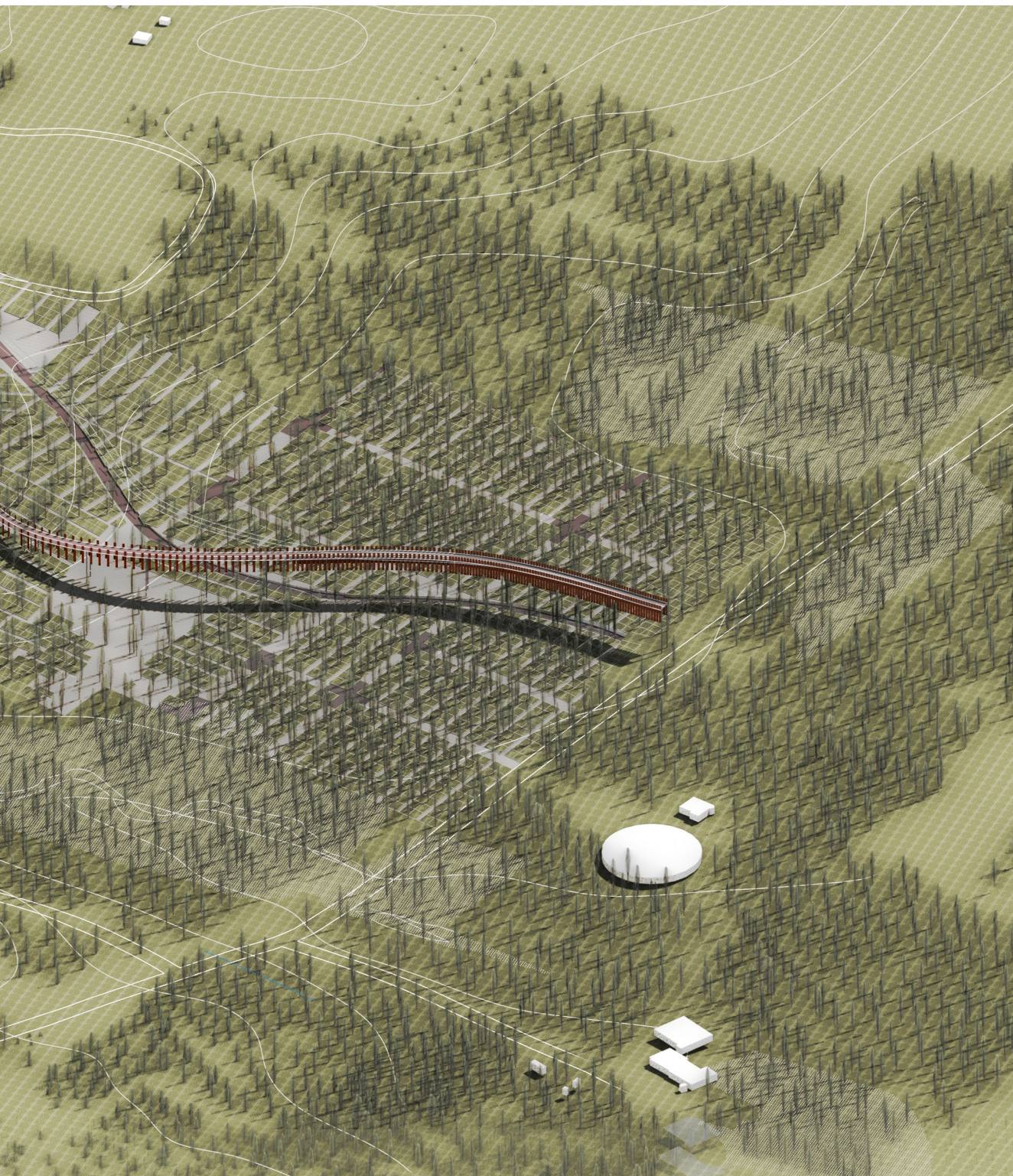
OVERLAPPING PLAN
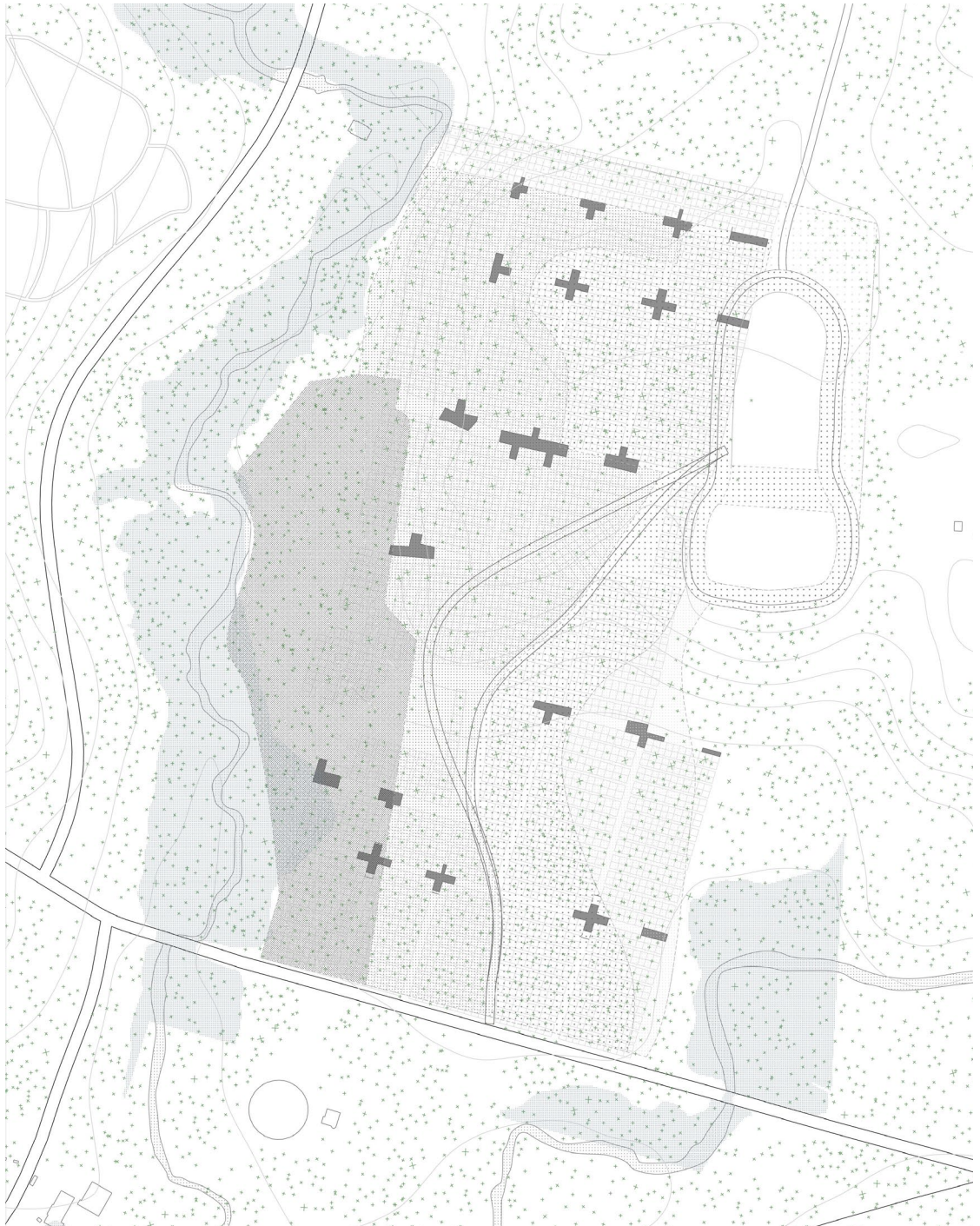
These three marks will hide inside this decay cemetery, providing a measurement for the continuing decay process.

SUSPENDED PATH
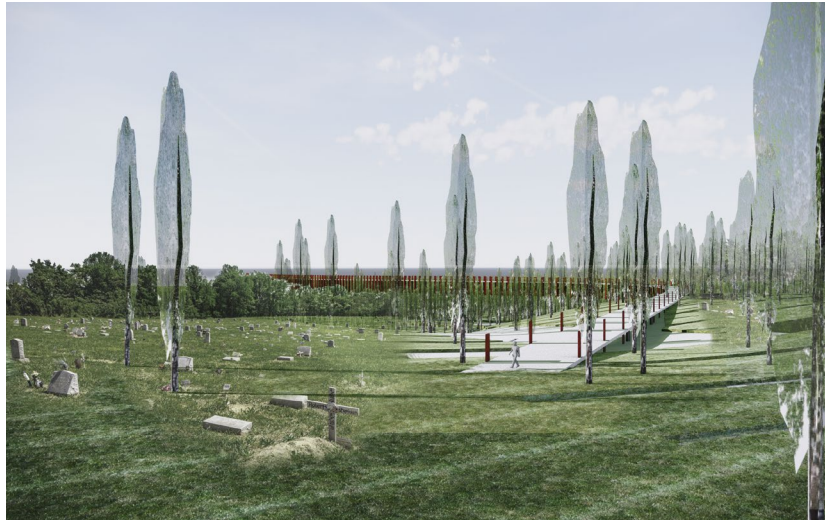
GROUND PATH
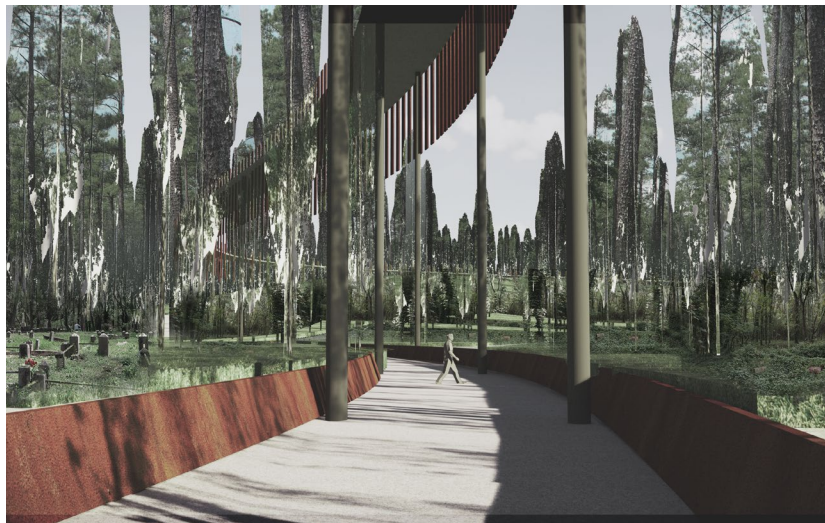
CROSSING
PAVEMENTS

2. Architecture as a mediated framework to serve incoming misalignment

Take one more step beyond the definition from which people reorganize things and build a consensus. A framework is needed to operate the physical object we had defined. Framework, system, and organization could connect different definitions, providing a fundamental space for productivity. They are specifications about how humans participate in social progress together. From feudal system to democratic system, from liberalism to neoliberalism, we can always see the iteration and repetition over the different frameworks. This dynamic process implies the capacity and proficiency of humans coordinating all the resources through which misalignment happened.

After World War II, architects had been through a golden time when reconstruction and building needs were thriving everywhere. They began to propose different frameworks for future cities like Ville Radieuse. They were confident that architecture could impact society, so the statement they made was in the scale of cities and hoped to reform the mode of living. However, in the 1970s, there was more minor and less large-scale construction, and neoliberalism started to dominate the world. The building process had to compromise more to capitalism. Architects no longer aggressively bring up new ideas about future cities. They turned their attention to a doable scale. For example, the framework architects set in PREVI LIMA is how buildings can be adaptive and meet different needs in the long run. It was very practical and capital logic. We can still find the same framework in Alejandro Aravena's half houses. The courage architects setting the framework and engaging the reality is changing. However, what is the correct extent for our design to act? Should it always correspond to the economic situation? After all, a framework that tries to people

regulate their spontaneous behaviors on a small scale without connecting to more external resources would be pointless for them.

An ideal framework should act as a mediated platform, serving supply and demands and their misalignment in-between. Only this way can maximize its function of framing instead of being manipulated all the time. The following research about Jaap Bakema's 'Total Space' may help us find an alternative framework that neither compromises capitalism nor magnify architecture's role in this post neoliberalism era.

