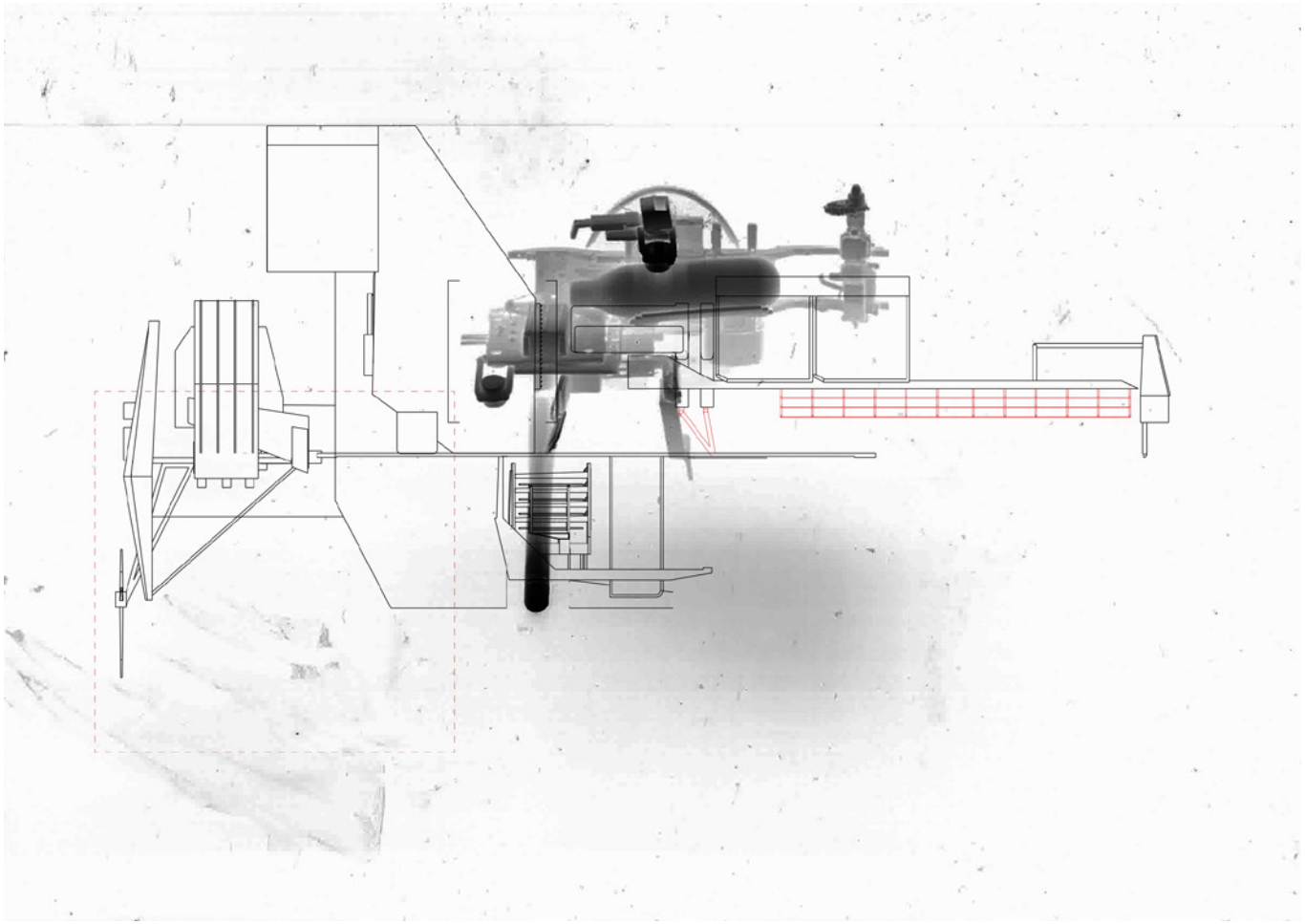

# Configuring Taiwan's Architectural Extensions

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120-point thesis
submitted to the Victoria University of Wellington
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Master of Architecture (Professional)

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School of Architecture
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# Abstract

Amongst Taipei's contemporary urban skyline of skyscrapers sits a secondary layer of prolific informal structures latching onto the existing modernist infrastructures of Taiwan, most prominently multistorey residential buildings. These structures resolve the spatial issue of the urban environment on the surface level and communicate a certain expression of Taiwan's way of life, but just as importantly, they serve as a critique of modernist standards and homogeneous space.

This phenomenon is the result of the absence of planning and declaration of martial law under the KMT's rule of Taiwan from 1949-1987. During this time, all top-down plans were reduced to one objective—to take over from China and return to the mainland (Illegal Taipei). During this time the government was negligent about these unrestrained developments in the city. In a 2011 exhibition titled "Illegal Architecture" Taiwanese architect, Ying-Chun Hsieh expressed a distinct view of this period. He wrote:

> Fortunately, while the government was concentrating itself on regaining the possession of mainland China and on promoting populism, which made it weak, people were given a chance to breathe. Their creativity was released, and fabulous urban life finally arose in Taipei… (Ching-Yueh)

In recent years, the government has had a change of agenda; the demolitions of illegal extensions are now enforced and with it what has come to symbolise a Taiwanese's way of life informed by decades of creative informal expansions and certain freedoms. Although government regulations emerge from safety concerns, this thesis argues that there is a superior procedure to overcome these issues without altering the culture:

to create an architecture that references but does not imitate the context, therefore creating a new architectural language that retains the spirit of context and history of the everyday in Taiwan.

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https://issuu.com/robinonsyang/docs/configuring_taiwan_s_architectural_extensions

◄ Fig. 1. Design Experiment Two Matrix Hovering over Taipei.

Souffle
羊陶

# Preface

Identifying as a Taiwanese Kiwi, it was critical for me to reconnect with my culture. Born in New Zealand and only having lived in Taiwan for a short period of time in my childhood, it was important for me personally to take this opportunity and further understand the architecture, culture, and people of Taiwan. Having visited Taiwan almost once a year for every year of my life, naturally I started wondering about the architecture of Taiwan. It was evident that the extensive culture that this thesis is addressing is prominent in every corner. When I discovered that these structures, which are an essential part of many Taiwanese people's day to day life, are being demolished and phased out without an alternative, I knew I wanted to address this issue in a way where the culture and identity are expressed.

◄ Fig. 2. Conversation captured on the streets of Yilan.

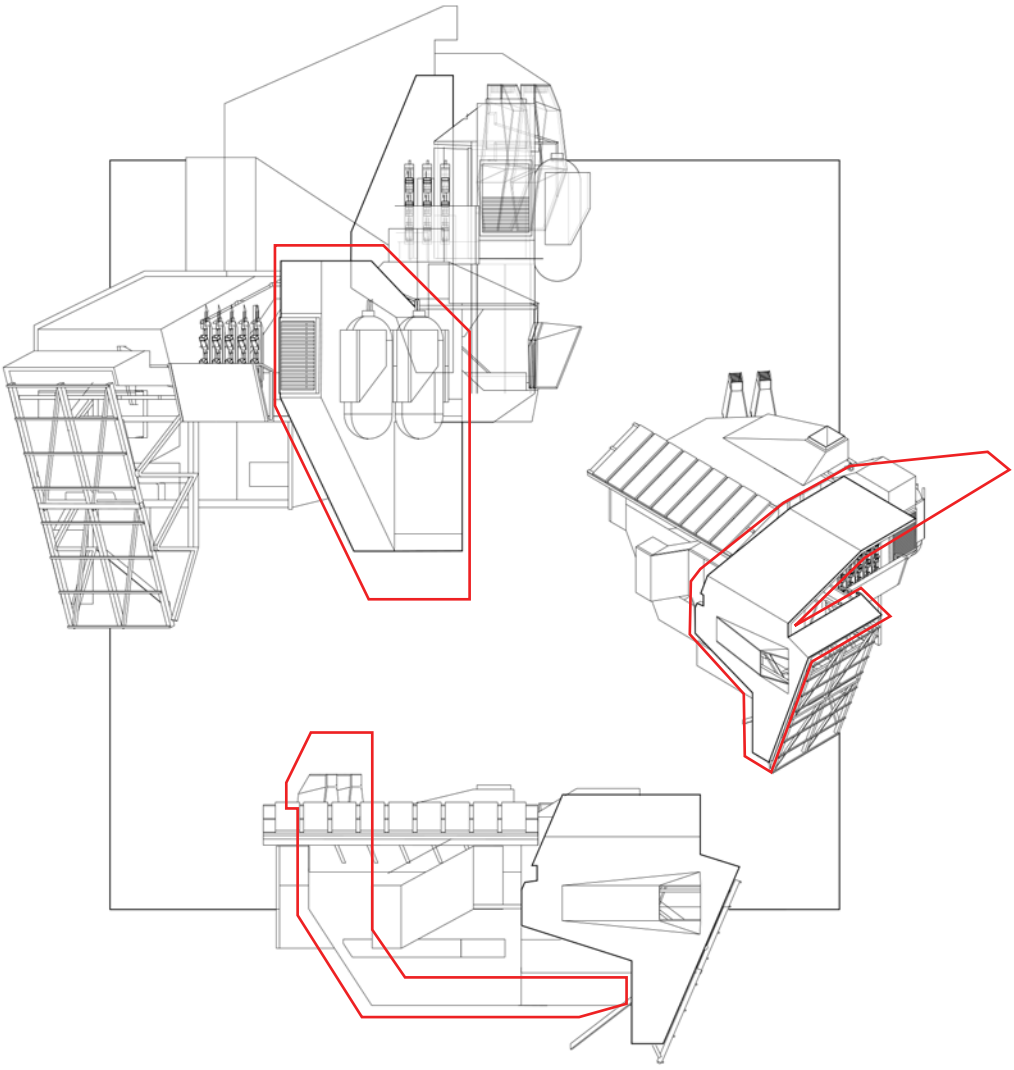
# Acknowledgements

Firstly, to mum and dad, thank you for your unconditional love. Words cannot describe how much I appreciate your confidence in my aspirations and dreams. You have provided me the strength to not give up over the past few years.

To my friends, thank you for the continuous interest and discussions regarding my work.

Lastly, to Britt, thank you for your constant support and reassurance, your passion for my work has eliminated self-doubt and always remind me of my passion for architecture.

◄ Fig. 3. Analogue sketch studies on display.



Abstract III

Preface V

Acknowledgements VII

1 Introduction 1

2 Context Analysis 13

3 Theoretical Approach 49

4 Design Case Studies 67

5 Design Experiment One 81

6 Taiwan Fieldwork 117

7 Design Experiment Two 167

8 Design Experiment Three 215

9 Conclusion 329

List of References 336

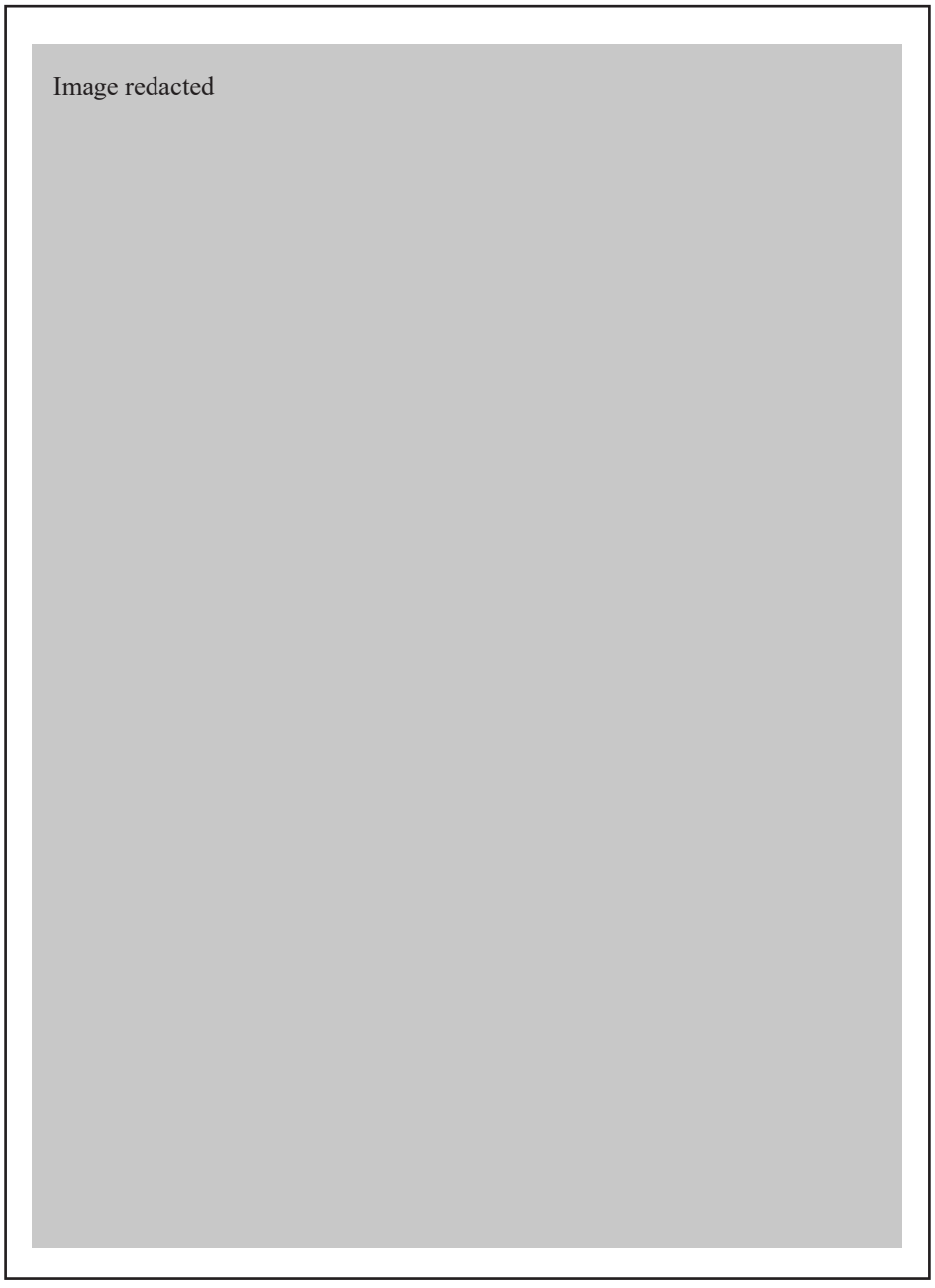
Sources of Figures 340

◄ Fig. 4. DE3 Dwelling Drawing Collage.