Building Agency of Jaap Bakema

How neutral framework provide both constrain and flexibility

Jaap Bakema is the architect I researched on the course Building Agency which question and re-imagine the building's engagement of contemporary crisis we facing and the role of architects. Compared to architects who focus on small scales practice and intervention with social agenda nowadays, Bakema, as an important figure of Team X, believes buildings and cities are the same as 'Total Space'. He did not just draw a big picture and ignored people's feelings and activity inside like Le Corbusier. On the opposite, he achieved a very detailed scenario of people's living by layers of frameworks.

overgangs –
– elevator

Model, view from the Mediterranean Sea looking east
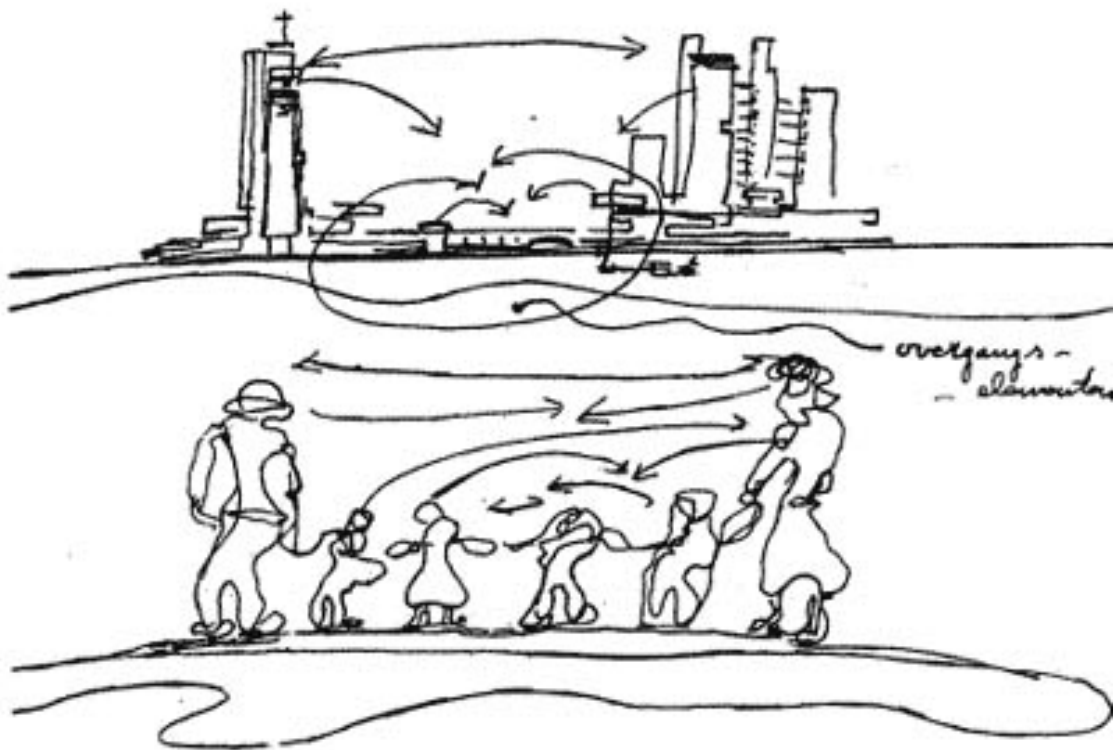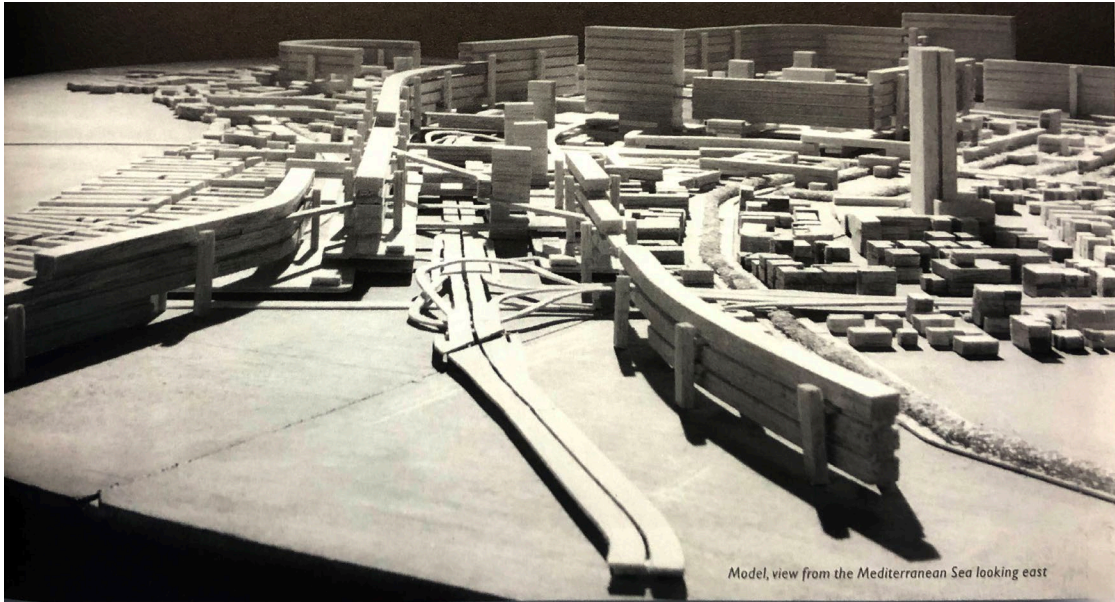
Jaap Bakema's "Total Space" in post-neoliberal era

In his thinking and development of "Total Space", Bakema has likened the similarity between city and architecture to that of a tree and a leaf. In this analogy, he eventually illustrated it as "Architecturbanism" as his main urban design strategy. This framing construction of the objective is only one side of his design thinking. He believed that between these apparent structures there was space for invisible, latent activity that was not entirely programmatic and functionalist. Bakema's emphasis in the "Total Space" is on the commonality of things, on the human scale and supporting framework that should be present at all levels, and on the role of the collective connection between people and individuals in all aspects of nature and economy and society. The "Total Space" is more of a comprehensive, holistic philosophy than the "Architecturbanism" that focuses on the relationship between city and building. It is the idea that all things come together to influence each other (also a reflection of the confidence in human initiative in the rapid development of post-war reconstruction society). In the "Total Space" system Bakema has constructed, he seeks to include as many things and layers as possible in the discussion, thus creating a richer level of explicit and invisible space. That is why Bakema finally proposed the concept of "Open society", hoping to get the involvement and participation of as many things and people as possible.

In a word, Jaap Bakema's idea of "total space", the design and programmatic resolution of reality and problem solving through full-scale elements, may be a reference and inspiration for us who are currently seeking to break out of the neoliberal crisis within the framework set by neoliberalism.
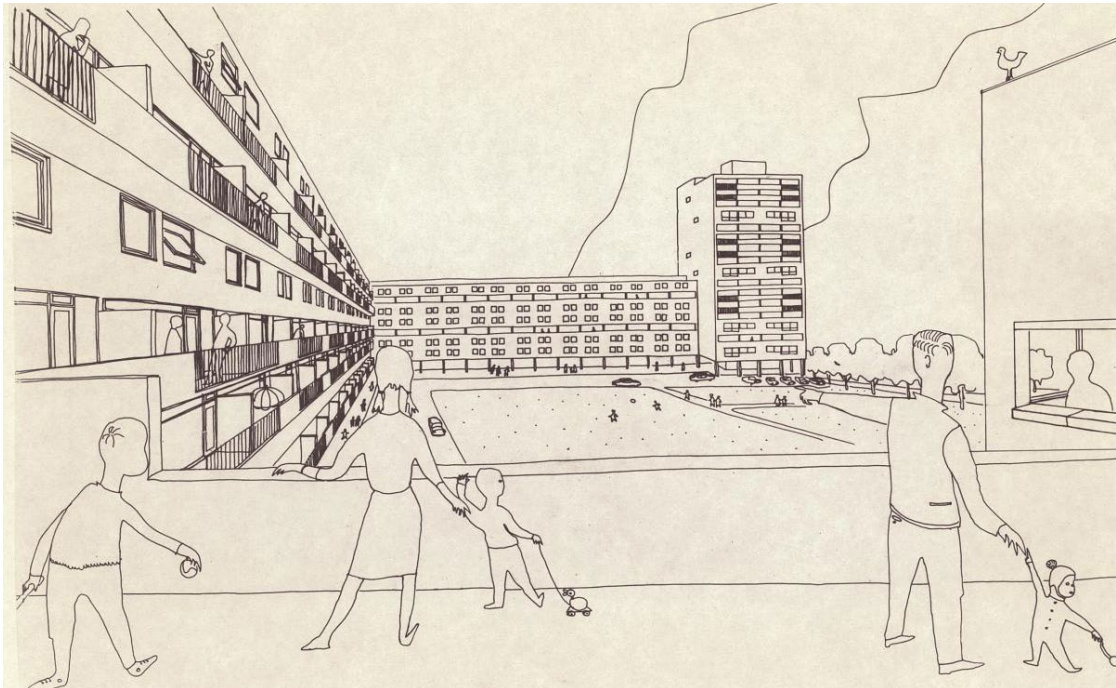
Bakema's idea are actually a topic of today. In the case of bottom-up and small-scale events, is there a need for some more holistic top-down framework to help define the space for discussion and avoid being a vehicle for other things? In Kapp and Baltazar's Against Determination beyond Mediation,A top-down based solely on the architect's personal will may be biased. But if they can be dynamically combined, and if the reality at a certain point in time is the reality, the framework of top-down can become one of the elements that participate in the whole reaction. That is, the building agency as an interface.

Kapp and Baltazar also mention infrastructure like the Internet and the telephone, which is a comprehensive upgrade for society as a whole without too much political bias and direction.Along with the further development of technology, many Internet platforms have further assumed the role of an interface, matching the needs of both suppliers and exchanging information, such as Doordash and Uber. They are more neutral than Facebook, Amazon and other platforms, being a matchmaker rather than a mere recipient of information. But they still have their own scale and hierarchy.

And if we define the building as an interface, it intervenes in a way that allows the surrounding environment to project equally onto it and play an interactive role. But from the example of the Internet, Interface does not mean that no framework is set and no content is defined. In Bakema's "Total Space", the gesture of multi-layer space, the visualization of "open-space" is the subject of the interface, while the object is the basic spatial activity of people, economic development, political ideology, etc. If we do not define architecture in this way, it will be reduced to a vehicle of other things. At this point, architecture as Vehicle has an artificial policy. It may be political, or it may be biased towards everyday life and bottom-up. I am not opposed to the idea that on a particular scale, some forms of construction in-between should be subordinated to daily life or top-down ideology. But we need to have a "Total Space" perspective and give architecture an identity and position when we think about it as a whole.

Total Space, in its context, integrated and visualized the common post-war tendency of national identity and welfare system building, in line with the central tendency of economic development in the Netherlands and Western Europe, and the tendency we have now is the expansion of capital, class consolidation and ecological issues brought about by globalization and neoliberalism. After immersed in various forms in the local context, architects should use architecture again to respond to the context of globalization instead of just dodging in the bubble of the localization with the context. At a time when the issues are more challenging, architecture should be more ambitious to propose multi-layered frameworks in order to seek more open and multi-layered invisible spaces implied in them, which may be Bakema's revelation to us.

3. Architecture as a building technology to enhance potential misalignment

Inside the framework, technology is needed to guide each event. We need to have a common language to communicate, have the same unit scale to measure, and have the same methodology to follow. Overall, technology enables a more precise control since we deal with specific objects inside the framework. On the one hand, this precise control and standard would quickly improve our society's efficiency of governance and production. On the other hand, it may erase diversity and bring misalignment when we only use one technology.

Language is the technology of communication. Dialects would disappear with the assignment of the official language. Cities next to the harbor will decline with the abandonment of the canal. It seems that this is the pain we must take if we want to expand our infrastructure and civilization using efficient technology. However, sometimes not everything can be standardized inside the framework, which leaves more misalignment. For example, the balloon frame structure of the wood house has never been standardized, although architects had published many versions of specifications.

This pursuit of efficiency and consensus is often through three more detailed aspects of technology. They all could cause some misalignment. First, set up different statuses and phases when using technology to share the same goals and expectations. In the metabolism, different visions were drawn to imagine potential development for the cities and buildings. However, the Nakagin Capsule Tower, as the rarely built sample of metabolism, hardly had a chance to replace its capsule unit as the architect had imagined. Second, setting up the same standard and rules monopolizes discourse and behavior. For example:

same size of brick/same way we casting concrete/same smartphones/ same gas car/ same photoshop/ etc. Third, setting up the same methodology. From Alberti, architects gained their power through drawings. Drawings are a specification of a building and a recognition of power and communication. The operational flow of transforming all the detail into projected drawings like plan and elevation have existed for hundreds of years. With the emerge of 3D Modeling, we find a chance to skip the process of 2D drawings, which may have declined the architect's power without notice.

We can see these aspects as an extension of power and control over specific things and operations. Each of these aspects could have more examples considering our daily life. These misalignments are hard to be applied as an overall design strategy. They are objective limits and restrains caused by technical factors at a more specific and detailed level. The following research about casting concrete will illustrate architects' struggle and statement over its technical limitation. Misalignment hidden behind materiality is a chance to break through.

Configuration of Technical: Casting Concrete

How the technique of casting reveal struggle behind material

Concrete achieves liquidity when casting as a component rather than an on-site structure. But how to evaluate its property between structure and aesthetic that has long been bothering architects

In short, since its application to modernist architecture, concrete has been torn between technology and aesthetics. On the one hand, it is a reliable material that can be molded into various structural systems. On the other hand, it has enough formal dynamism to allow architects to play with it. Architects would face the decision of whether to use concrete for its technical or formal characteristics. The result of this choice will be directly reflected in the strategy for the concrete facade.

In the Green Corner Building, concrete starts to enjoy the same casting and forming process as soil. We can see the architect's standing back and chill altitude, hanging over the decision of form-making to nature itself. It marks the turning point of exploring concrete aesthetics against its structural properties. This transition also reveals that architects are mature enough to build without leaning on specific properties of concrete. Sometimes overcoming the consequence by tools and agencies (machines and material) is the start to being creative. Concrete could act like one of its components—sand, to be liquid and flow.

The Green corner building is also modifying the actual construction process corresponding as they take the sand-casted concrete as a resembling panel instead of pouring on-site concrete layer over layer on the building. Workers set up all molds next to the building site. Moreover, each panel would be hung up by the crane and relocated to its position. Since prefab sand-casted concrete and cast-in-place concrete are acting together as a frame structure on each floor, cast-in-place concrete will be poured after the assembly of the sand-casted concrete panel.

The Green Corner Building holds the same aesthetic as other Studio Anne Holtrop's practices. They are rethinking the relationship between architecture and nature – If nature could already provide texture and mold, why can't we take advantage of it? This reflection represents architects begin to treat concrete without historical baggage and expectations, which enables them to engage more with non-traditional technology and be more creative

1 Set of Robot Motions vs 4 Tool Profiles

1 Tool Profile vs. 4 Sets of Robot Motions

Tool 1
1 Degree Single Convex

Tool 2
3 Degree Single Convex

Set 1
1 Degree Drive Curves

Set 2
3 Degree Drive Curves

Tool 3
3 Degree Double Convex

Tool 4
3 Degree Double Convex

Set 3
3 Degree Regular Intersections

Set 4
3 Degree Irregular Intersections

There are two new ways to create sand molds in the casting process, directly and indirectly. The first one is using a robotic arm to create a programmed pattern along the surface of the sand. Due to the deformability of the sand, a 2D drawing can be projected into a 3D pattern on the sand. The robotic arm will act the same way it does when drawing anything else, but a depth will be created on the sand's surface due to the drawing tool's profile. Then, a regular pattern on the sand will wait to be cast by concrete.

Moreover, the drawing tool's shape will have a direct influence on the pattern. The depth of each trail of the robotic arm will depend on the sharpness of the tool's profile. This collaboration with an adjustable tool ensures the 2D CAD drawing can achieve rich 3D molds, while building such patterns from new material is much more costly and complicated. This technique, in reality, is often used for customized concrete façade panels in specific projects. After all, the casting process involving robotics and sand is still not like other materials produced like the ford line.

The second method is printing sand directly as a mold. Sand-like materials, including actual silica sand, ceramics, and even metal particles, will be printed with binder polymer, allowing it to become a solid 3D Model after the printing process. It will have more accurate control and the potential to create a dynamic form than the concrete. The printing machine, controlled by multi-directional motion, will print the setting objects inside a sandbox layer by layer, like the bigger 3D printing machine in the architecture school shop. When it is done, people need to clean up the sand surrounding the printed object. Using this methodology, casting concrete can achieve both complicated forms satisfying both structural renovations and creative surfaces.

Laser-Cut Timber Formwork

Rebars and Post-Tensioning Tendo

Concrete Segment

3D-Printed Formwork

Reference Base
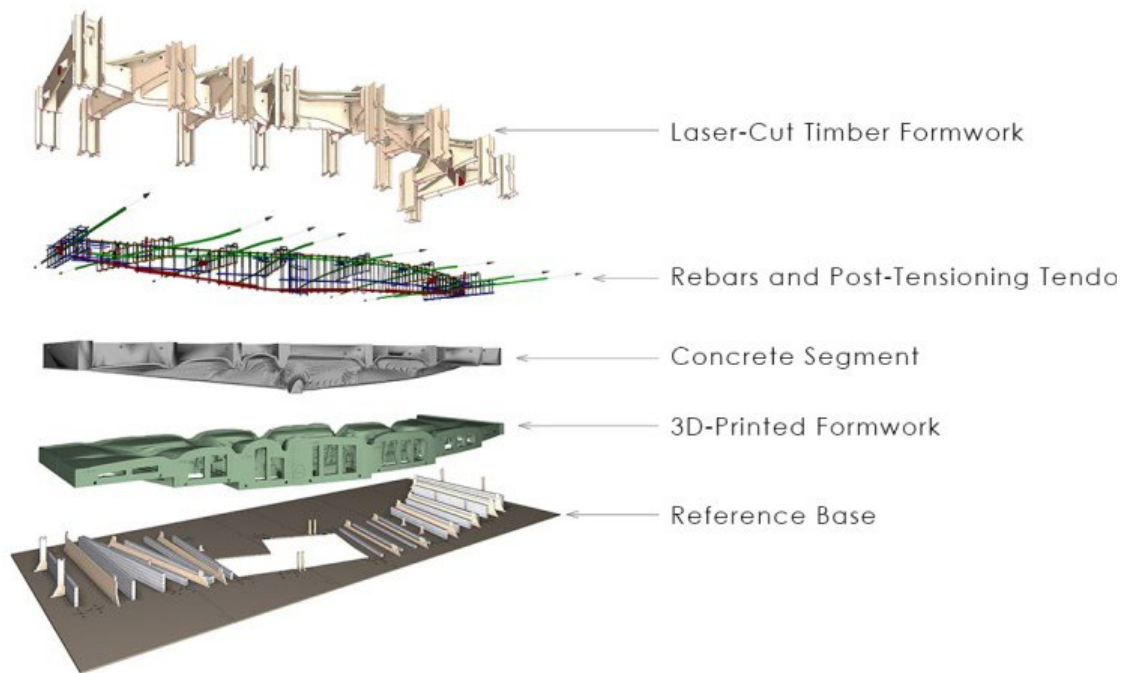
The new technologies above provide architects more chances to create customized surfaces with the most historical artificial material in architecture. The thoughts and obsession with applying concrete as a façade making the building look like a whole instead of another decorative layer over structure imply the desire of architects to reclaim their discourse on architecture. Technologies are questioning architects for their choices again.

However, the previous pattern engraving on the concrete resulted from molds that served during the construction. It was passive documentation and representation of the building process. When architects are about to use those new technologies like 3d printing, they must input a subject-designed pattern or form logic so that the machine can follow and produce. Although they are both kinds of creating processes, the latter asks for more precious control and thoughts and is more like an art crafting. How could architects take advantage of these technologies to better use concrete as their desired material in their realm without slipping into an artistic creation? The Green Corner building does not encounter these questions as it offers all the creative arts to the earth itself. Recent practices of Studio Anne Holtrop, from casting concrete to casting glass, are all inspired by the natural decay and erosion process. Nature and consequences of construction might be the most dynamic and compelling resources for the reasoning of architecture. When we are using a machine that has more precise control and power that follow human's thoughts, how can we still achieve the richness brought by nature and randomness is the issue we will ask ourselves to face forward.

3. Architecture as a misalignment itself to unfold disposition in form

Over the last three centuries, the architectural paradigm has been changing quickly. From neoclassicism to modernism, architecture still gains its dominance, succeeding previous aesthetics and paradigm, although there were compromises and battles with technology development and social relations. However, in post-modernism, we have witnessed architecture swing in the battle of various social systems and ideologies. Welfare housings were demolished, modern buildings were declared a failure. It seems that architecture is becoming a patch and backup for others. The post-war period seems to be the last chance for architecture to upgrade itself in its way to accommodate social needs. Nowadays, it is true that more and more breakthrough in technology is happening, but less and less is concerned with our physical living environment, which requires less about the new paradigm of architecture. The mode of living and working did not change for the last several decades. A standard upgrade for the office space can be achieved by installing equipment like a WIFI router and display screen instead of architecture renovation.

The way for architecture to regain its autonomy is to focus on itself and make itself a misalignment, a pre-set factor, and a disposition. This argument is not going back to the debate about 'form follows functions' or 'functions follow form.' Compared to previous architecture, it has fewer rights to engage within the process of displacement. Other misalignments are manipulating it. The following design projects will focus on three aspects of misalignment that architecture could act on itself. The first is geometry relation. The second is material. The third is the spatial sequence.

Artificial and Natural: Nature Fantasy

Architecture as a misalignment itself to interweave environment

The design starts by studying and extracting fragments from Palladio's villa. The starting point is purely about form's geometry relations without knowing any functions and site. The following process is how to use the existing monumental, symmetrical form to engage with the surrounding environment. We luckily find out the changing artificial logging landscape as a background for our design and reinforce the materiality and landscape inside the building. The logic and development of this design are dominated by the form itself.
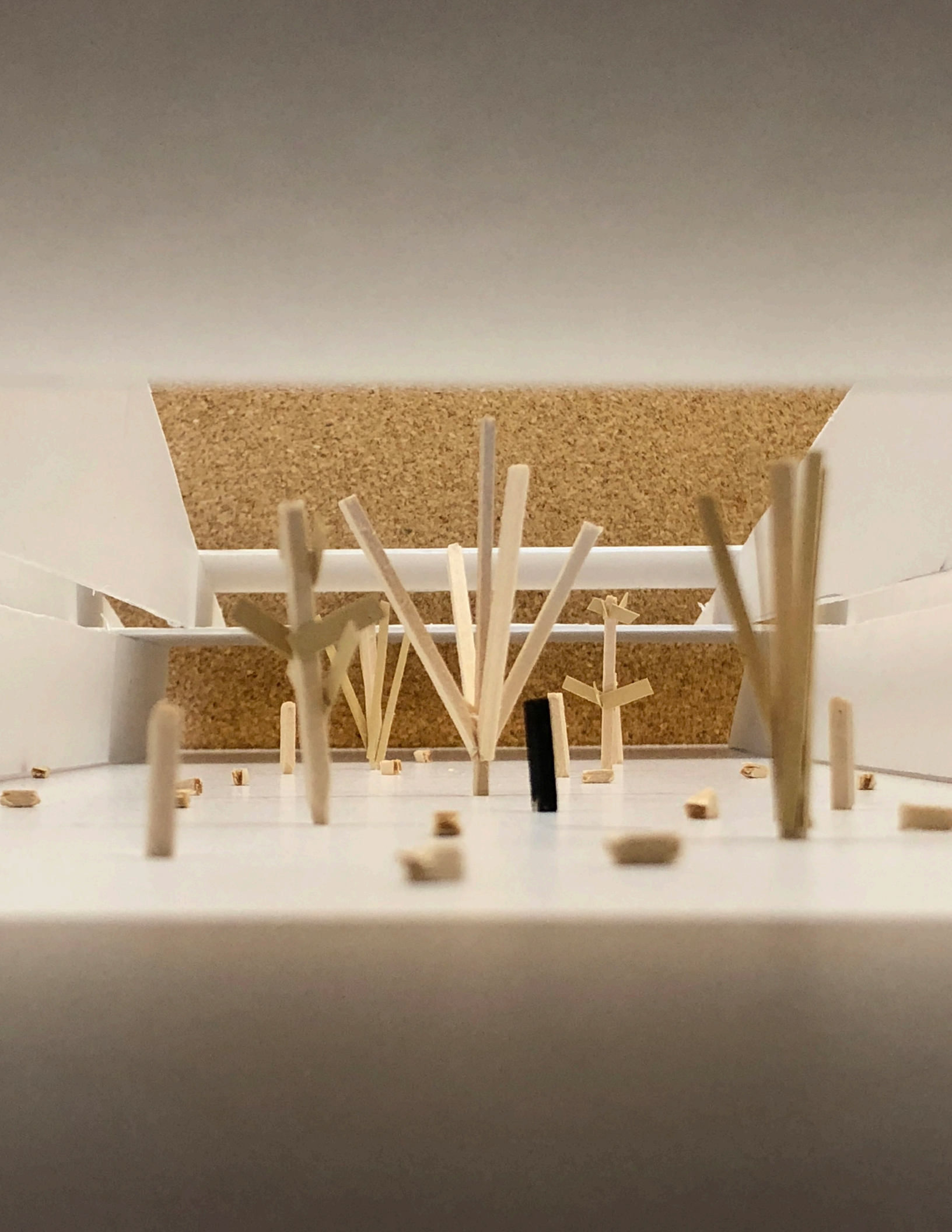
Villa Foscari
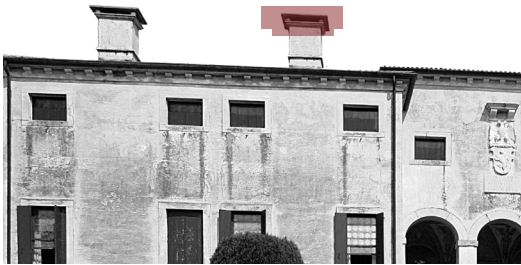
Villa Godi
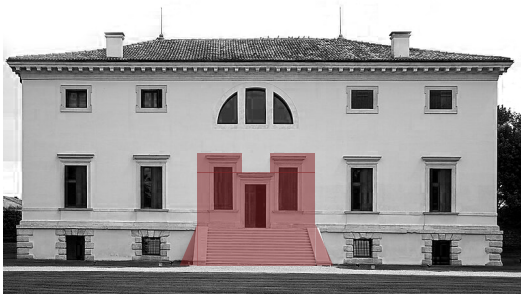
Villa Pisani

The architecture, as we understand as a container and interface for the garden, is abstracted from Palladio's villa. 3 initial fragments scaled and combined with each other to create and explore potential relations in forms. The final proposal is derived from Villa Fosc contrast and classical quality which would be a perfect media for nature.