Fig. 5. Bird's eye view of Taipei.

# Introduction

1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# Problem Statement

As a multi-colonized country, Taiwan has been ruled by several countries throughout the past few centuries, from Portugal to China—The most influential era being China and Japan; the Japanese introduced modernization to Taiwan, which came with urban grids, infrastructures and building regulations. When the Kuomingtan, or the Chinese Nationalist Party, retreated to Taiwan from the Chinese Civil War, all regulations and order introduced by the Japanese were put on hold, as the main agenda of the Kuomingtan was to return and regain possession of China. This is the precise moment when the people of Taiwan were able to take matters into their own hands and address their own living obstacles. Much like many other high-density modernist cities around the world, the issue was the lack of space. This spatial issue sparked the Taiwanese extension culture, which is a contemporary vernacular architecture.

Half a century later, the intention of the government has evolved in a more progressive direction; the extensions are now outlawed, and demolition is enforced. Although this was an attempt to upkeep the wellbeing of the people due to safety, but this strategy was of a deductive nature. Without providing an alternative that retains the culture, the Taiwanese way of life is being demolished along with the physical structures.

◄ Fig. 6. Street corner in Da'an district, Taipei.

# Research Question

**How can urban temporality act as a stimulant for devising an architecture, providing a vision that portrays a future of architectural extensions in Taiwan that retains the culture and lifestyle of its people?**

This investigation seeks to create an architectural language by embracing the extension culture in Taiwan, which acts as a potential alternative for the future of extensions in Taiwan and maintains a tradition that has come to symbolise the culture and identity of the place.

## Aims

The aims of this design-led research are:

- to seek an alternative architecture for the future of extensions in Taiwan that retains the culture and identity of the current Taiwanese extensions;
- to generate an architectural vocabulary that references the extensions culture without simply imitating it;
- to enable multi-functionality corresponding to existing typologies of current extensions and speculate on potential typologies of future extensions.

## Objectives

The objectives to assist in accomplishing the aims of this design-led research are:

- to explore the current phenomenon's situation in terms of identity, needs and threats. As importantly, further investigate what the future holds, taking that into consideration when executing the outcome;
- to establish an understanding of the existing extension's multi-functional nature and test this within spatial limitations through a series of design experiments;
- to understand Taiwanese extensions as a form of contemporary vernacular architecture and generate a set of design principles referencing the formal qualities as an architectural language;
- to challenge how two-dimensional and three-dimensional sketch interventions can assist in establishing architectural language and typologies;
- to integrate the resulting architectural language with the multi-functional attributes and derive a new set of architectural components.

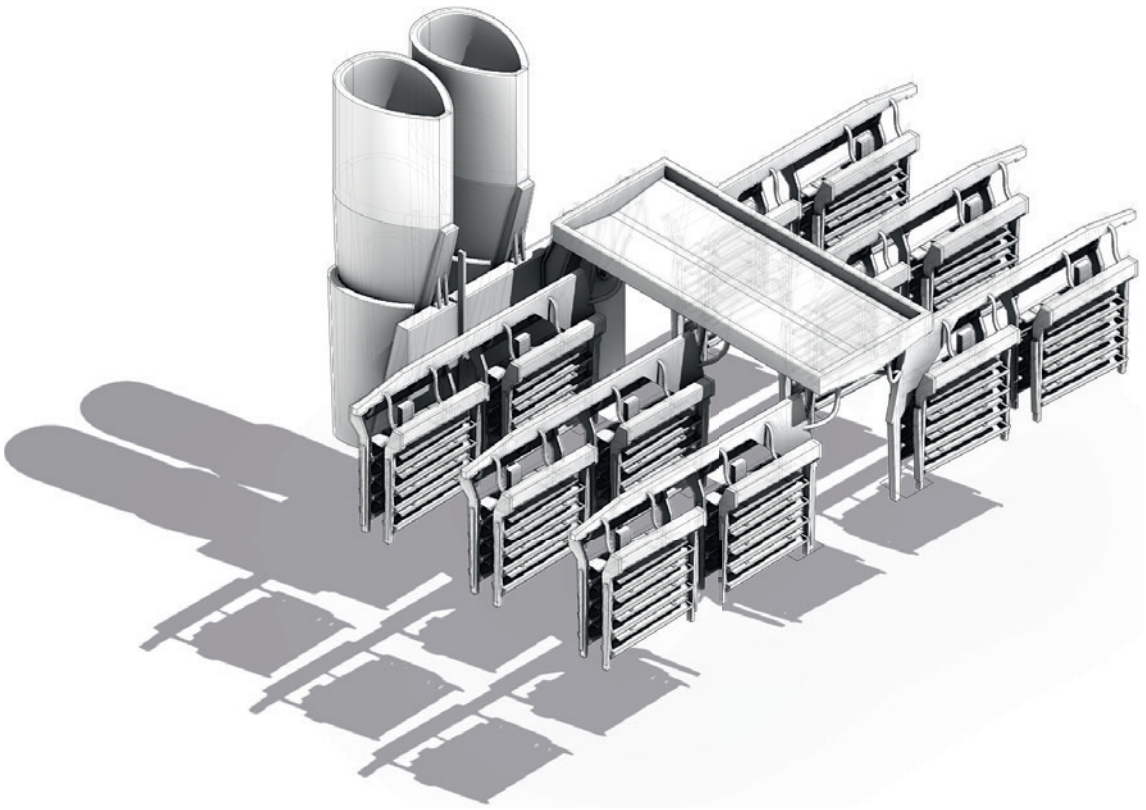
# Scope

This design-led research investigation tackles the research question in a speculative manner: to create an architectural language by embracing the formal and multi-functional qualities of the extension culture in Taiwan, resulting in an alternative for the future of extensions in Taiwan.

This is examined through three key sets of design experiments constructing a body of work:

- DE1 focusses on testing multi-functional typologies in a restricted environment, at the façade extension scale;
- DE2 establishes an architectural language that references but does not imitate the current language of the extension culture, which is interpreted as contemporary vernacular architecture;
- DE3 aims to integrate the architectural language derived through DE2 and the multi-functional attributes explored in DE1, and experiments with interventions at a rooftop extension scale.

Although safety of the extensions is officially the obstacle that the current extension culture faces, this thesis focuses on the importance of preserving the culture and the Taiwanese way of life. The demolition of unsafe structures is understood, but most of these structures have survived for decades. It is obvious that safe extensions can be and have been made. Therefore, providing a vision of the potential alternative is the focus of this investigation; cost and structure is outside of the scope of this investigation. By conducting the investigation in a speculative manner, this thesis looks to raise awareness of the essentiality of providing an alternative for these structures.



▲ Fig. 7. Rain Water Collecting Mega Hydroponic System from DE3

# Methodology & Thesis Structure

The structure of this thesis follows the methodology chronologically, as shown in the methodology diagram (Fig. 8). This thesis employs design-as-research as the primary methodology. Whilst conducting research-for-design preceding and during the design phase. Peter Downton emphasises that designing is a production of knowledge and production of a desired speculation of how things could work and appear (Downton, 2003). This production is based on pre-existing knowledge of design and relevant sources.

Through three interrelated series of design experiments, a speculative proposition of the future of Taiwanese extension culture is produced. Utilising various design tests in each experiment provides insight and an iterative approach; each iteration is an inquiry into the research question. Sequentially, the three experiments build an argument addressing the aims and objectives of this thesis investigation (Downton, 2003).

2 The investigation starts with Chapter Two, "Context Analysis", establishing an understanding of the Taiwanese extension culture; comprehension of the phenomenon and Taiwanese national identity is the main objective of this process. The origins, current situation and implications are explored creating a foundation to further understand the threats, needs and identity of these extensions. The use of mapping and digital street view extractions from Google Earth is also used to inhabit the city and observe the extension in context without being on site.

3 Chapter Three, "Theoretical Approach", is a series of literature reviews completed to construct a theoretical approach towards addressing the aims and objectives. Lebbeus Woods's work regarding reconstruction of architectural space in environments of crisis is explored. The concept of forms that self-reference but do not self-imitate was adopted when considering the proposed architecture vocabulary of Taiwan's extensions. John Hejduk's use of an empirical vocabulary, tracing and interpreting structures in a time sequence, is adopted when analysing the extensions in Taiwan, to further understand the identity and architectural language. Robert Venturi's critiques of the modernist movement are embraced when assessing the formal development of the phenomenon.

4 Chapter Four, "Design Case Studies", provides insights on a series of projects both built and unbuilt, each addressing an aspect of the aims and objectives of this investigation:

- On the phenomenon itself, City Experiment with Two Actions, a project done in 2013 by JUT Architectural Academy from Taiwan;
- On the multifunctionality, Clone House by CJ Lim in 1999;
- On extensions and need-base architecture in New Zealand, Sky Box by Gerald Melling in 2001;
- On multifunctionality and exchangeability, Plug-in City by Archigram in 1964.

Research For Design

2 **Context Analysis**

Origins
Present
Implications

Google Earth Extractions
Mapping

3 **Theoretical Approach**

Lebbeus Woods
John Hejduk
Robert Venturi

4 **Design Case Studies**

City Experiment in Two Actions
Clone House
Sky Box
Plug-in City

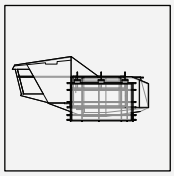
6 **Taiwan Fieldwork**

Flâneur
Participatory Observation
Case Studies

Design As Research

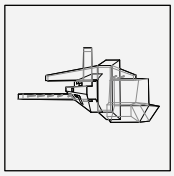
5 **Design Experiment One**

Multifunctional Spaces
Addition and Configuration
Parti Models
Analogue Drawings
Digital Drawing and Modelling Iteration



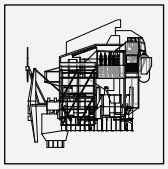
7 **Design Experiment Two**

Archtiectural Language
Empirical Vocabulary
Collage
Palimpsest and Tracing
Analogue Drawings
Digital Drawing and Modelling Iteration



8 **Design Experiment Three**

Parti Models
Specific Site Analysis
Multifunctional Space
Architectural Language
Analogue Drawings
Digital Drawing and Modelling Iteration



9 **Conclusion & Critical Reflection**

▲ Fig. 8. Methodology and Thesis Structure Diagram.

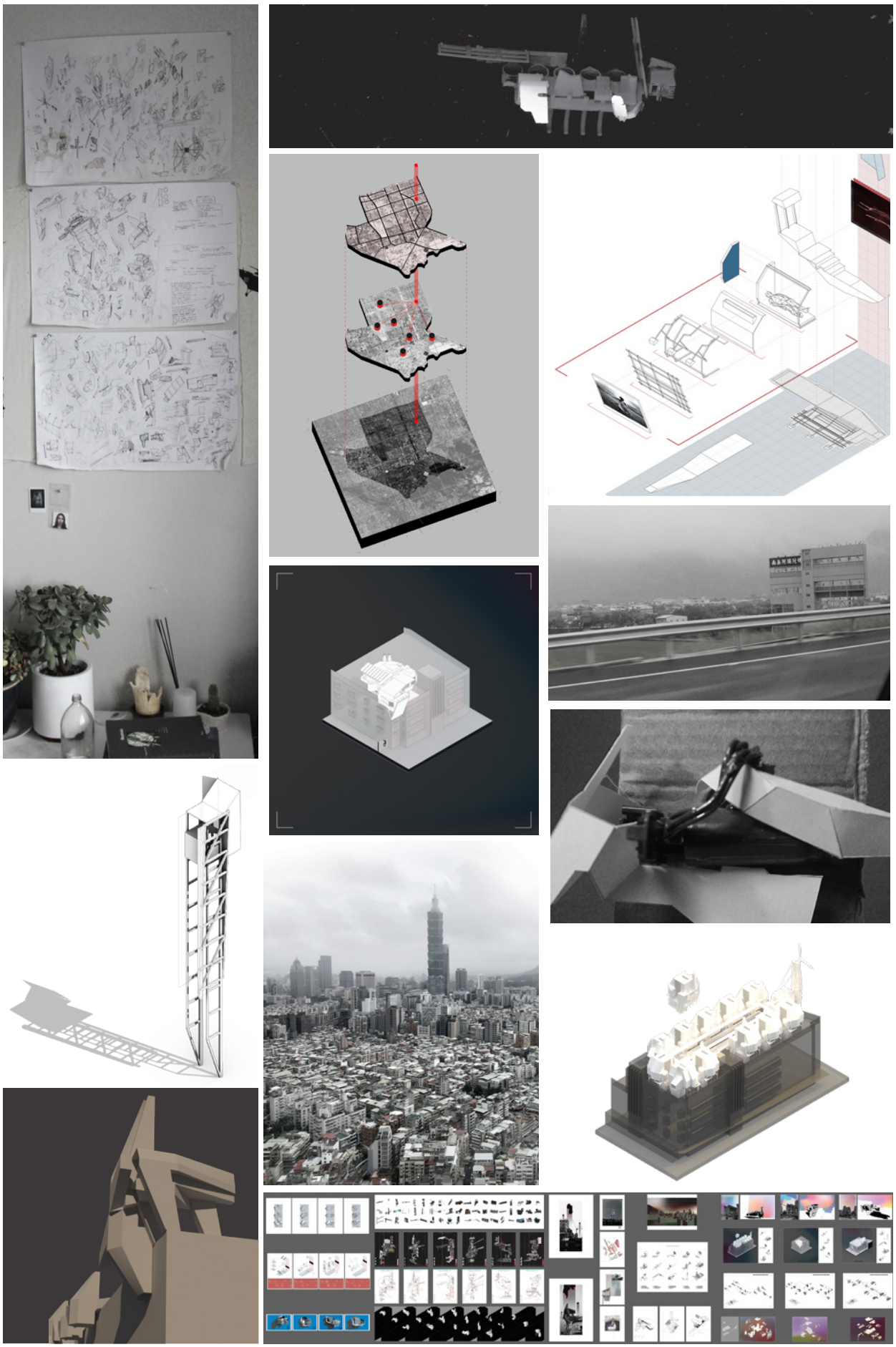
5 The first three chapters establish a foundation for the first component of the design phase, Chapter Five, “Design Experiment One”, a series of tests at a facade extension scale. The methods applied starts with a series of parti models, which provides assistance in organising the notion of “addition” and “configuration” (Elzen, 2012). Then the method fluctuates between analogue and digital drawings or models creating an iterative and feed forward approach. The process of iterations creates elements that are “self-similar but non-identical”; therefore the test pushes and builds upon itself to further address the research question (Rhowbotham, 1999). This preliminary design experiment focusses on the multifunctionality and the notion of addition and configuration could appear. This chapter concludes with reflection and critiques into the experiment.