Rooftop Ramp

Mirror Lay

Prototype A

Prototype B

Prototype C
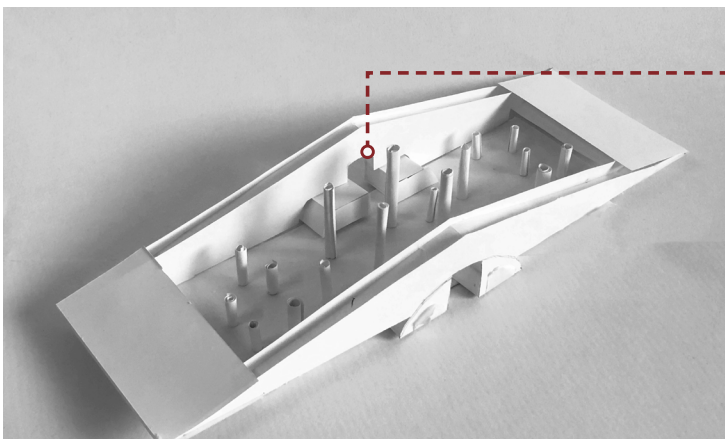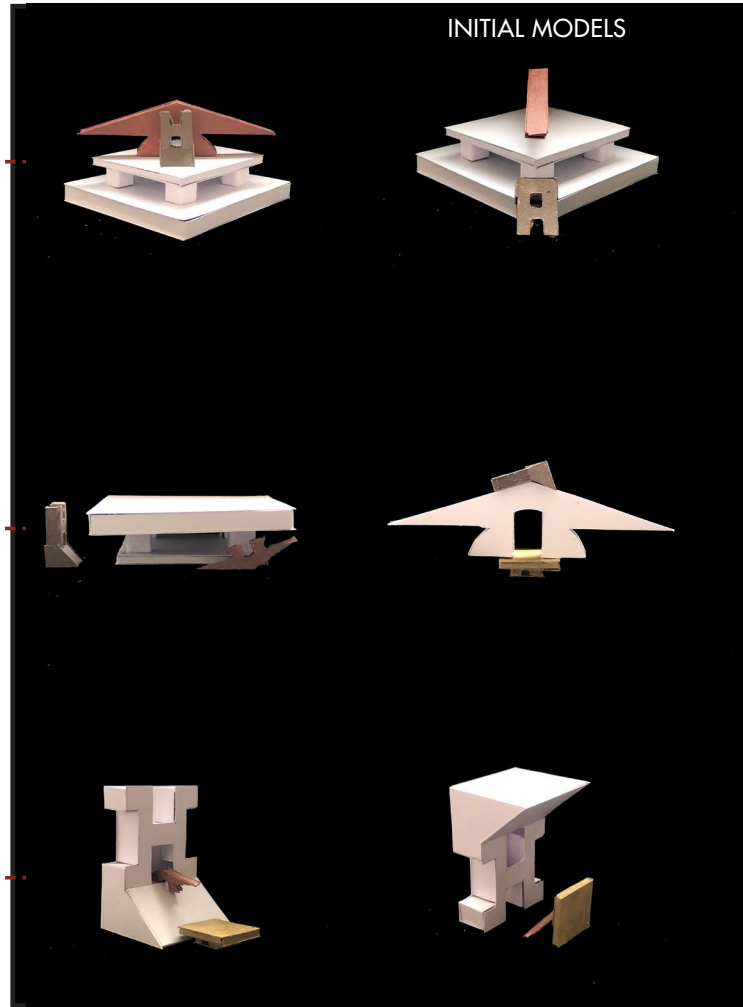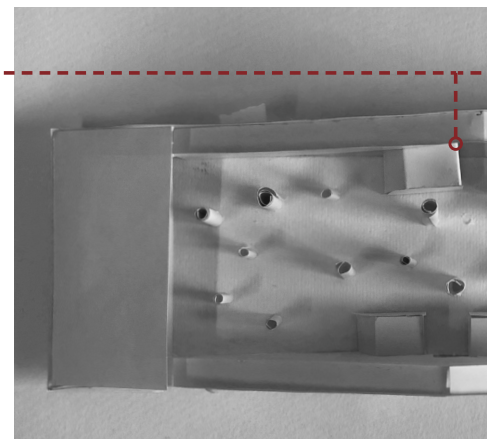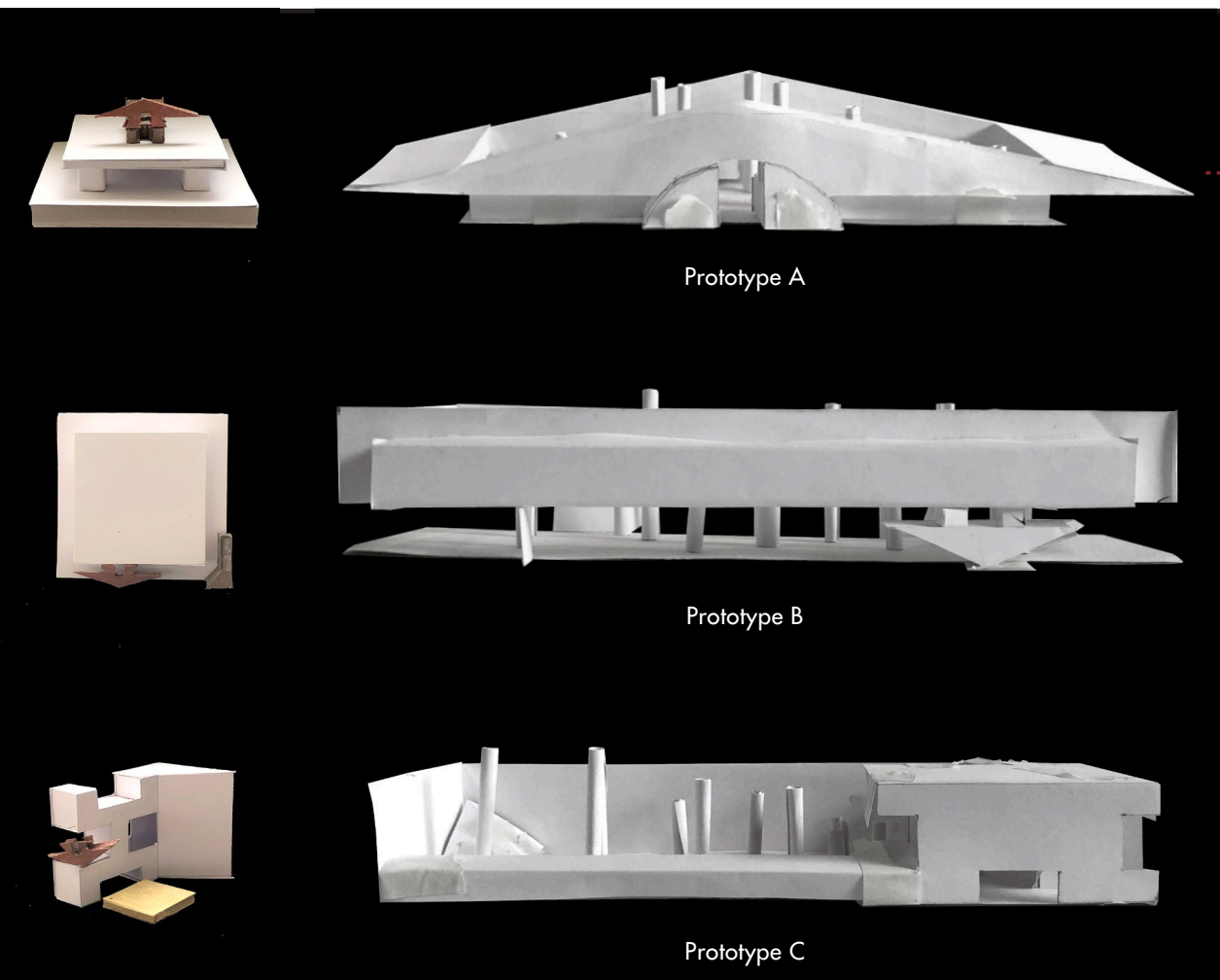
with strong identity and geometric shape is isolated from Villa Foscari, Villa Godi and Villa Pisani. Then different fragments are cari's triangle pitched roof and half circle window shape. A triangle long side elevation immediately emphasizes the geometric
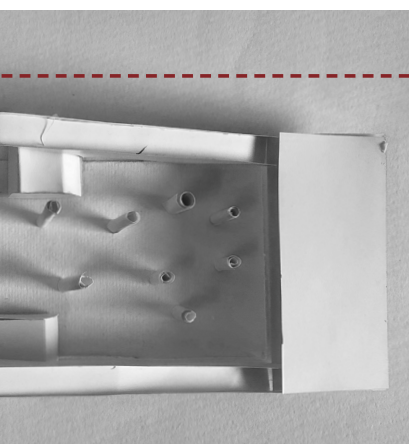
yout
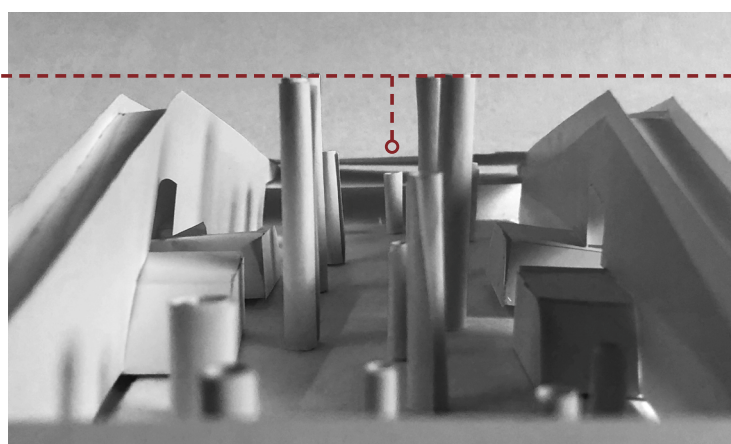
Tree Matrix
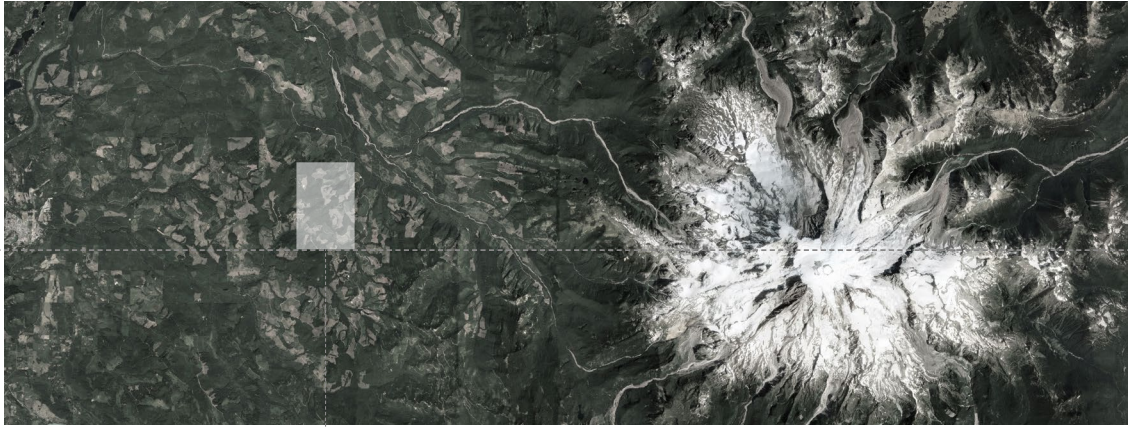
SITE: MOUNT RAINIER

Do pure nature still exist now? Even around beautiful Mount Rainier, those endless forest is made for logging. Trees would be cut down every 20-25 years and the surrounding environment would be a totally different story after that. We put the Botanical Garden right at the intersection of different logging areas to observe the process of grow and fall.

| Socotra Dragon | Socotra Bottle | Blue Yucca | Ravenala |

While the outside landscape looks natural, it is artificial. We choose some identical trees inside our garden. While they look very artificial, they are all come from nature. We hope this contract could enhance the visiting experience.

| 2006 | 2012 | 2018 |
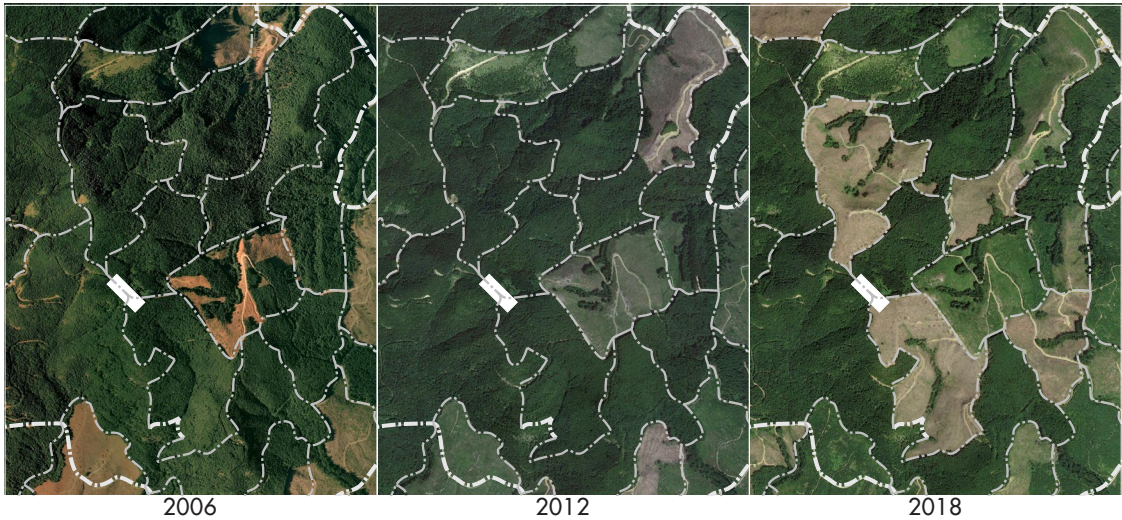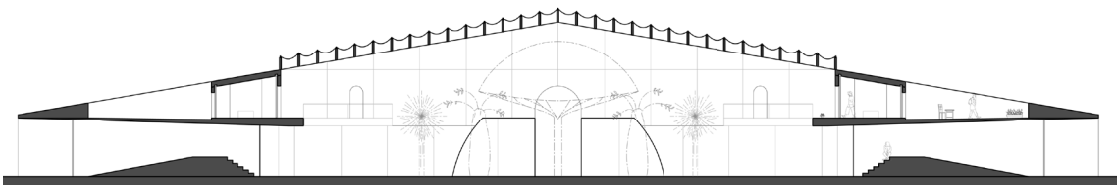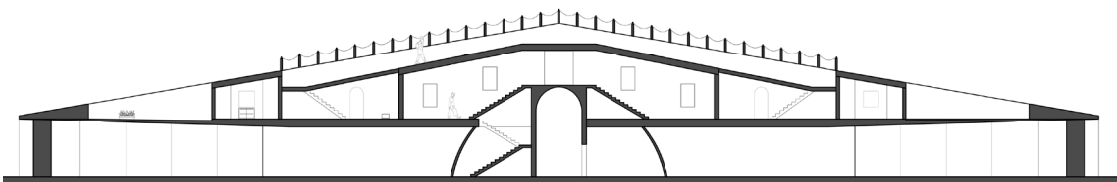
SECTION B

SECTION A

AXIS1

AXIS2

AXIS
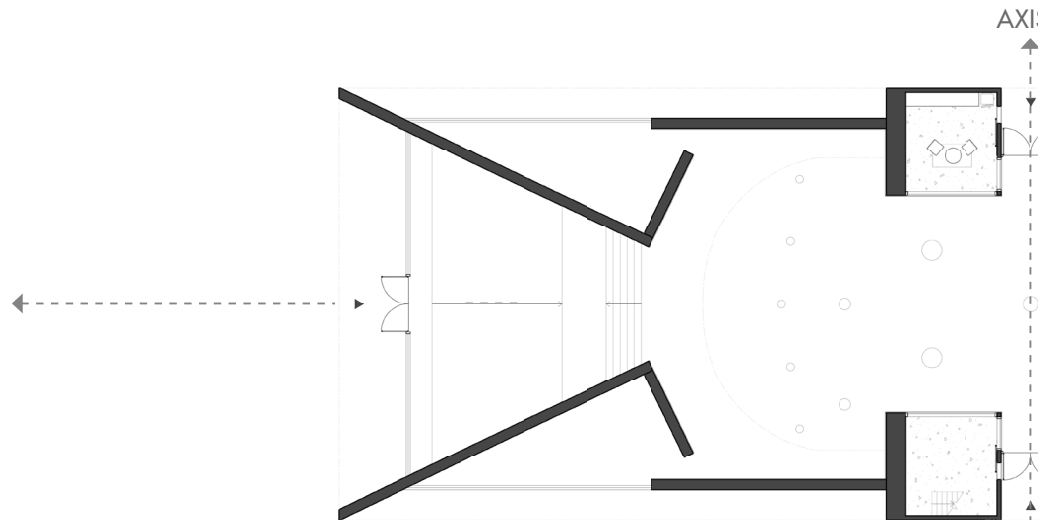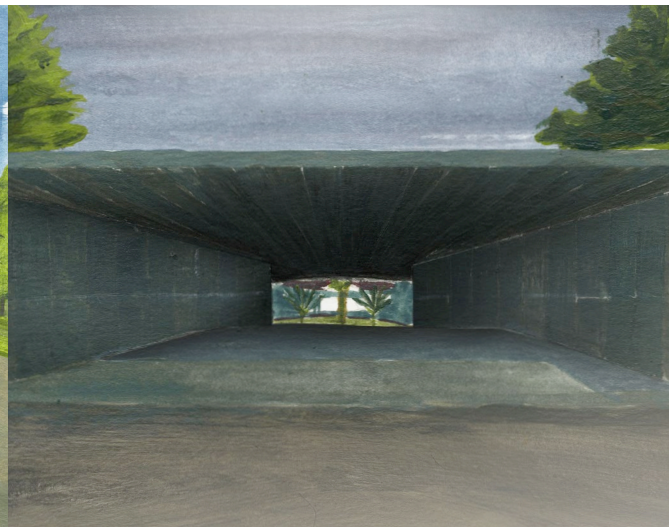
The Garden has an extremely mirror layout along with four entrances to each direction, which corresponding to chang
enjoy changing illusions in-between.From artificial nature to natural artificiality and then go back to artificial decay.We w

S1
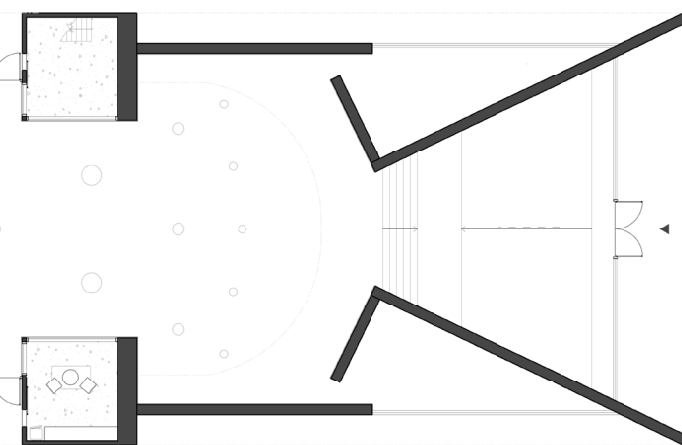
AXIS2

FIRST FLOOR PLAN

ing nature at different times. There are space sequences for visitors entering the building in different kinds of nature and
vant people to start to question and observe nature in Mount Rainer after visiting our garden.

Acrylic, 20x20 cm x4
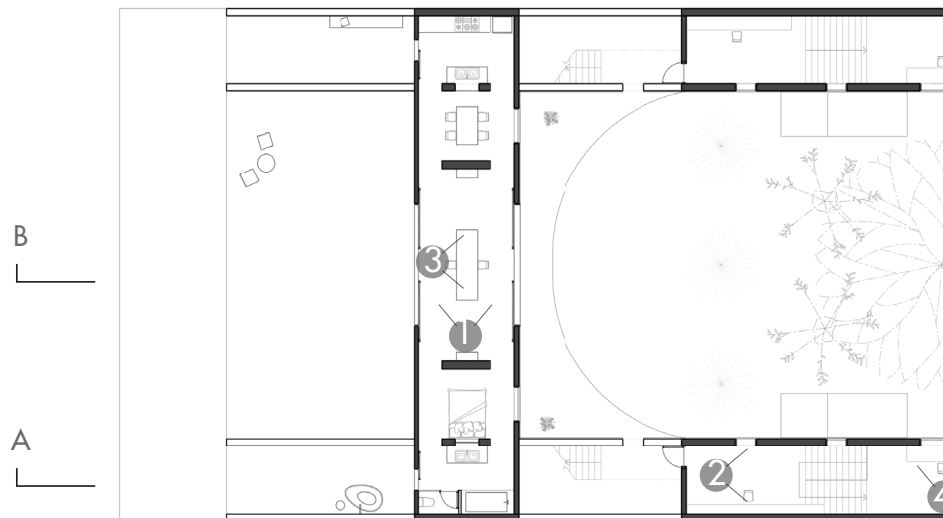
On the second floor, rooms and spaces are also symmetrically placed. There are two botanical research labs and two of the research lab are one-way mirror to keep the integrity of inner facade.Restrooms and stairs to the second floor are

Acrylic, 21x27 cm x2

SECOND FLOOR PLAN

B

A
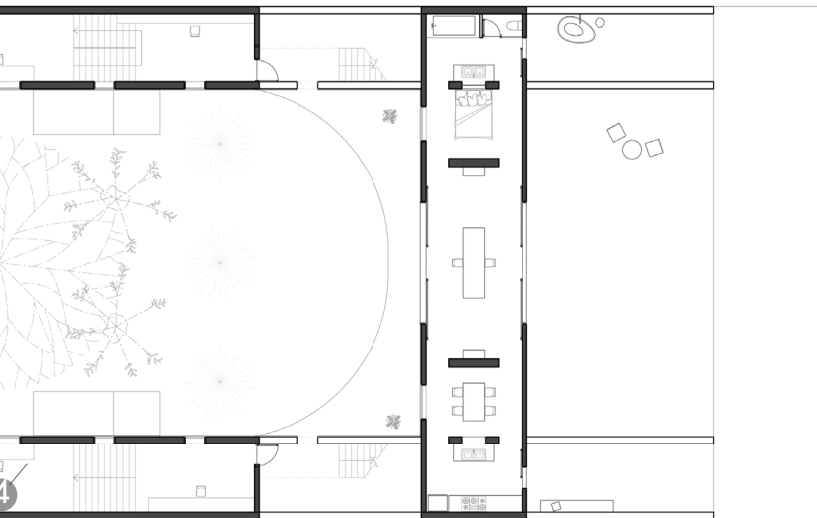
apartments occupied by the host and the guest. While all windows' shapes are designed according to views, windows
placed inside the arches. Inner surfaces of the garden are reflective to expand an infinite tree matrix for visitors. Fantasy

Finally, go back to our cavalier, we have just finished our journey. This journey is not a close case. It might
industry every 20 years. Reality and illusion in the mirror also might change based on our subjective imagina
defines it? Could artificial kinds of nature, like our garden, also be real nature if we offer people a chance to
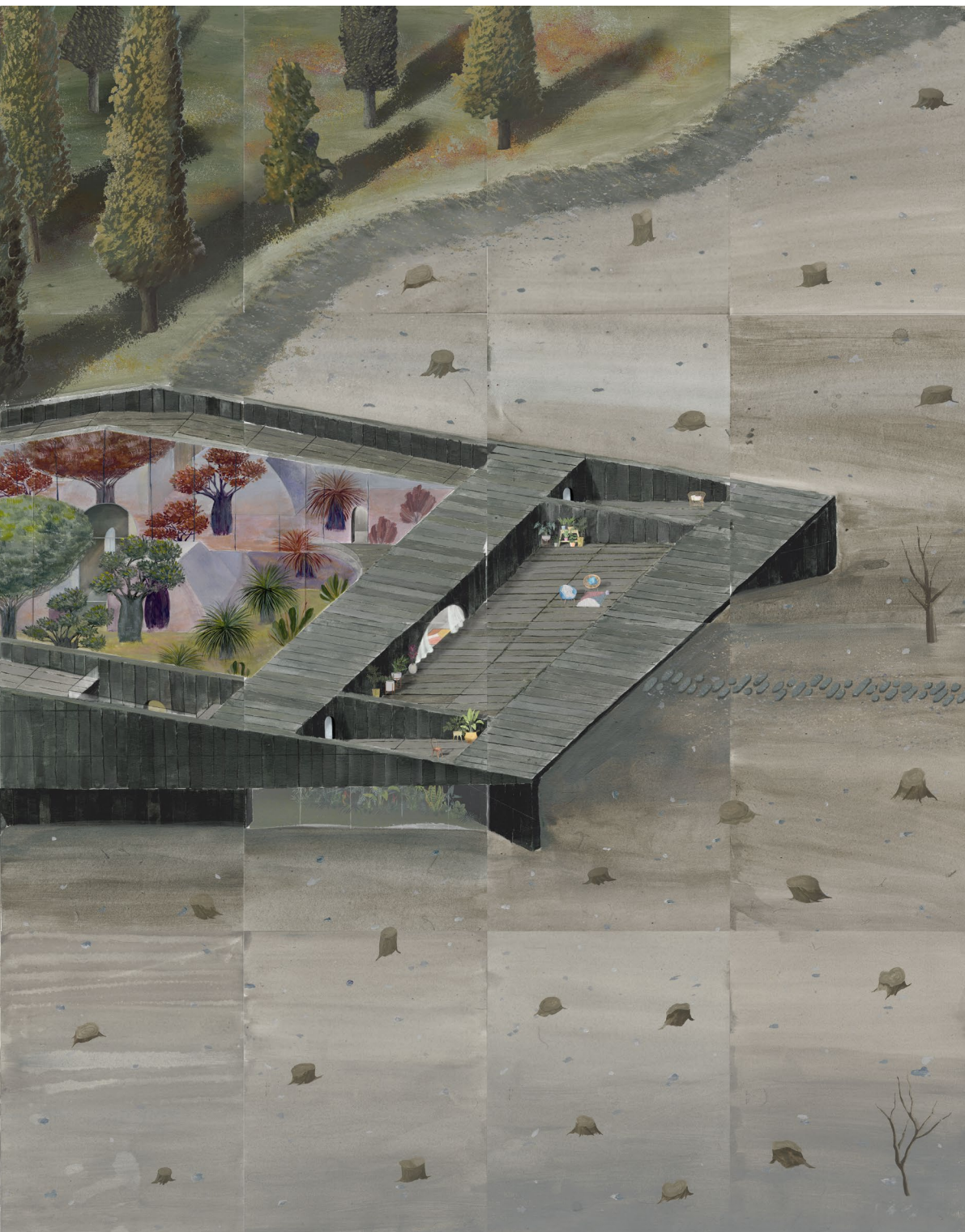
Acrylic, 21x28 cm x32

change because the natural environment is not set up forever. Forest might change because of the logging
...tion while we might be part of other's illusions as well. If nature will change anyhow, does it still matter who
...o observe and realize the beauty and uncertainty of nature?