6 Chapter Six, “Taiwanese Fieldwork”, fluctuates back to a research-for-design nature, applying an ethnographic field study method. Ethnographic studies emphasises the human interacting with the subject (Wang, 2013 ), and in this case, the architectural language, function, needs and identity of the extension culture is studied. The fieldwork chapter is broken into three processes: “Flâneur”, a discerning observation and reading of the city and in turn the extensions culture; “Participatory Observation”, anonymous and casual conversation with the people of Taiwan, to further understand the needs and identity of the phenomenon (Jean Liedtka, 2019); and finally, two on site “Case Studies”, one focusing on the pigeon lofts of Taiwan to emphasise the architectural language and another focusing on Taiwanese architect Fieldoffice’s Jin-Mei Pedestrian Bridge, exploring the use of multi-functional attachments to existing infrastructure. This chapter finalised the design principle to which the upcoming design experiments will adhere and acts as an injection of resources to further the foundation for design.

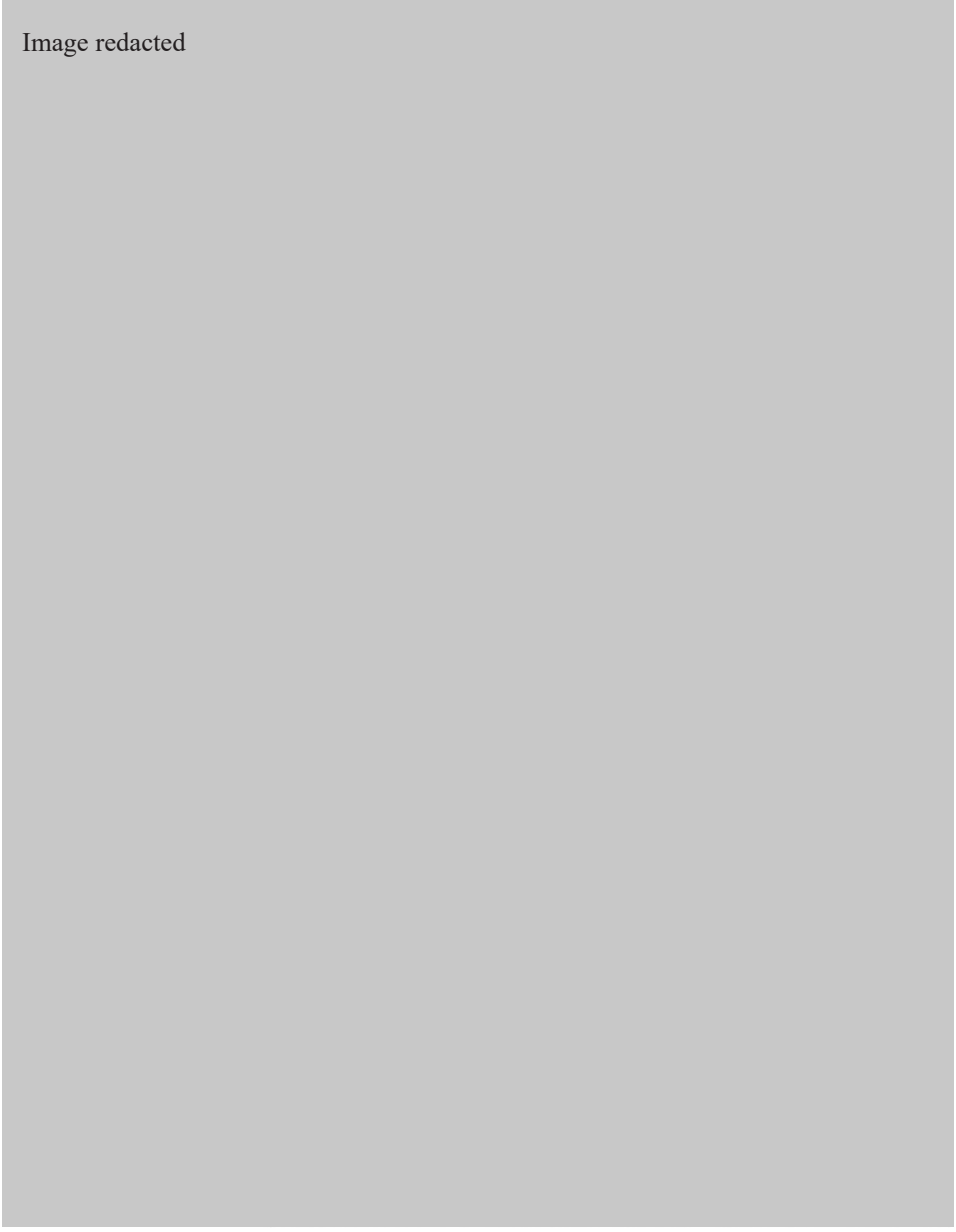
7 Chapter Seven, “Design Experiment Two”, focusses on the development of a new architectural language derived from the phenomenon. This is initiated through the creation of an empirical vocabulary extracted from photographs documented during the “Flâneur” section. Then a series of tests through the methods of collage, tracings and palimpsest was conducted to emphasise the soul of the extension culture in Taiwan. The process of collage experiments with spatial and formal juxtaposition (Shields, 2014); it assists in creating a unique interpretation of the extension culture. Then each collage or photomontage is traced upon to emphasise certain formal qualities; palimpsest drawings were also implemented to further illustrate characteristics of interest. The process of this on photomontage consists of perspective images penetrating the structure internally and externally (Hejduk, 1986). Through analogue and digital sketches, a series of three-dimensional iterations dictated by two-dimensional forms formulated from the initial tests is developed. This showcases a new architectural language of Taiwanese extensions that are self-similar but not identical (Rhowbotham, 1999).

8 Once the multifunctional typologies and the proposed architectural language is determined, they are utilised as the foundation for the final design phase. Chapter Eight, “Design Experiment Three”, begins with another series of parti models, following a similar process to Design Experiment One. A site is chosen, and a more specific site analysis is conducted to further accentuate the site responsiveness in terms of functions. With the needs of each site in mind a series of design tests is done through iteration fluctuating between digital and analogue drawings.

9 Chapter Nine, “Conclusion & Critical Reflection”, reflects on each chapter in accordance with the aims and objectives of the investigation. It then critically responds to the design outcomes in terms of the research question and addressing the limitations and assumptions of this approach this investigation has taken. Finally, the chapter concludes with reflection upon the opportunities this thesis has to offer and how it can be referred to in a wider context of architecture.



▲ Fig. 9. Collage of iterations and processes of this investigation.




▲ Fig. 10. Context Analysis Collage.

# Context Analysis

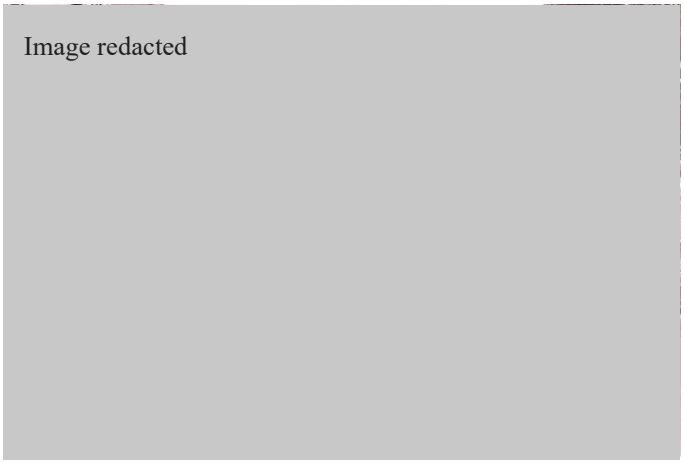
# 2

▲ Fig. 11. Alleyway in Taipei.

## Introduction

This chapter examines the informal extensions culture in Taiwan; it aims to establish an understanding of the relationship between the phenomenon and the people, urban environment and history. This is done through three sections: Origins, Current Situation and the Implications. The first section, Origins, investigates the relevant history of Taiwan that has enabled such a phenomenon to flourish. This provides an insight into Taiwanese identity and what the extensions represent. The second section, Current Situation, investigates what has empowered the phenomenon to continue despite the government's effort to eliminate it. It uses Google Maps' extractions and mappings to inspect the extensions in context and examine the consistency of the phenomenon throughout Taipei. The third section, Implications, explores where the extension culture of Taiwan is heading through analysis of "Illegal Architecture", an exhibition curated by Taiwanese architect Roan Ching-Yueh, which focussed on the importance of bottom up strategies in the urban environment in Taiwan. This provides insight into what the extension culture means for the lives and identity of the Taiwanese people. Collectively, these sections form a foundation for the design phase to address the aims and objectives of this investigation. Through understanding of the threats, needs and identity of these extensions, this chapter provides meaningful opportunities for the design experiments.

# Origins



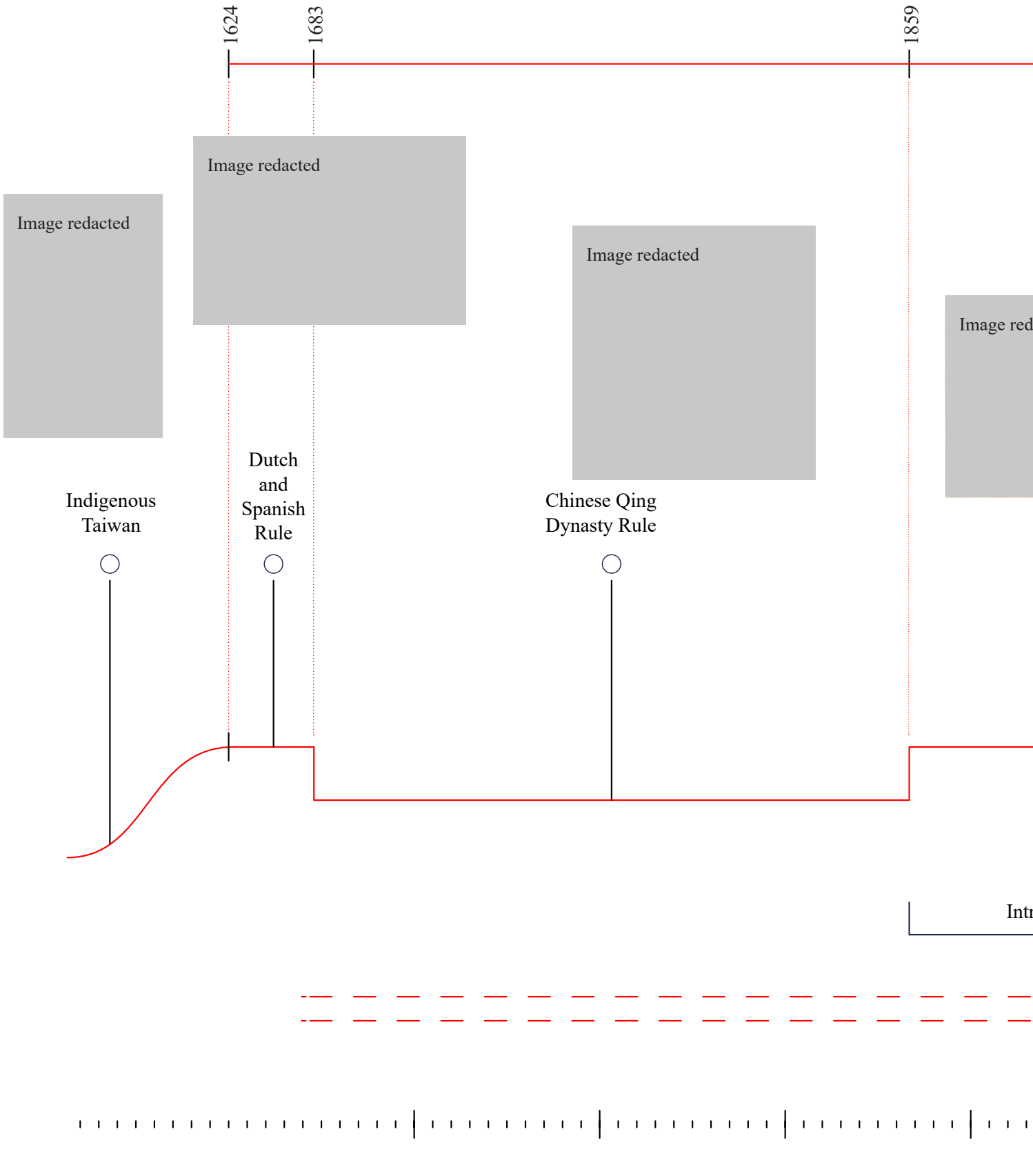

Taiwan as a country has endured various cultural infiltrations and disruptions due to the multi-colonised nature of its history—most prominently by Japan from 1895 until 1945 and the Chinese Nationalist Party from 1945 until 1987. The informal structures are a representation of the on-going repression the nation has endured. As population grew in the 1900s, these structures rose as extensions of spaces required, which is a reaction towards the modernist standards the Japanese introduced and was enabled to grow due to the neglect of regulation and planning by the Chinese Nationalist Party.

▲ Fig. 12. Taiwanese street view in 1987.