Reuse Material: Condom Clouds

Architecture as a misalignment to rebuild material

The design takes advantage of the condom's variability to create different layers of clouds by the same object. The feature of the material is a major source architecture could develop on.

Forty-three thousand five hundred condoms are being recalled during the manufacturing process, and 940,000 condoms expire in the United States stores per year. These condoms cannot be recycled directly in the factory, because they have lubricants and other additions on the surfaces. Thus, we raised the question that, instead of ending up in the landfill, how could these discarded condoms serve a new function to prolong their meanings, and how could they develop their features in a new possibility?

Sold 36,000,000 condoms / yr   Sold 450,000,000 condoms / yr

Expired 75,200 condoms / yr   Expired 940,000 condoms / yr

Recalled 3,480 condoms / yr   Recalled 43,500 condoms / yr

New York State market ▮▮▮ U.S market
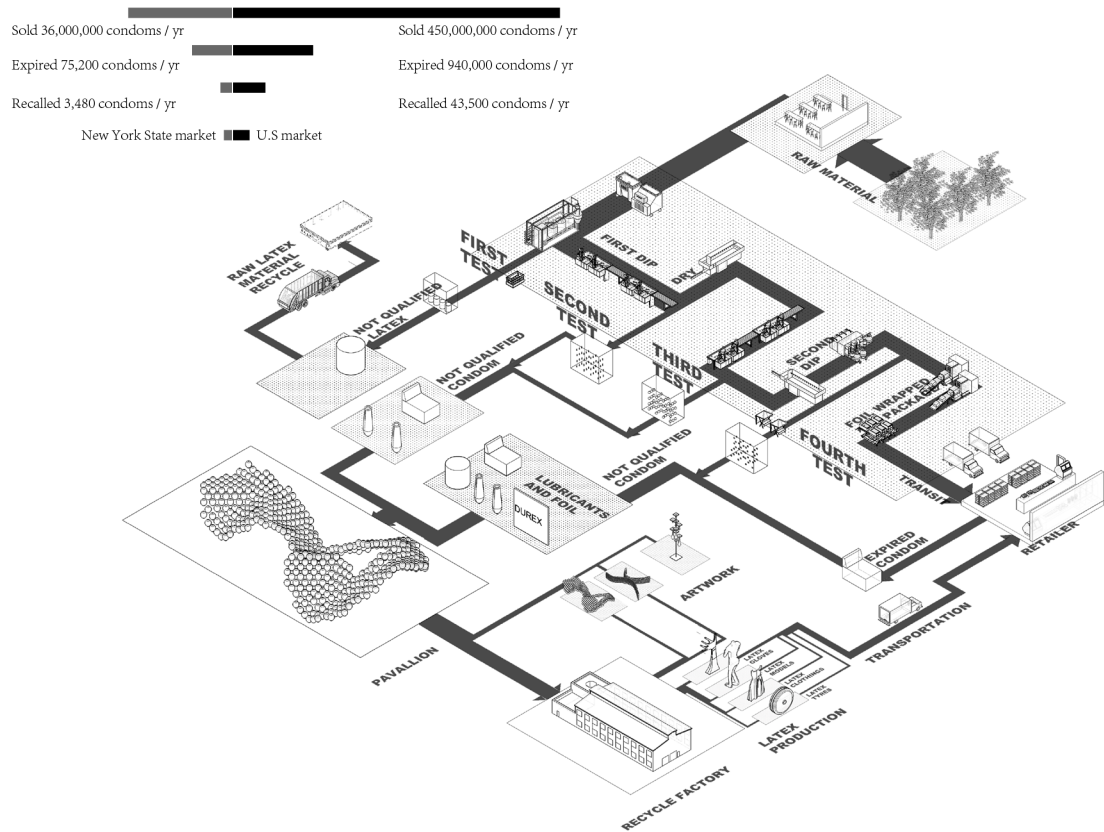
CONDOM PRODUCING SYSTEM DRAWING
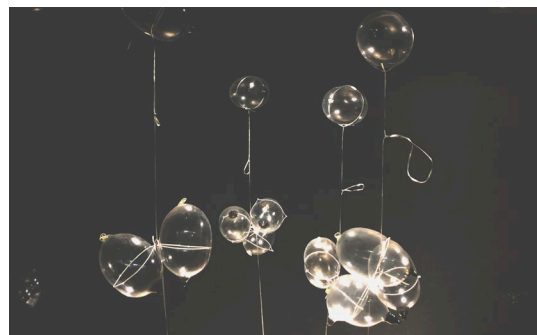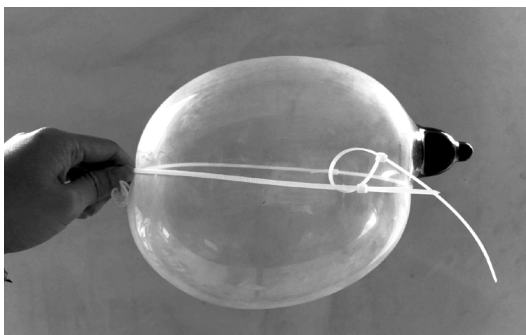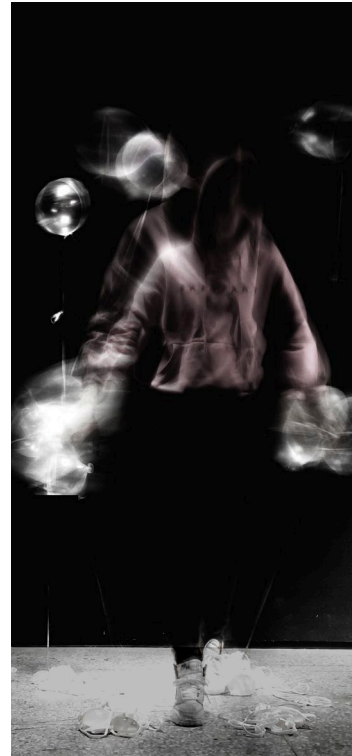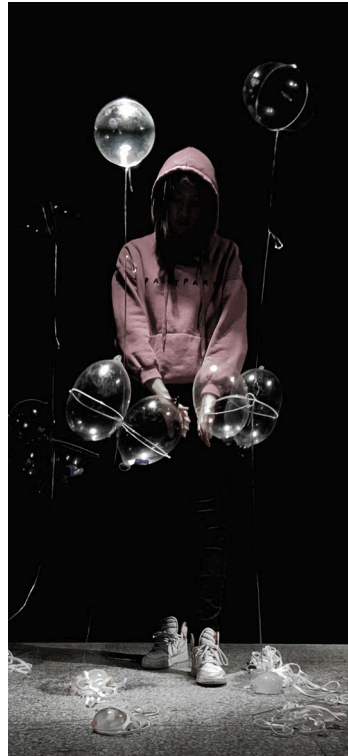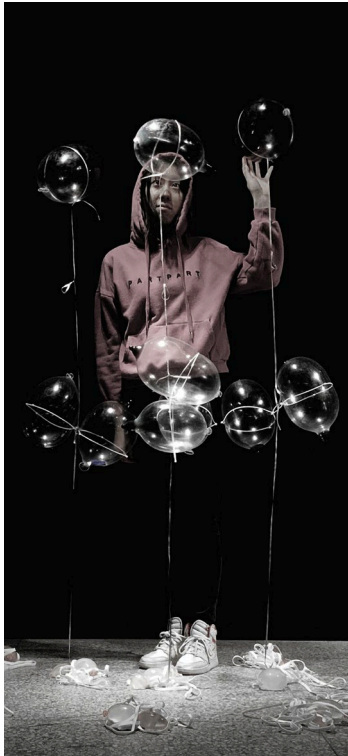
The pavilion has three layers of condoms vertically. The top layer is the condoms with hydrogen. It can show different shapes over time responding to the surroundings and wind. The middle layer is at the same height as human genital areas, which has a certain metaphor that refers to gender differentiation. This layer consists of three or four condoms in each unit. As we enter in, walk, or even push the condom units, the middle layer can be formed by our actions. And the bottom layer is the condoms with the gravity provided by water to set on the ground. In such a way, by applying the condom's characteristics on a pavilion, we discovered the new interactions between condoms and people and made the pavilion adaptive to the
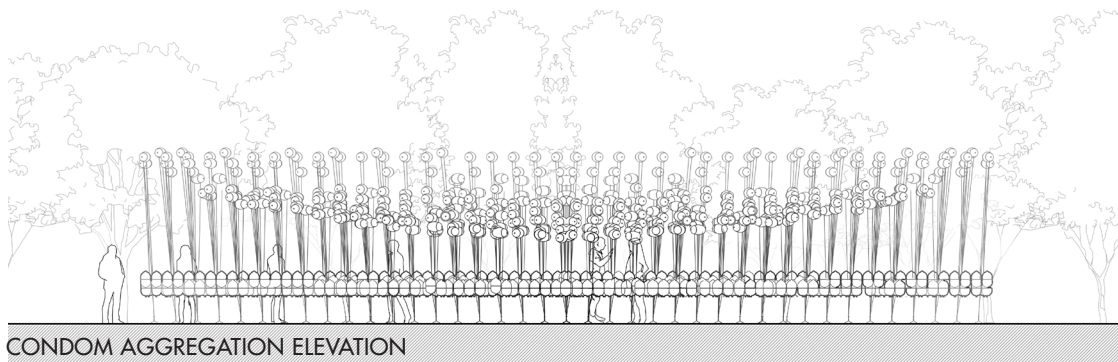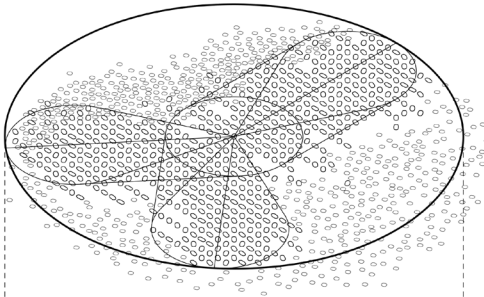
VIEW OF WHOLE CLOUD
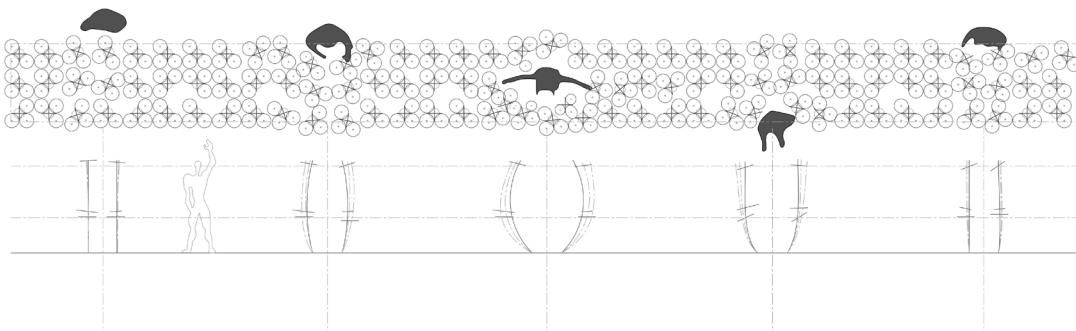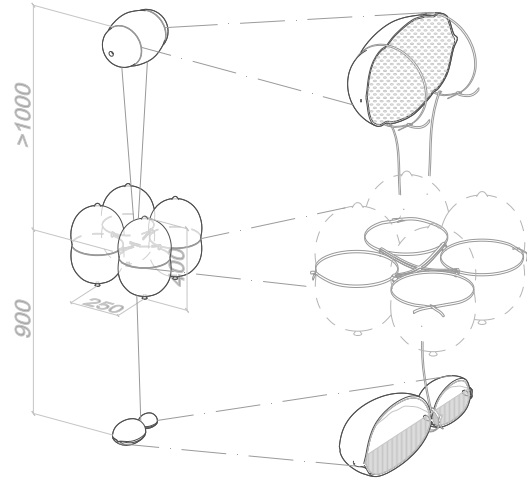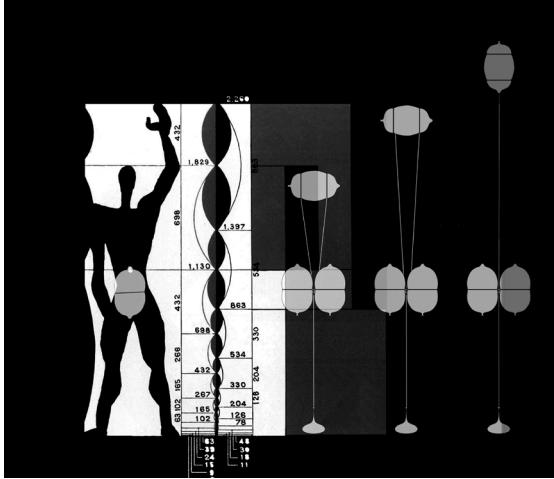
CONDOM SCALE AND JOINT DETAIL
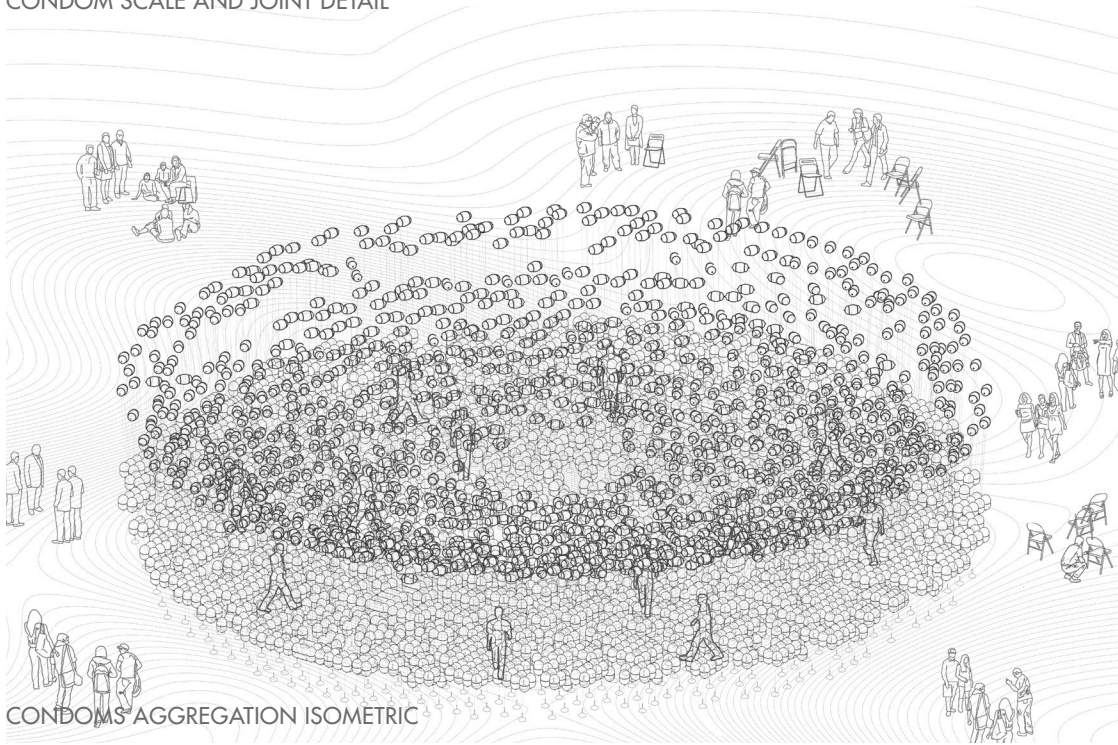
CONDOMS AGGREGATION ISOMETRIC
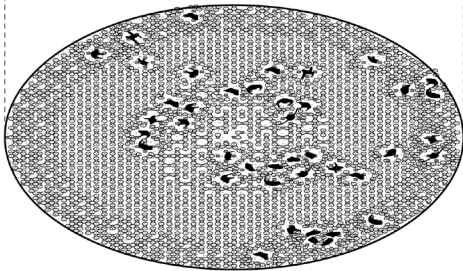