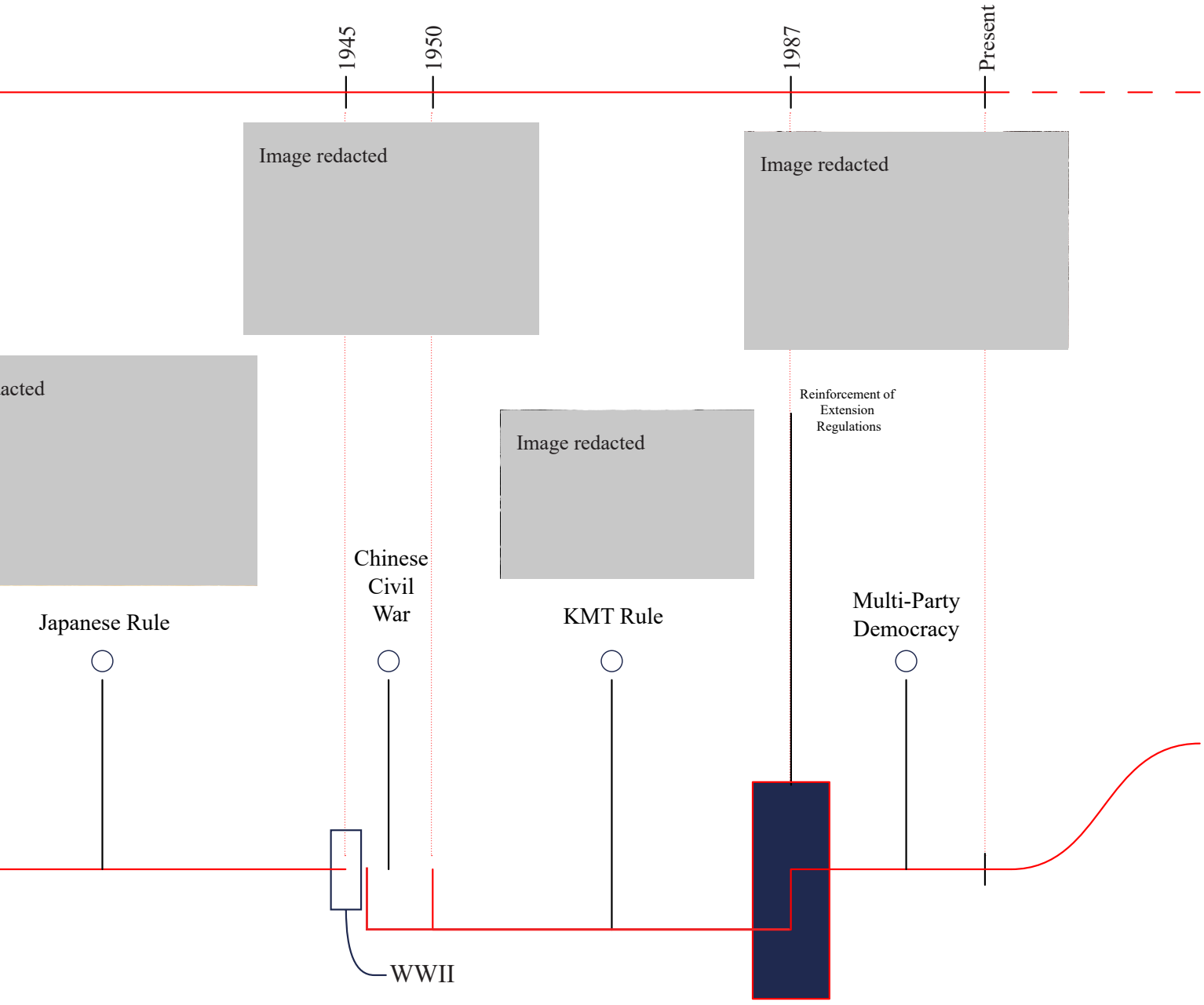
## Brief Colonial History

Earliest external settlement in Taiwan was around six thousand years ago, by Han Chinese farmers, who are believed to be the ancestors of the indigenous Taiwanese people. In 1622 the Dutch East India Company saw the potential of such an island as a trading outpost and attempted to Seize Penghu Island. It was not until 1624 that the Dutch successfully colonised Taiwan and established “Fort Zeelandia” (Itō, 2004). During this time there were also colonies established by the Portuguese and the Spanish. In 1863, the Qing Dynasty of China finally acquired Taiwan, placing it under its jurisdiction (Willis, 2006). Taiwan was declared a province in 1885, but after the loss of the first Sino-Japanese war in 1895, Taiwan was surrendered to Japan by the Qing government (Zhong, 2016). This brief historical overview of Taiwan’s colonisation is to demonstrate the diversity and convolution of Taiwan’s colonial history.

## Brief Historical Timeline of Colonial Taiwan




▲ Fig. 13. Brief Historical Timeline of Colonial Taiwan.


1945
1950
1987
Present
Image redacted
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acted
Image redacted
Reinforcement of Extension Regulations
Chinese Civil War
Japanese Rule
KMT Rule
Multi-Party Democracy
WWII
roduction of Modernism
MARTIAL LAW
Build Up of Informal Extension Culture

## Japanese Rule

During Japanese rule, modernisation and industrialisation were introduced, which proceeded to the construction of urban grids, railways, transport networks, building regulations, sanitation system and a formal education system (Hsia, 2002). Japan saw Taiwan as a "Model Colony" in expansion to its empire (Pitkänen, 2019). This marks the birth of the four to five storey modernist concrete residential dwellings that cover the urban fabric of today's Taiwan. It became the norm for families in the 1900s, with the ground floor being space for the family's business and floors above being the space for living for three generations. Standardisation came with modernisation; strict regulations and restrictions of construction of spaces and signage were implemented (Itō, 2004).

Although modernisation contributed positively to contemporary Taiwanese lifestyle and provided structure and foundation for progressive development of Taiwan's current society, this era was a time of repression and suffering (Zhong, 2016). The Japanese incorporated a nationwide assimilation policy; known as "National Spiritual Mobilization Movement", this policy prohibited Taiwanese culture, language and religion, to the extent of even advocating the people of Taiwan to abandon their surnames and adopt a Japanese name, as a part of "Japanization" (Ching, 2001). Undoubtedly, this affected the identity of at least two generations of Taiwanese and still has cultural imprints today. Even though the Taiwanese were forced to become Japanese culturally, they were still treated as second class citizens (Zhong, 2016); many Taiwanese still retained their Taiwanese identity behind closed doors and expressed dual national identities (Hao, 2010). This generated much resentment and the hope for change.

▲ Fig. 14. Japanese Map of Taipei City, showing the urban grid.

## Chinese Nationalist Party Rule

After Japan's surrender of WWII in 1945, all claims of Taiwan were renounced in the Treaty of Taipei without specifying what nation they were to be surrendered to (Charnery, 2000). One would assume the nation would come to its own, but Taiwan's "ownership" was extremely intricate during this period. The Chinese Nationalist Party or KuoMing-Tang, occupied Taiwan in 1945 with military intentions. As the KMT was defeated in 1949 by the Communist party during the Chinese Civil War, they completely retreated to Taiwan (Charnery, 2000).

When the Chinese Nationalist Party took over, martial law was declared, and Taiwan became an authoritarian country without an opposition party. The KMT saw the past colonial period by the Japanese as shameful. Therefore, much like the Japanese's strategy, the KMT started to "reintegrate" Taiwan into China (Greene, 2016)—Abolishing Japanese and Taiwanese language in school and enforcing the teaching of Chinese identity, further disrupting the national identity of Taiwanese people. Despite this, a large portion of the Taiwanese people welcomed the KMT and saw it as reunification since the Qing era. But notions of a reunification soon fell, as the KMT's administration neglected the people and their pre-existing lifestyles—For example, seizing and closing of previously Japanese-owned factories, which left the Taiwanese employees unemployed. Commodities were also compulsorily bought or confiscated by the KMT at a low price and sent back to mainland China, causing inflation and shortage of everyday products (Charnery, 2000). Other goods like cigarettes and alcohol were outlawed to sell unless through the government run company "Taiwan Tobacco and Liquor Corporation"; tensions rose. This led to the "February 28" incident, where the public assault of a cigarette vendor and the death of a bystander by KMT authorities led to mass protest around the country (Stephen J. Hartnett, 2019). In return, the government massacred thousands, if not tens of thousands of civilians (Smith, 2007). This is marked as the birth of the Taiwanese Independence movement, an enforcement of national identity of the Taiwanese people.

▲ Fig. 15. 228 Incident Photograph.

## Birth of the Extensions

When KMT took over, Taiwan saw an instant surge in population; the KMT brought over one to two million people from China (Pitkänen, 2019). This caused significant spatial issues and overcrowdedness, and in turn accommodation difficulty. The KMT retained its claim to China the "Motherland" and treated Taiwan as a peripheral frontier island (Pitkänen, 2019). It is obvious that the KMT was indifferent to the existing Taiwanese's lifestyle and wellbeing. With their main agenda being to eventually reclaim China, its policies heavily prioritised military purposes; all regulations and planning of the urban environment were neglected (Greene, 2016). This sparked the informal settlements within Taiwan, in two distinct manners.

The first was illegal urban dwellings, many of which are by veterans or started as temporary military housing (Casagrande, 2015). These dwellings were constructed wherever space was available and gradually became informal villages, the most well-known being Treasure Hill. Treasure Hill is also the only one of these informal villages still existing today; it was founded by KMT veterans, who like many others had difficulty securing conventional accommodation due to the lack of housing and space. In 2003, the government decided to demolish the settlement consisting of four hundred veteran households. The organic and unrestricted nature of this village was also the saving grace for itself. The demolition only lasted for the first two layers of houses as the layers beyond were too high and there were no drivable roads (Casagrande, 2015). Today the village has been revitalised by Finnish architect Marco Casagrande, and it is now an artist's village with its own grey water systems and urban farms.

Although Treasure Hill is the last of its kind, the other manner of informal settlements is still existing and has been thriving, extensions. As population grew, the four and five storey homes introduced by the Japanese became loosely regulated (Pitkänen, 2019). What would have been a single-family home is now divided into three or four apartments; naturally living spaces for residents became clustered and limited. With the government reluctant to finance or provide assistance to the spatial problem, the people of Taiwan took matters into their own hands and started building extensions out of necessity (Pitkänen, 2019). The passivity of the government enabled the Taiwanese people to unleash their creativity and build as they please and as they need. These included balcony enclosures to provide rooms, balcony extensions for air conditioning, laundry and gardens and finally rooftop extensions. Rooftop extensions address the accommodation issue most aggressively, creating a whole additional apartment or multiple studio apartments (Pitkänen, 2019).

Many saw the rise of these informal extensions as a negative symptom of societal issues relating to economic disparity and the overall passive role of the government (Pitkänen, 2019). There is no denying that it is caused by such negligence, but this investigation sees the extensions' culture as the people of Taiwan finally being free and enabled to take control after centuries of suppression and convolution in national identity. The extensions exist as a national identity expression, revealing what the cities of Taiwan really are (Ching-Yueh, 2014). It responds and reacts to the modernist standards introduced by the Japanese and the negligence by the KMT; the phenomenon is yearning for the freedom of Taiwan.

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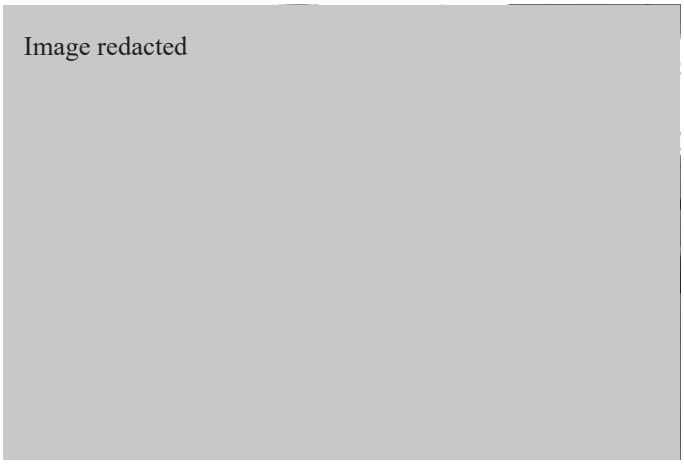
▲ Fig. 16. Treasure Hill.

► Fig. 17. Balcony Extensions in Taipei.

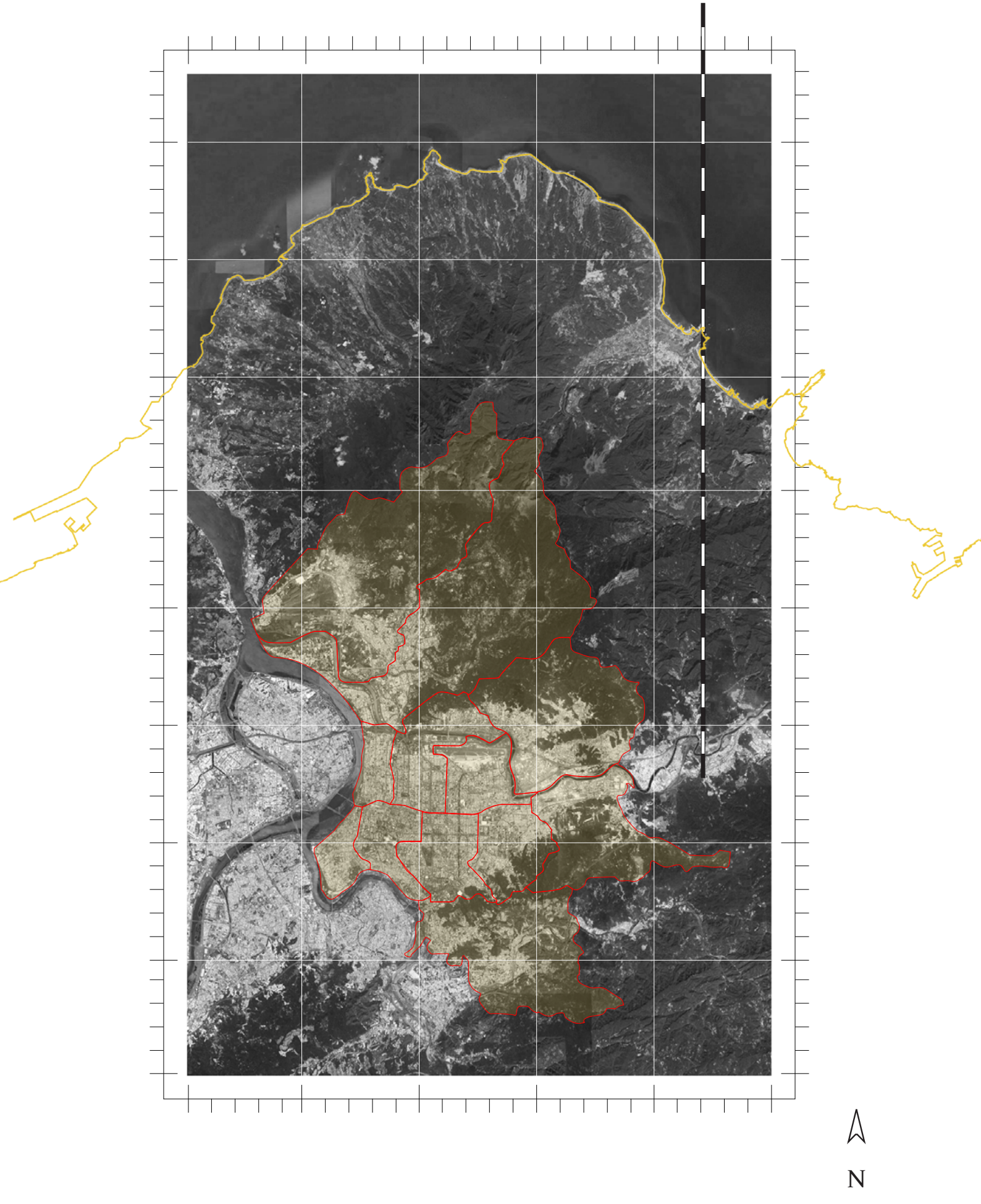
# Current Situation




It was not until the mid-1970s that the government finally took a more active role; attempting to address the housing issue, they proposed to build a hundred thousand public housing units (Pitkänen, 2019). Naturally, this was an ambitious endeavour; the government found that they had limited resources to achieve this. The main issue was that most of the urban land in Taiwan was privately held, which made it difficult and expensive to acquire. In turn, this meant that the housing that was initially built with low-income families in mind became too costly. It also meant that most of the housing was built for sale instead of rent, making it even harder for low-income families to utilise (Yi-Ling Chen, 2014). This led to the government shifting their approach; instead of regulating these informal extensions they chose to ease the restrictions and essentially turned a blind eye, continuing to allow the extensions culture (Pitkänen, 2019).

▲ Fig. 18. Demolition of a rooftop extensions.

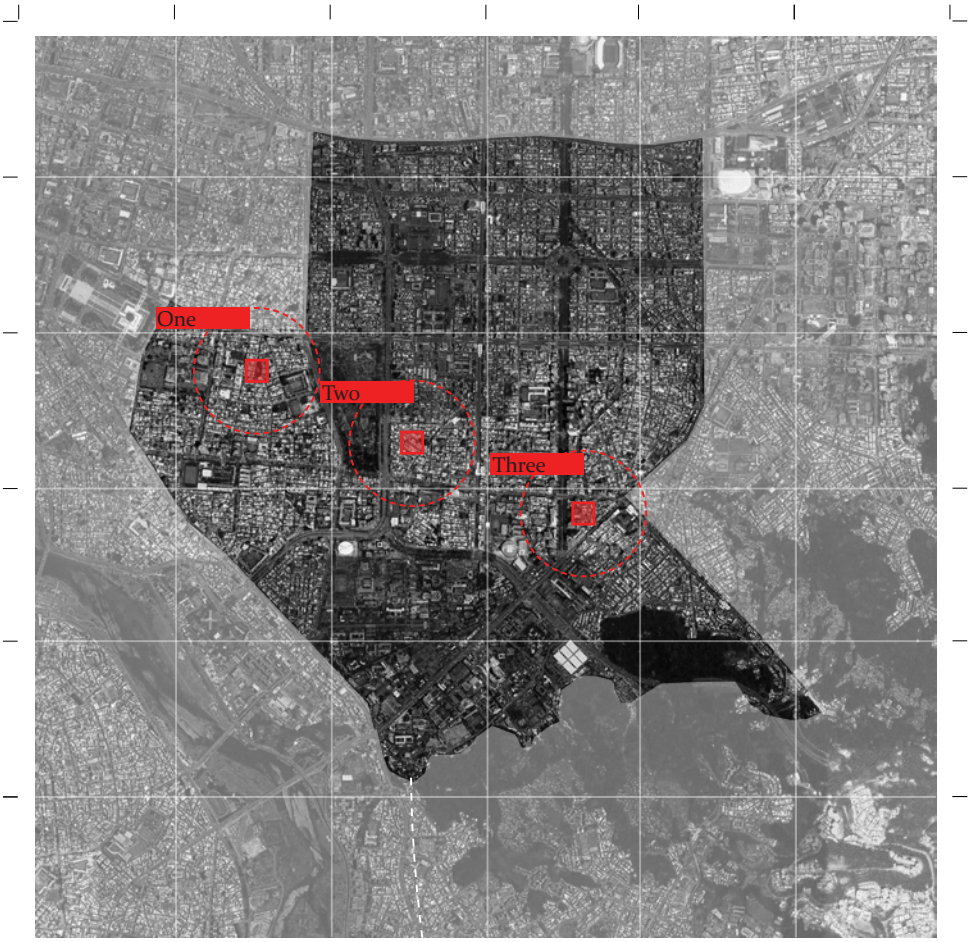
With martial law being lifted in 1987, the Taiwanese Independent movements initiated in 1947 came out from under cover and began to grow. Open debates on Taiwan's identity slowly became a widespread conversation (Greene, 2016). Did the KMT or China have the right to govern it? As Taiwan's political arena democratised in the 1990s, the people of Taiwan finally were given a voice, which produced a more progressive government. In 1995, the Condominium Administration Act was implemented and created an aggressive regulation on the informal extensions with which the people of Taiwan have lived for five decades—stating that all new illegal extensions will be demolished with pre-existing extensions planned to be demolished (Pitkänen, 2019). Although this was a progressive and decisive step that the government has finally taken, it once again dismisses the Taiwanese people's existing lifestyle. If these latched-on structures are being demolished, the low-rise modernist blocks of apartments will be left naked, and the spatial issues will rise once again.




▲ Fig. 19. Mapping of the twelve distrcits in Taipei.

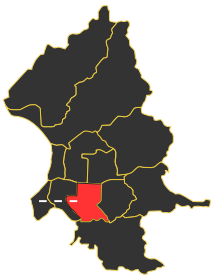
Although declaration of the legality of these extensions have been made, mass-demolition is difficult, mainly due to the politicians worrying about losing votes (Pitkänen, 2019). Despite this, demolition has been enforced and is on the rise. This did not stop the people of Taiwan; there are estimated 22,000 new additions every year and 290,000 illegal structures exist in Taipei region alone today (Weston, 2017). This is due to the extreme population density of Taiwan; the following eight pages show mappings and extractions of Taipei's four densest districts through Google Earth.

# Da'an District




1 km 2 km 3 km 4 km 5 km

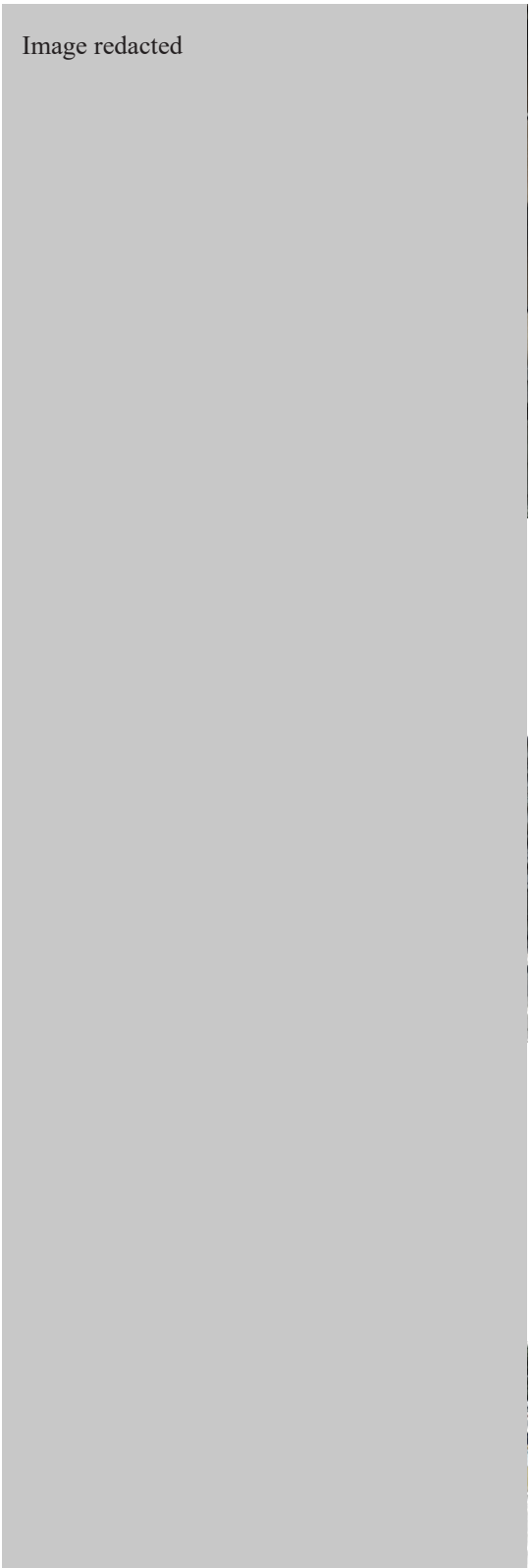
25.0262° N, 121.5427° E



N

| | |
|---|---|
| Population: | 312,956 |
| Land Area (km2): | 11.36 |
| Population per km2: | 27,541 |

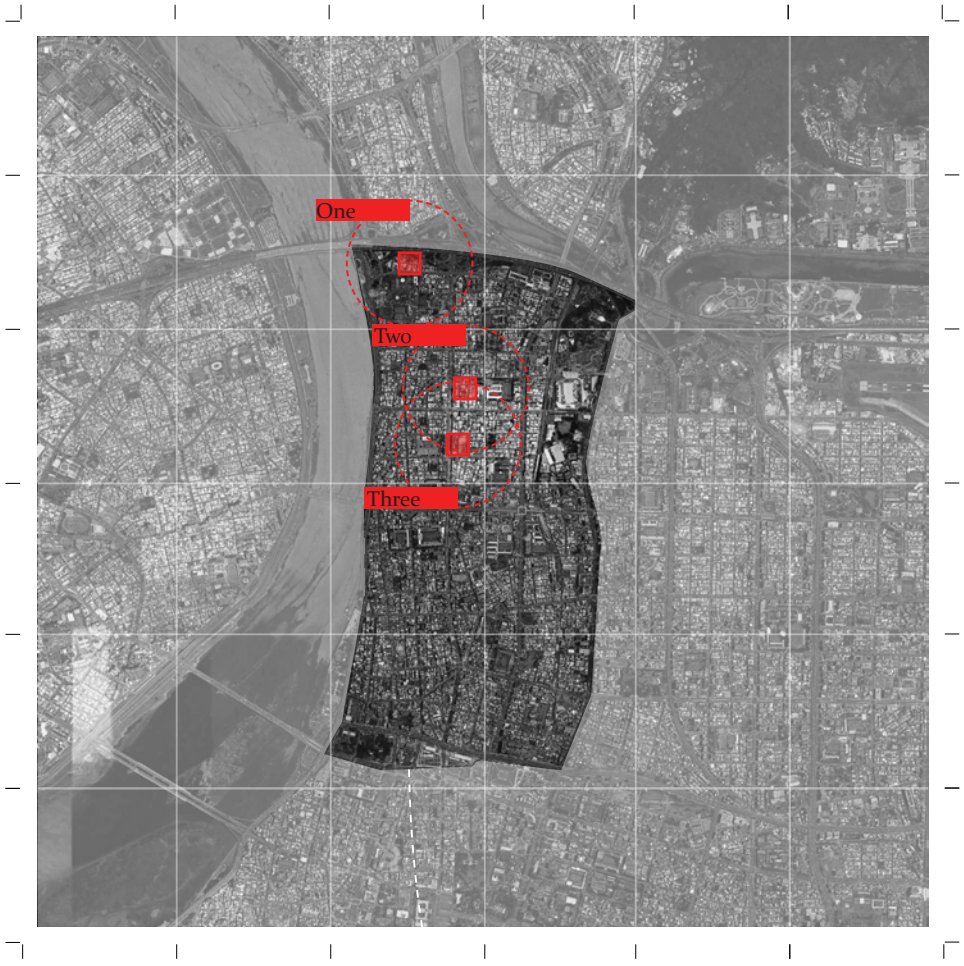
(Taipei City Government, 2017)




◄ Fig. 20. Da'an district contextual map.

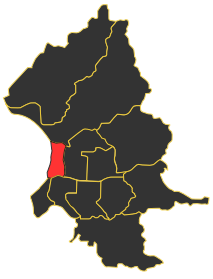
▲ Fig. 21. Da'an district street view extractions.

# Datong District




1 km 2 km 3 km 4 km 5 km

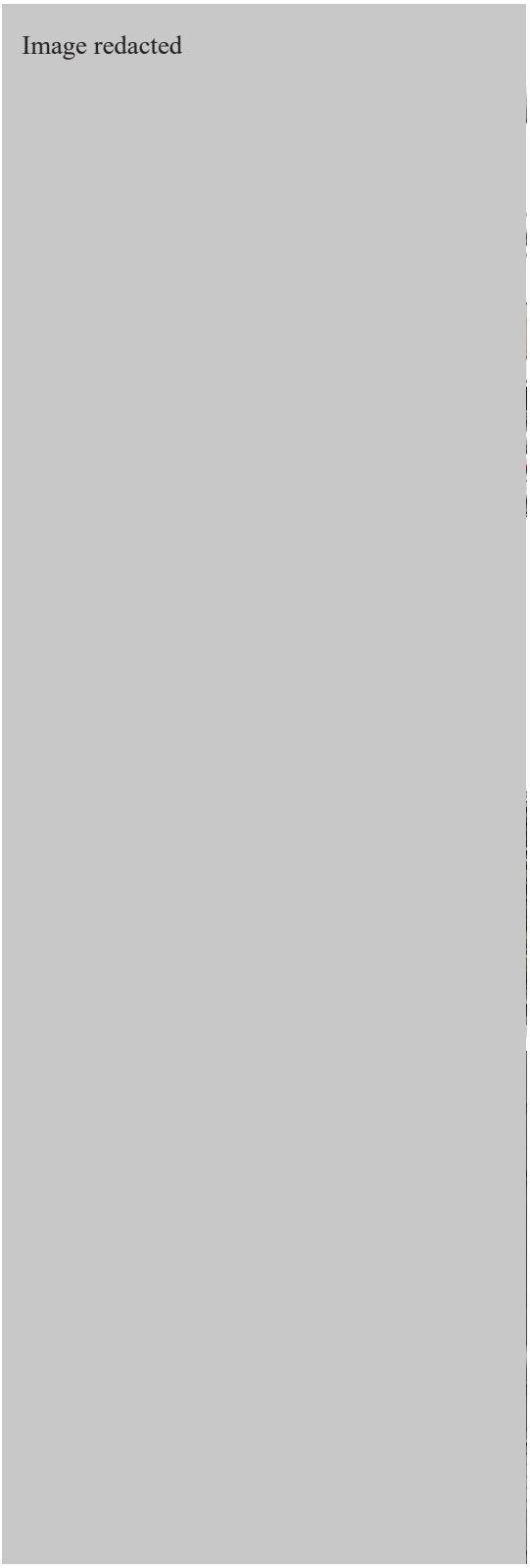
25.0627° N, 121.5113° E



N

| | |
|---|---|
| Population: | 127,022 |
| Land Area (km2): | 5.68 |
| Population per km2: | 23,062 |