CONDOM AGGREGATION ELEVATION

3rd. Layer: Condoms Filled with Hydrogen
By controlling the binding of shoelaces and condoms to create a form that can swing with the wind.

Structure Layer:
We use shoelaces to tie the condoms together, the condoms on the same vertical ordinate are tied together as one module.
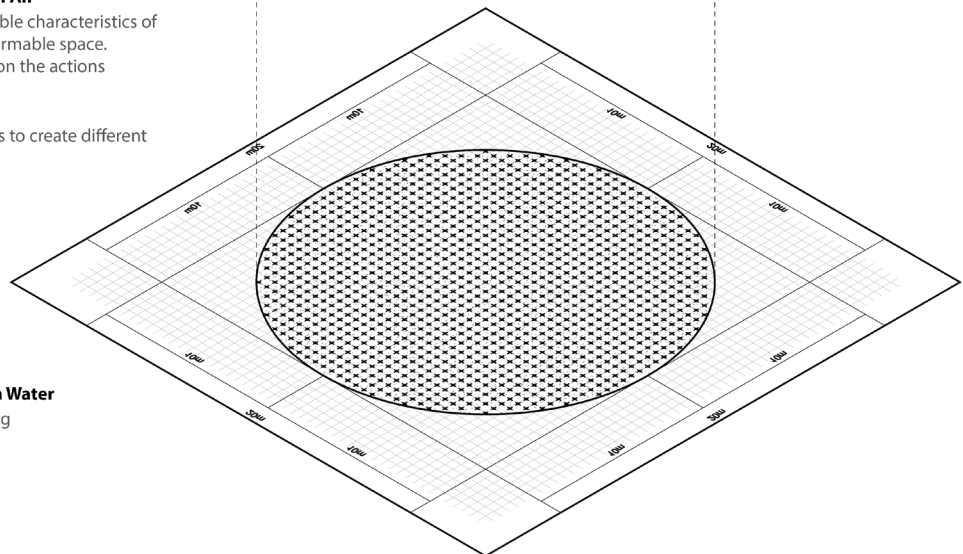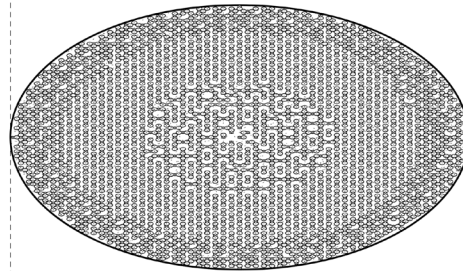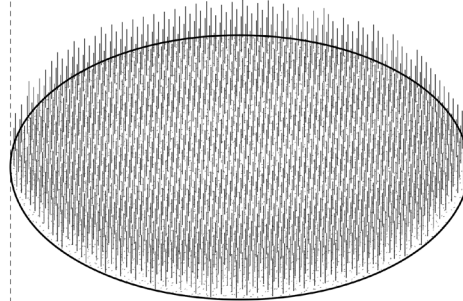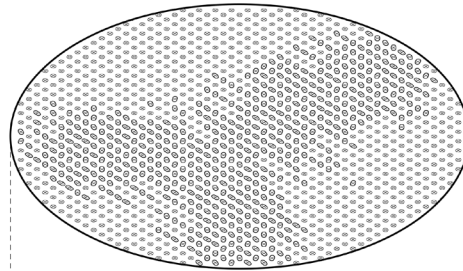
2nd. Layer: Condoms Filled with Air
Taking advantage of the deformable characteristics of condoms, we have created a deformable space. The shape of the space depends on the actions and states of the people inside.
Tight to Loose Experience
We put different density condoms to create different atmospheres in the pavilion.

1st. Layer : Condoms Filled with Water
Using the gravity to hold the flying condoms above the grid system

The pavilion has three layers of condoms vertically. The top layer is the condoms with hydrogen. It can show human genital areas, which has a certain metaphor that refers to gender differentiation. This layer consists of th formed by our actions. And the bottom layer is the condoms with the gravity provided by water to set on the gr between condoms and people and made the pavilion adaptive to the surrounding environments.

different shapes over time responding to the surroundings and wind. The middle layer is at the same height as
three or four condoms in each unit. As we enter in, walk, or even push the condom units, the middle layer can be
ound. In such a way, by applying the condom's characteristics on a pavilion, we discovered the new interactions

Layer of privacy: Backyard Housing

Architecture as physical distance but social closeness

      In this housing project, we are challenging the common concept of sharing space by spatial sequence. We used to think sharing space is more public for users and people have to enter it before going back home. We define the sharing space as a backyard and reverse this circulation this time so that seniors could still own their privacy. All the configuration and development is based on how people could enter their own space first and could decide the time they want to use the sharing space. In this way, the misalignment of public and private provides more possibilities of how people could live together in different layers.
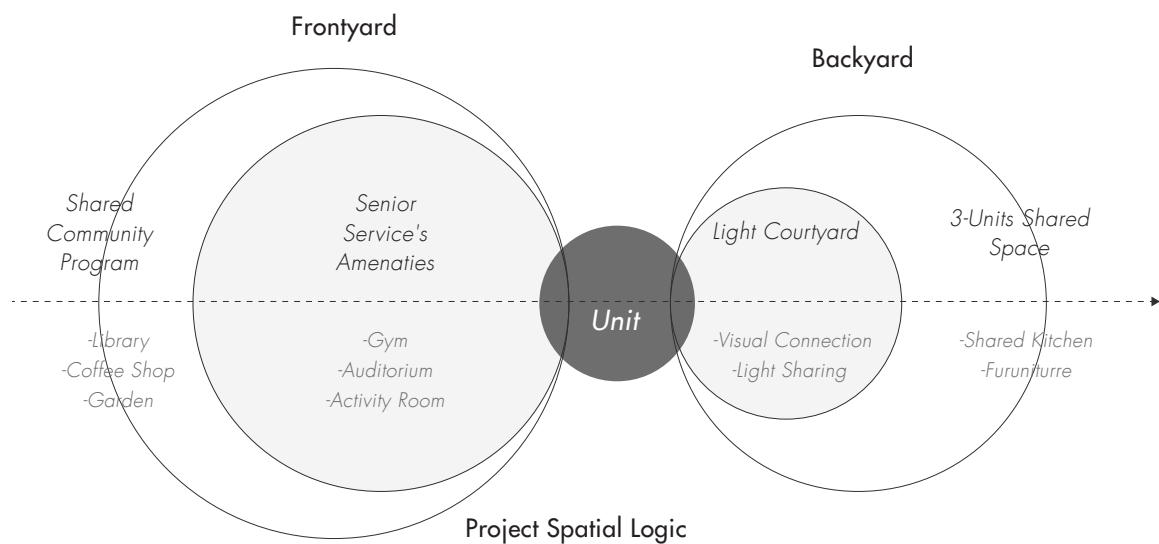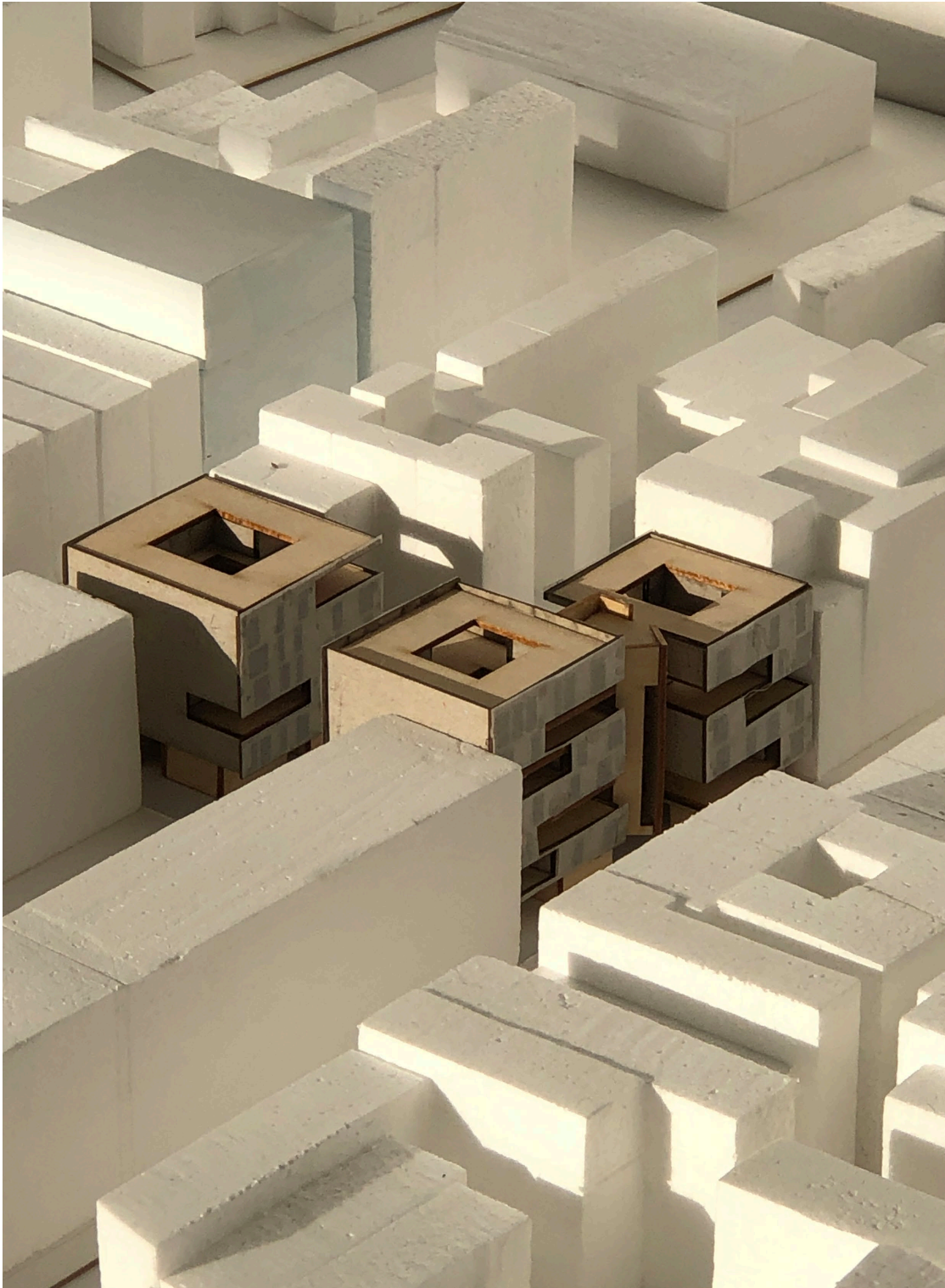
Site Plan

Layer of Privacy

This housing project is located at Elizabeth Garden in Nolita area which is a very open and welcoming neighborhood. Given the majority of the demographic there are young people, we are proposing a seniors-only community but with shared amenities for the whole city. The existing Elizabeth Garden provides rich types of gathering space for the city. The housing will also bring this character into the new public space.