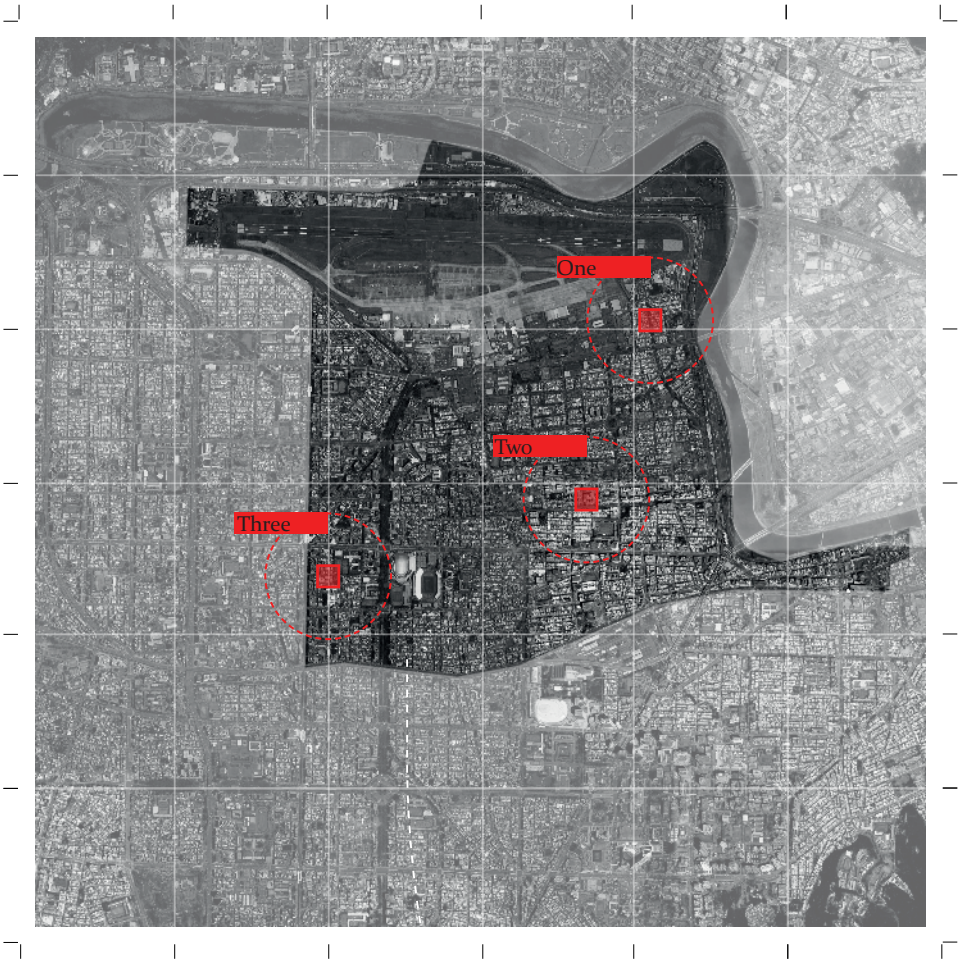
(Taipei City Government, 2017)




◄ Fig. 22. Datong district contextual map.

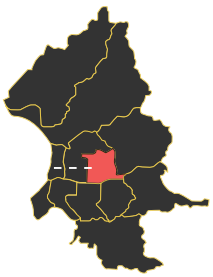
▲ Fig. 23. Datong district street view extractions.

# Songshan District




1 km 2 km 3 km 4 km 5 km

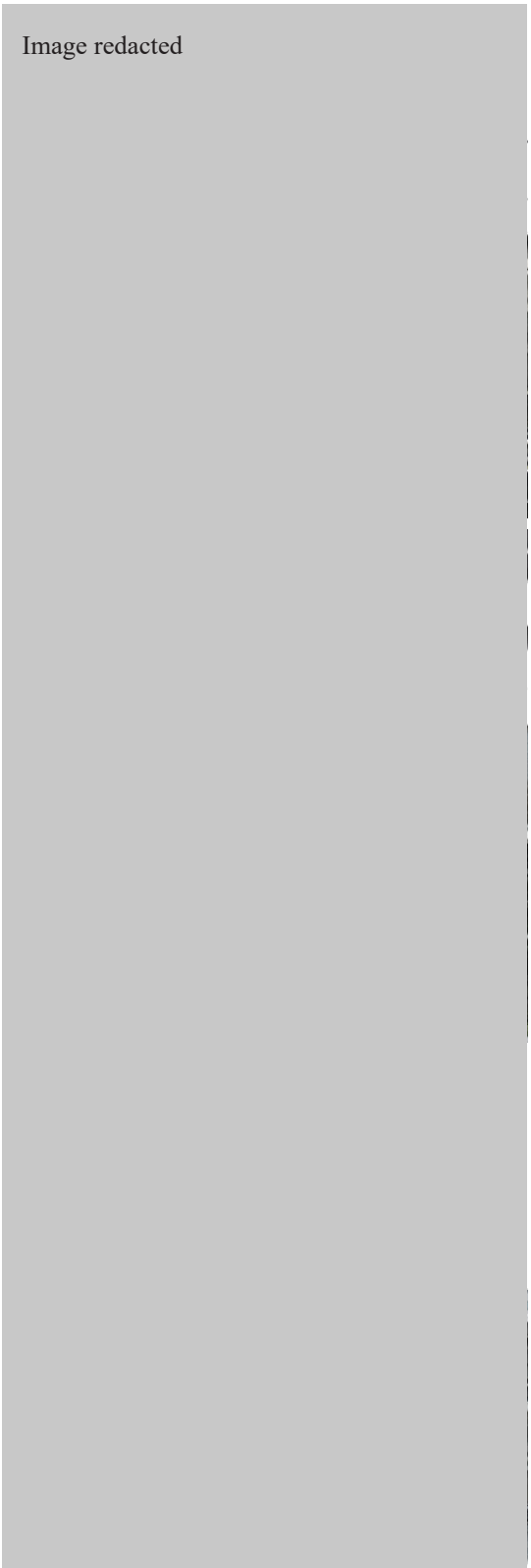
25.0542° N, 121.5639° E



N

| | |
|---|---|
| Population: | 208,832 |
| Land Area (km2): | 9.28 |
| Population per km2: | 22,576 |

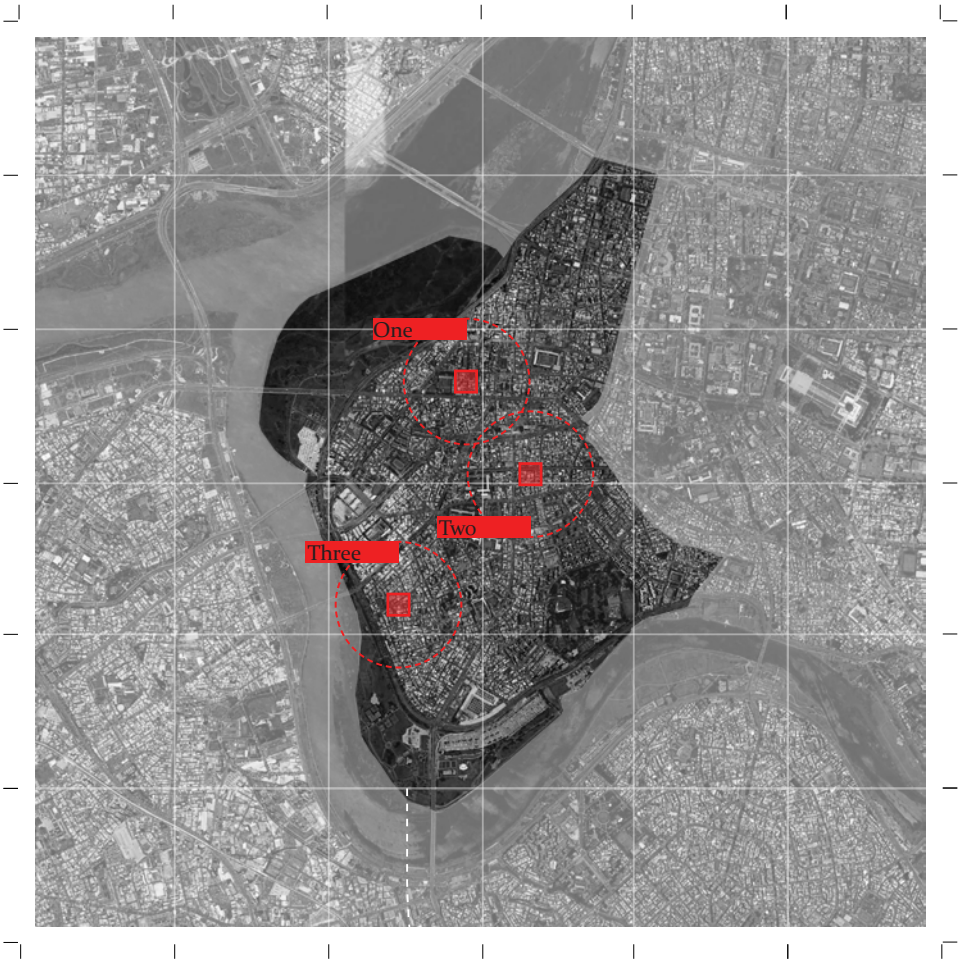
(Taipei City Government, 2017)




◄ Fig. 24. Songshan district contextual map.

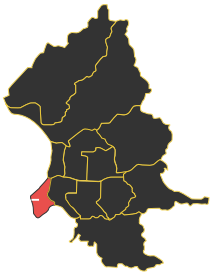
▲ Fig. 25. Songshan district street view extractions.

# Wanhua District




1 km 2 km 3 km 4 km 5 km

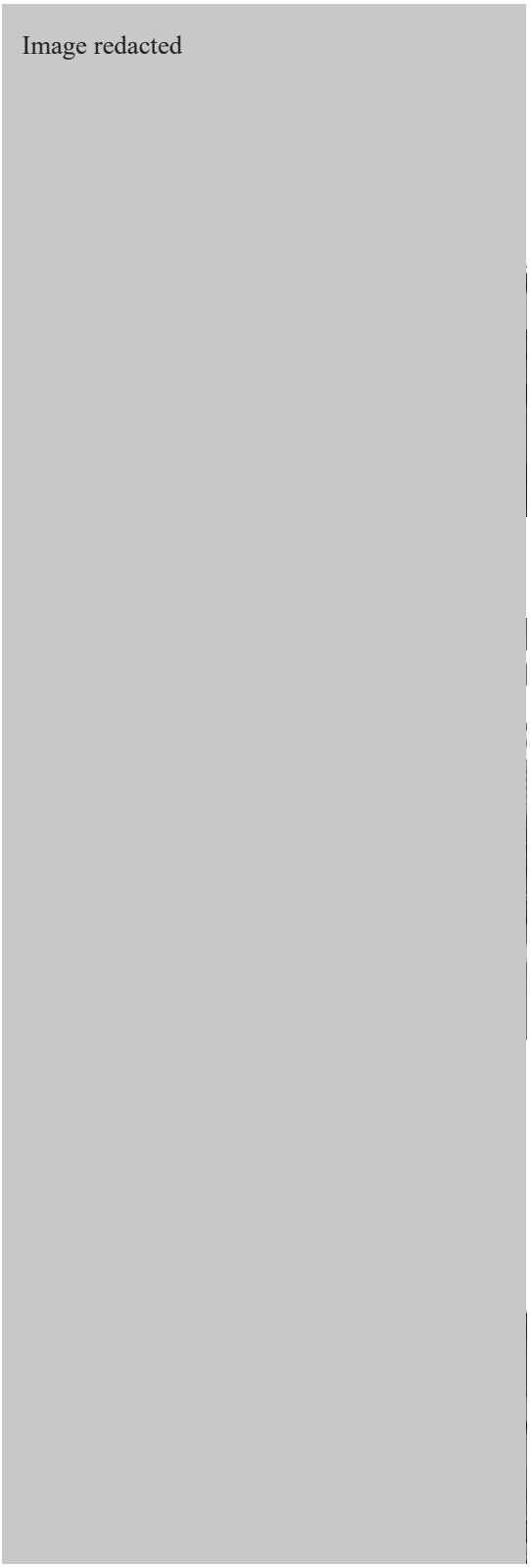
25.0263° N, 121.4970° E



N

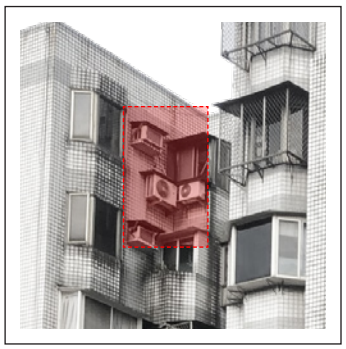
| | |
|---|---|
| Population: | 194,376 |
| Land Area (km2): | 8.85 |
| Population per km2: | 21,950 |

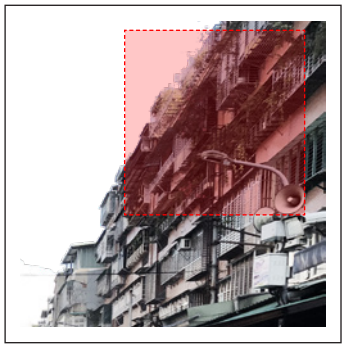
(Taipei City Government, 2017)



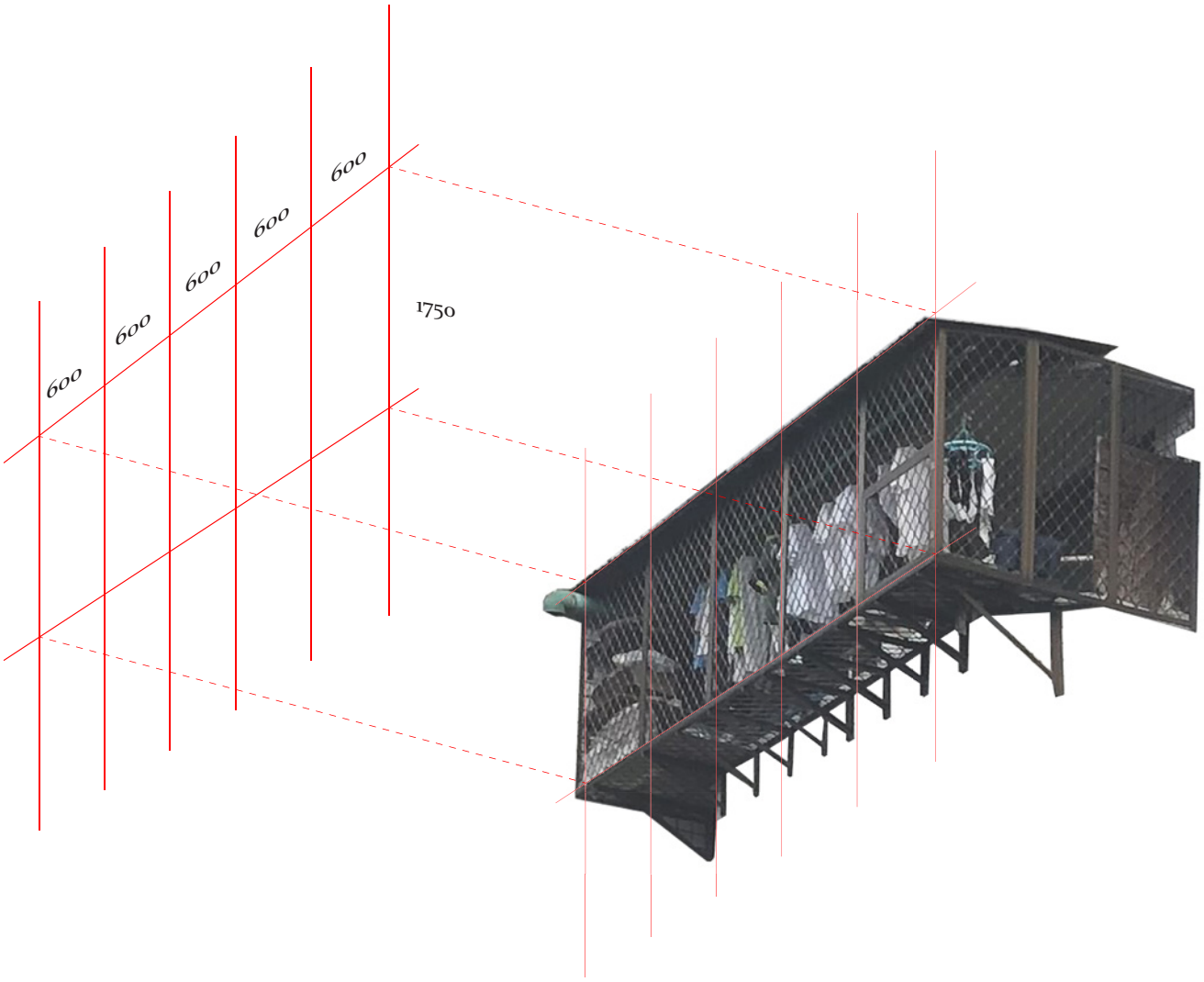

◄ Fig. 26. Wanhua district contextual map.

▲ Fig. 27. Wanhua district street view extractions.





Through Google Earth exploration, it is found that these extensions exist in a similar manner throughout the densest parts of Taipei. Rooftop extensions are generally all for accommodation, with a whole floor extended either as an additional apartment or multiple studio apartments. The rooftop extensions have various sizes and dimensions according to the building footprint they inhabit. As for facade extensions, there are more similarities, as the window or balcony they exists upon are homogenous four to five storey buildings. They all act as an expansion of the apartment; it is found that the most common functions of these extensions are air-conditioning unit, garden and laundry. Most extensions are also multifunctional; combining the three or with addition to another function according to the needs of the occupants.




◄ Fig. 28. Common Typologies of Facade Extensions.

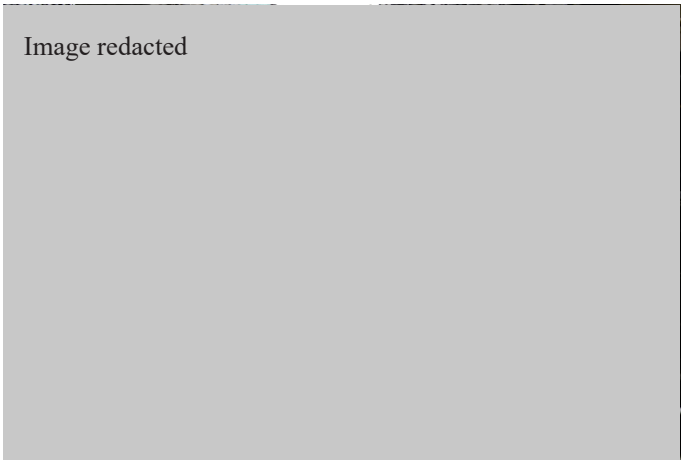
▲ Fig. 29. Facade Extensions Dimension Estimated.

As exhibited, it is clear that these extensions still inhabit a large portion of Taiwan's urban environment. Another reason is the rapid rise of housing prices in Taiwan; between 2008 and 2018 they have risen 70.09% (Global Property Guide, 2019). Along with this many privately held apartment developments have been constructed; this is a result of low-interest rates on mortgages and a law allowing Chinese nationals to acquire properties in Taiwan (Pitkänen, 2019).

The newly erected apartment blocks have no real connection with Taiwanese culture; most apartments express no Taiwanese identity—such as high-rise apartments building adopting a classical architectural style. This lacks any identity or expression that responds and represents Taiwan; whilst these apartment blocks are rising, Taiwanese extensions that express the real Taiwan are being threatened and eliminated. This undermines and interrupts the Taiwanese people's century-long endeavour of defining national identity and pride.

▲ Fig. 30. New Residential Development Entrance.

# Implications

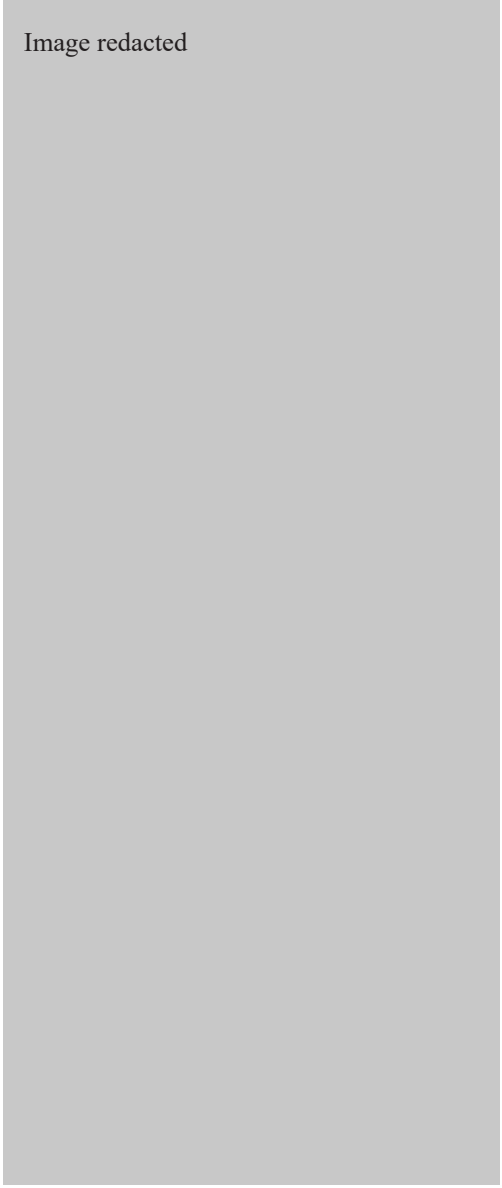



The government's main solutions historically are either elimination or neglect; the future of the extensions culture is bleak. The architectural environment is moving towards a direction that is indifferent about the national identity and lifestyle of the Taiwanese people. The issue here is not about safety or regulation, as mentioned in the "Scope" section; it is understood that the unsafe structures need to be addressed. But elimination without providing an alternative, affects and disrupts the Taiwanese identity and lifestyle of the past five decades. Fortunately, as Taiwan moves towards a more progressive nation, and the people's voices are being gradually valued, architects are starting to address the phenomenon publicly.

▲ Fig. 31. Arcadia in the Back Alley.

► Fig. 32. Arcadia in the Back Alley Interior.

►► Fig. 33. Arcadia in the Back Alley Interior Closeup.




In 2011, “Illegal Architecture” an exhibition curated by Taiwanese architect Roan Ching-Yueh, explored and emphasised the value of informal architectural extensions. Roan points out that the extension culture reflects the current societal situation and Taiwanese architecture (Roan, 2014). By understanding and accepting the wisdom and energy of the phenomenon, architects could create something that connects the national identity to the urban environment. The exhibition included two “illegal” installations: “Arcadia in the Back Alley” by Taiwanese architect Ying-Chun Hsieh and “Squaring Sphering” by Chinese architect Shu Wang.

Arcadia in the Back Alley adopted a scaffolding system and used recycled materials, utilising familiar materials to create a familiar system, but because it was made with an aesthetic eye it seemed to acquire acceptance. Hsieh identified the extensions culture as the glory of Taiwan, people being able to “freely brandish their vitality and creativity, playing with the public power and the aesthetics of architects as well as the middle class” (Hsieh).

Image redacted

For Squarely Sphering, Wang used timber for its accessible and straightforward qualities to create a strong yet light structure on a roof-top. It was Wang's way of paying homage to the informal extensions culture (Roan, 2014). Wang points out that his studio Amateur Architecture Studio is based in Hangzhou China and have witnessed the disappearing of a traditional city there. Every apartment building had built their own small informal structures, until an order to remove or demol-ish all illegal structures. The buildings turned in to "featherless chickens" in a few days, but the most interesting and impressive part is that within a year, these informal structures, like mushroom, started to appear once again (Wang). Wang expressed his appreciation of architecture of the people and the bottom up approach they indicate.

It is evident that architects are starting to address the issue of simply eliminating these structures, and the important identity and essentiality value of the phenomenon for the people is being emphasised publicly. It is undoubtedly crucial how the government chooses to operate from here on out; we know from history that elimination or neglect is not a suitable process.

Image redacted

◄ Fig. 34. Squarely Sphering Street View.

▲ Fig. 35. Squarely Sphering Interior.

► Fig. 36. Squarely Sphering Bird's Eye View.

Image redacted

# Conclusion and Design Opportunities

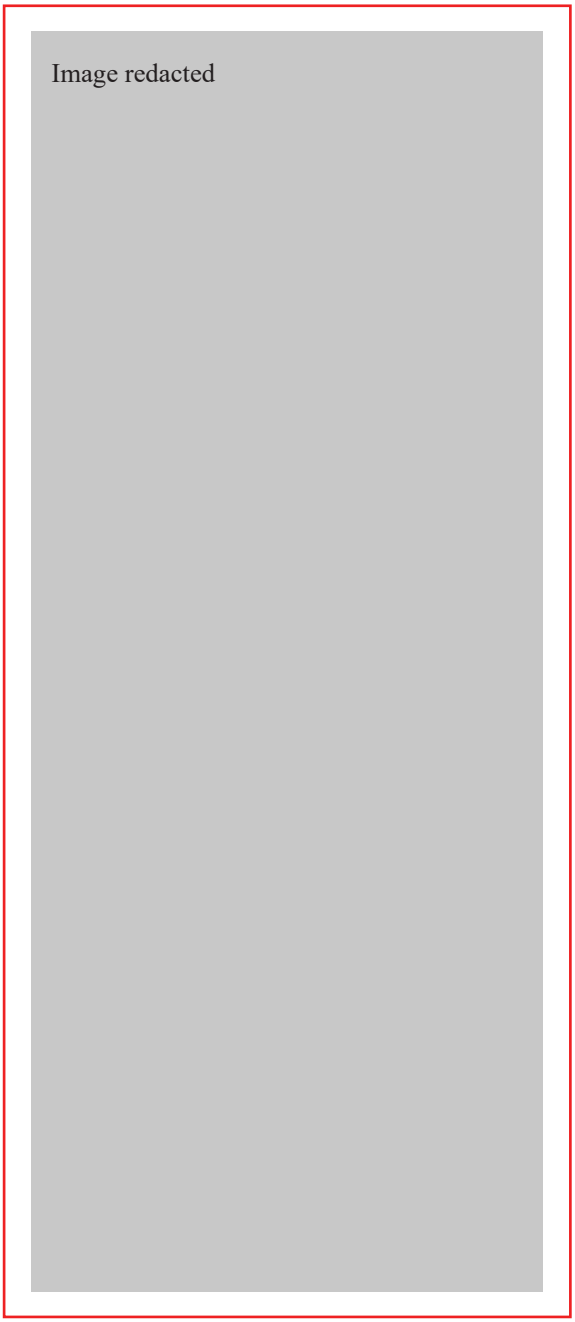
Through the study of the Origins, Current Situation and Implications, this chapter extracted information that acts as key drivers and opportunities for the design research.The insights found in each section also assist in understanding the phenomenon itself.

Through historical analysis, the Origins section explored how the multi-colonised nature of Taiwan and its struggle for nation identity has been reflected in its urban environment and in turn created the birth of the extension culture. This understanding of the correlation between the struggles of finding national identity and the extension phenomenon meant that the extensions are a part of Taiwan's identity and to eliminate them without providing an alternative will disrupt not just the lifestyle of the people but also their journey of finding national identity.