Frontyard

Backyard

Shared Community Program

Senior Service's Amenaties

Light Courtyard

3-Units Shared Space

Unit

-Library
-Coffee Shop
-Garden

-Gym
-Auditorium
-Activity Room

-Visual Connection
-Light Sharing

-Shared Kitchen
-Furuniturre

Project Spatial Logic

The Elizabeth Garden is acting like a backyard space for the surrounding neighborhood. Each nearby house will extend its backyard to connect with the garden. To keep this harmonious, new housings are 6 - 7 story height like all the surrounding buildings. It will also provide entrance towards all directions and offer gathering space and a backyard resting place for the city.

VIEW OF AUDITORIUM

Shared spaces on the ground floor will become a place seniors engage with young people in the Nolita area. On the one hand, there is a front yard space like a library which seniors and others will use together. On the other hand, there will be space especially for seniors to study and take memorial classes. The former spatial quality of Elizabeth Garden, the layer of privacy is also preserved in the middle green space.


1 LIBRARY 2 AUDITORIUM 3 CAFE 4 GYM 5 OFFICE 6 COMMUNITY FARMLAND

GROUND FLOOR PLAN

VIEW OF LIGHTINING COURTYARD

At each floor, three units will together sharing a backyard space through the lightning courtyard. The backyard terrace is an extension of inside units.It will provide more customized and personal functions according to the residentis who share this space. In the spitial sequencce, seniors could enter their unit first without walking into public space. The sharing space should not be a compromise.
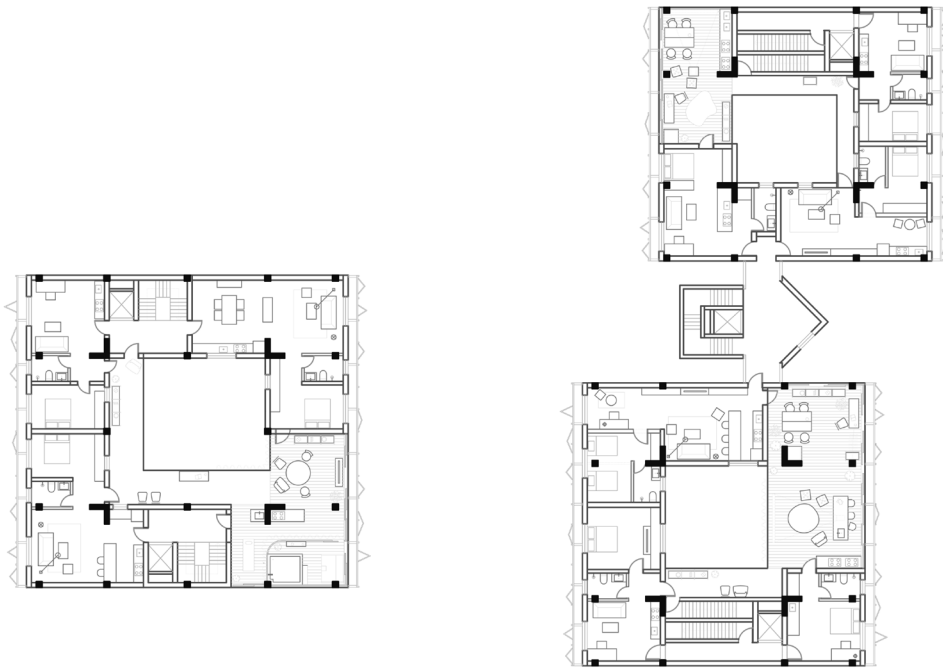
TYPICAL FLOOR PLAN

The shared backyard space will located in different position of each floor, creating a visual connection and richness inside the lightr
eye of each other while they can decide the openess towards others. They will also benefit from the sunlight and fresh air ciculated i
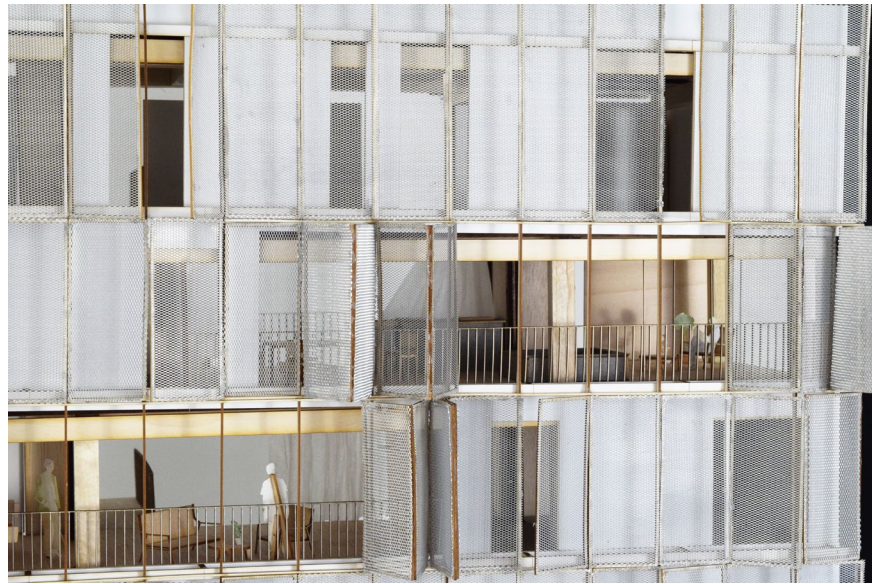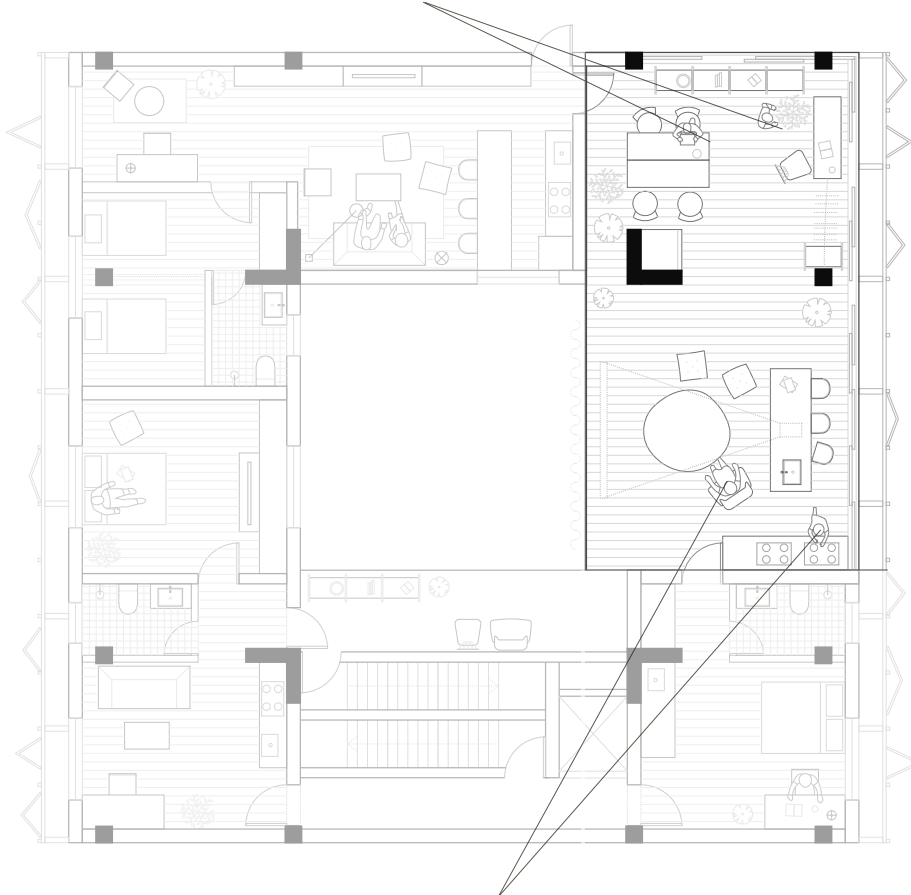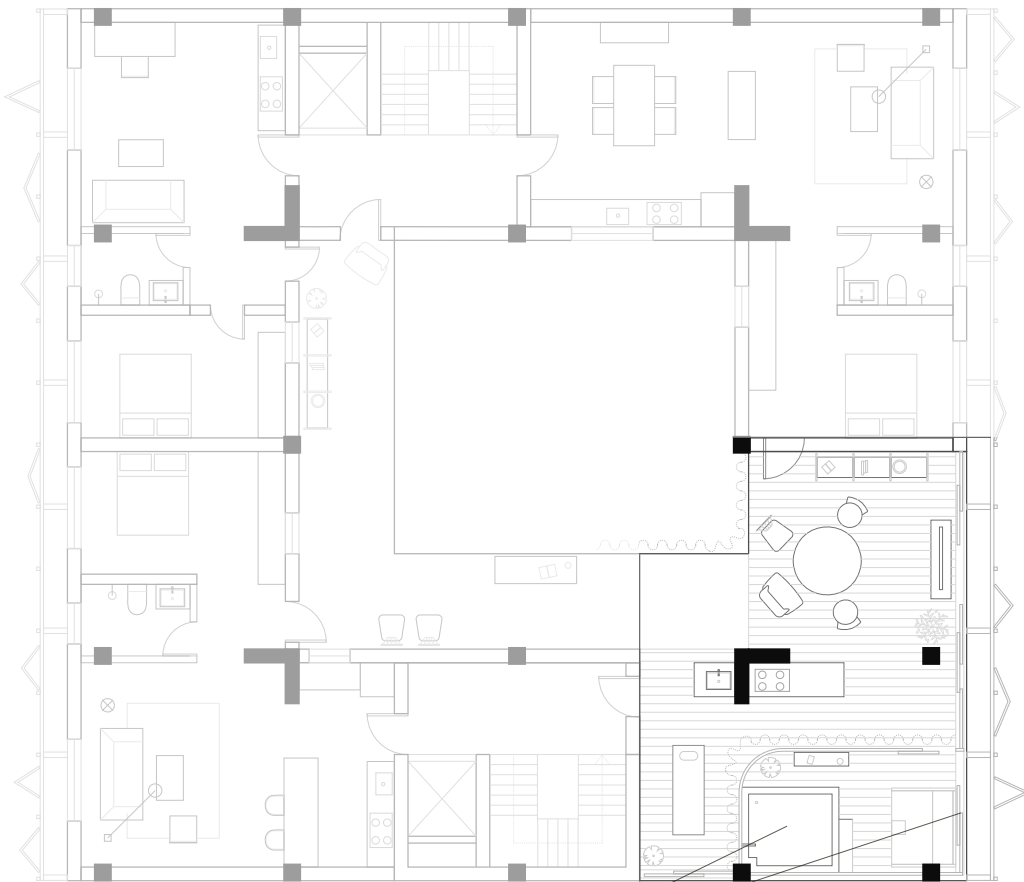
ning courtyard. Residents will have a
nside the courtyard.

Mario and Rosa love to plant, sometime they love

to share tomato they grow

Judy is going to use the large kitchen to cook while Amy is

reading on the balcony

Three old gentlemen decide to share a sauna room and

bathtub enjoying the sunset view together

Bibliography:

1. Sudjic, Deyan. The Edifice Complex: How the Rich and Powerful Shape the World. London: Allen Lane, 2005.

2. Boano, Camillo and Francisco Vergara Perucich. "Half-happy Architecture,"Viceversa 4 (April 2016): 59-81.

3. NEWMAN, ANDREW. "Contested Ecologies: Environmental Activism and Urban Space in Immigrant Paris." City & Society 23, no. 2 (December 2011): 192–209

4. Easterling, Keller. Extrastatecraft: the Power of Infrastructure Space. London: Verso, 2014.

5. Bakema, J. B, and Dirk van den Heuvel. Jaap Bakema and the Open Society. Amsterdam: Archis Publishers, 2018.

6. Munoz Sanz, Victor & van den Heuvel, Dirk. Total Space, 2016

7. Wensing, Thomas. Bakema's blind spot, 2014.

8. Cohen, Jean-Louis, and Gerard Martin Moeller. Liquid Stone: New Architecture in Concrete. New York: Princeton Architectural Press, 2006.

9. Bard, Joshua, Dana Cupkova, Newell Washburn, and Garth Zeglin. "Robotic Concrete Surface Finishing: A Moldless Approach to Creating Thermally Tuned Surface Geometry for Architectural Building Components Using Profile-3D-Printing." Construction Robotics 2, no. 1–4 (2018)

10. Rippmann, M., A. Liew, T. Van Mele, and P. Block. "Design, Fabrication and Testing of Discrete 3D Sand-Printed Floor Prototypes." Materials Today Communications 15 (June 1, 2018)

11. Mollard, Manon. 2020. "Breaking New Ground : Casting on Sand or Directly into Earthen Pits, Architects Are Letting the Logics of Making Generate Their Architecture, Anchoring the Work to the Site and Stretching the Constraints of Time." Architectural Review, no. 1468 (February): 100–109.

12. DeSilvey, Caitlin. Curated Decay: Heritage beyond Saving. Minneapolis, Minnesota: University of Minnesota Press, 2017.