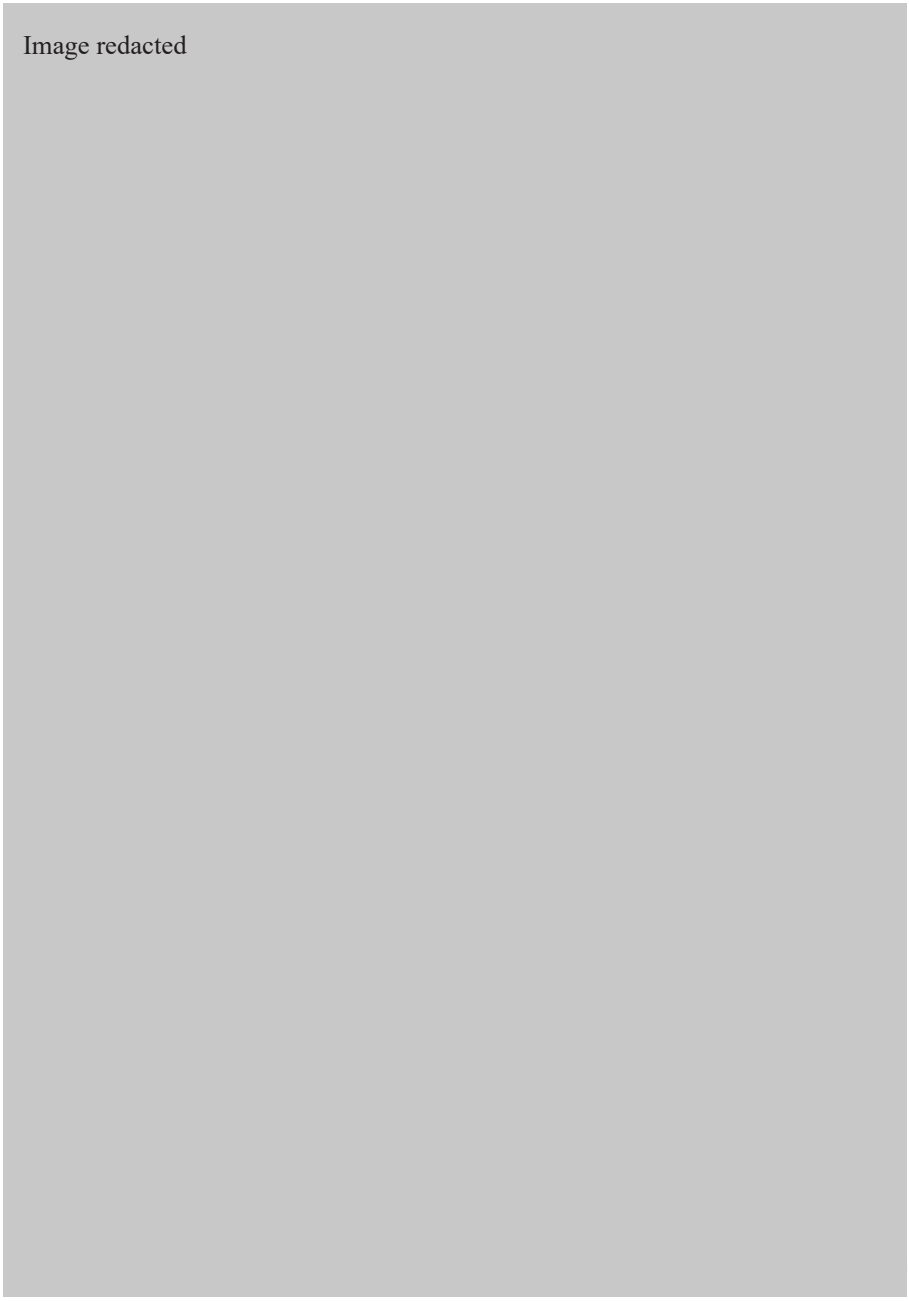
Through an investigation of recent developments in relation to the extensions culture, the Current Situation section examines how the government has attempted to deal with the issues of the extension phenomenon. These regulations have failed as the informal structures are still on the rise; this is shown through Google Earth extractions and mappings of the densest districts of Taipei. Through this exercise, preliminary insights into the functions of facade extensions are made. This section also critiques the lack of relationship between new architectural developments and Taiwan's national identity.

By analysing "Illegal Architecture", an exhibition demonstrating the importance of the phenomenon, the Implications section showed the concern architects expressed with the elimination of the phenomenon.

This chapter helps establish a set of meaningful design principles that can be utilised into the design experiments. It is crucial that there is an alternative provided for the future of the phenomenon architecturally. An architectural language that encapsulates the identity of Taiwan and the culture of extensions is long overdue. The development of a new architectural language of Taiwan that utilises the multi-functional nature is at the forefront of the design processes. The result must be an alternative that retains the lifestyle and assists in defining the national identity of Taiwan.




▲ Fig. 37. Matrix of Context Analysis Images.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# Theoretical Approach

# 3

◄ Fig. 38. Collage of Theoretical Approach Images.

## Introduction

The purpose of this chapter is to concisely frame a theoretical position that will guide this design-led thesis. The topics of this chapter reinforce the design direction, approaches and processes applied. The first section, Destruction and Architecture, focusses on theoretical works by Lebbeus Woods—specifically, on Woods's work surrounding the environment of crisis, war and reconstruction, which in the context of this thesis guides the aim of the architectural language development—an architectural language that references the extensions culture without simply imitating it. The second section, Sequential Environment, explores John Hejduk's use of an empirical vocabulary; tracings and the process of interpreting structures in a time sequence are adopted when analysing the extensions in Taiwan to further understand the identity and architectural language. The third section, Form Follows Obsession, draws from Robert Venturi's critique on the modernist movement. This directly relates to the strategy adopted to develop the proposed architectural language of the future of extensions in Taiwan.

Lebbeus Woods was an architect, artist and author of various books that focus on environments of spaces in or reacting to crisis, whether natural, political, social or warfare. This thesis focusses on Woods's two books, *War and Architecture* and *Radical Reconstruction*. This investigation interprets the elimination of the informal extensions as the crisis, and in turn, adopts Woods's theories to "reconstruct" or provide an alternative.

John Hejduk, architect, artist and lecturer, perceived his architecture as components and constructed environments to be viewed in sequence. His book *Victims* was an entry for the 1984 Prinz-Albert-Palais competition in Berlin for a memorial park. The point of focus in this literature review is to understand and adopt Hejduk's concept of viewing the park in sequence and also his development of an empirical vocabulary. In the context of this thesis, these approaches are adopted in a reversed manner, where instead of viewing the intervention in a sequence, the process of reading the city was viewed as a sequence and in turn creates an empirical vocabulary of the extension culture.

Robert Venturi, architect and educator, was an extremely influential architect, who helped inspire the post-modernist movement. His critique on modernism motto *Form Follows Function* in his book *Learning From Las Vegas* is the focal point of this literature review. Understanding of the lack of authenticity in the motto assists in navigating between form and function throughout the design experiments. This directly led to the thesis structure of DE1 being about function, DE2 being about form and finally DE3 being about the middle ground between form and function.

▲ Fig. 39. Series of Portraits of Main Theorists.

*"Now there is no choice but to invent something new, which nevertheless must begin with the damaged old, a new that neither mimics what has been lost nor forgets the losing, a new that begins today, in the moment of loss's most acute self-reflection."*

*— Lebbeus Woods*

▲ Fig. 40. Extraction from War and Architecture, Studies for Broken Wall Houses.

► Fig. 41. Extraction from Radical Reconstruction, Zagreb Free Zone.

## Destruction and Architecture

The previous chapter led us down a very political path; with a disruptive history and a bleak future of the extensions, Taiwan and its extensions culture has been in a crisis for half a century. Naturally, with the intention of creating an alternative architectural language, the investigation turned to Lebbeus Woods. From the late-1980s to mid-1990s Woods's work focused on environments of crisis; from Sarajevo and the war in Bosnia to the 1989 Loma Prieta earthquake in San Francisco, these works are known for reacting to the uncertain nature of contemporary society (Kanekar, 2006). There is undoubtedly a strong and distinctive architectural identity in his work, and this is derived from his approach to destruction and architecture.

Woods considered architecture and the built environment as a catalyst, a catalyst that creates opportunities for the non-normative through social and political heterachy, or anti-hierarchical. This challenges the top down rules of existing hierarchical systems. He saw architecture as participating in our lives and not just as a stage for events to play out and in, but as the event itself (Becker, 2014). There is a direct correlation to Woods's theory and threats the extension culture in Taiwan is facing, where the inhabitants of the extensions can be considered the non-normative and the informal extensions as the catalyst. In his book *War and Architecture*, Woods addresses the ruins in Sarajevo through reconstructive "injections". He claims that these injected forms embody the ruins of the building, not to symbolise or commemorate the destruction, but to bear it with pride of what has been suffered and lost (Woods, 1993). In *Radical Reconstruction*, Woods further deciphers this method of self-referential nature in times of crisis, stating:

> Now there is no choice but to invent something new, which nevertheless must begin with the damaged old, a new that neither mimics what has been lost nor forgets the losing, a new that begins today, in the moment of loss's most acute self-reflection (Woods, Radical Reconstruction, 1997).

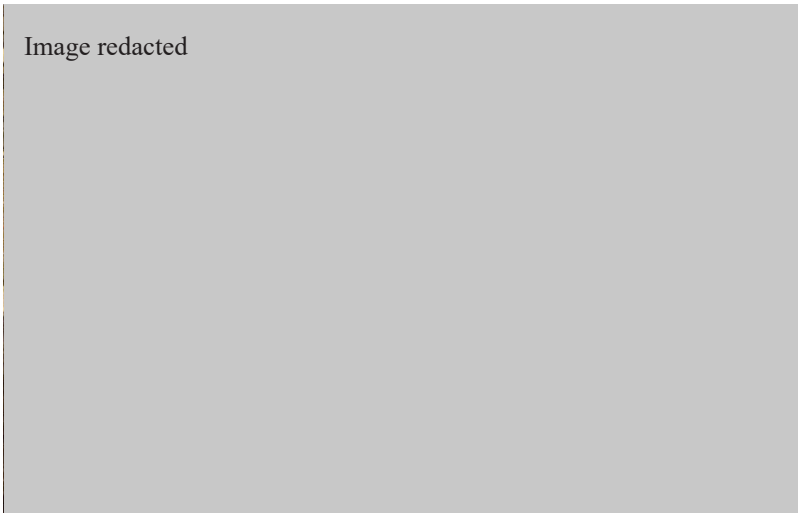
Woods's use of self-reflection creates an identity that pays homage to history yet strives for the future, whether utopian or dystopian. This thesis adopts this strategy of self-referential form, an architecture language that remembers the lost and in turn creates the new. Although the disruption in terms of the Taiwanese extension culture is not as dramatic as earthquakes or warfare, it is nevertheless a disruption. By adopting this strategy, the investigation will lead towards a new architectural language specifically for the Taiwanese extensions culture. It will revive the phenomenon in a way that emphasises a strong identity without disregarding the integrity of the current situation.

When discussing restoration and erasure of ruins resulting from warfare, Woods emphasises that the soul of the old city can never be replaced; it is built up over a number of lifetimes. At a moment of recovery, it is imperative that the rehabilitation is of new direction and the creation comes from the needs of the people (Woods, The Case Against Restoration, 1993). In the context of this investigation, this describes the failures of the KMT during their rule, neglect and the lack of consideration of the livelihood of Taiwanese people with their sole objective being the repossession of mainland China. This was the first disruption, and the rehabilitation was the Taiwanese people taking matters into their own hands and devising the extensions phenomenon. In recent years, the outlawing of the extensions and enforcement of demolitions can be considered the second disruption and this investigation is the endeavor to find rehabilitation.

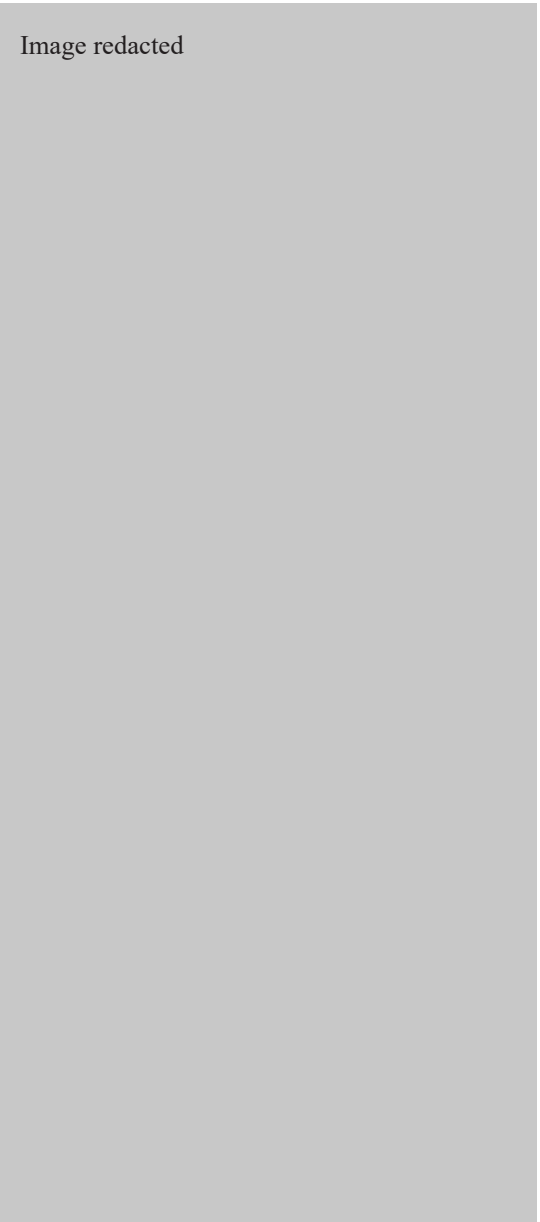
▲ Fig. 42. High House.

► Fig. 43. Terra Nova.

►► Fig. 44. SCAB.




Woods considers his works as experimental architecture, which he describes is when the outcome of the work is unknown until the work is actually done (Woods, Onefivefour, 1992); however, Woods's experiments have foundations, issues that he was addressing. He identifies socio-political imperatives of architecture, whilst pushing the discipline's formal capabilities (Fletcher, 2014). His ideas of heterarchy and freespace are a motif throughout his works. Freespaces are for every social class, anyone who desires to occupy and utilise it (Woods, Walls, 1997).




In his architectural visions, freespaces are the tips of the cone-like forms, the nooks of the undulating surface, the spaces that are essential when developing the overall architectural language but have no predetermined function. Some consider the entirety of his work as freespace, as it has no obvious function. By doing so, Woods could emphasise the identity and architectural language of his works. This concept of freespace is adopted in this investigation specifically only when extracting and developing the architectural language in Design Experiment Two. The experiment disregards the function of the outcome to further accentuate the identity of the formal exploration.

As wild and expressive as his work is, Woods's work is not meant to be literal. In an interview with the *New York Times*, Woods expressed that he is not interested in living in his visionary worlds; his work is supposed to evoke real architectural spaces (Ouroussoff, 2008). This investigation will take the architectural language developed in Design Experiment Two and apply it to typologies and functions creating a hybridisation of freespaces and physical purpose. The formal qualities of the free spaces will be tweaked and adjusted to be operational.

▲▲ Fig. 45. Victims Extraction, Drawbridge Man.

▲ Fig. 46. Victims Extraction, Security.

► Fig. 47. Sketches of the Elements.

## Sequential Environment

The gap in the phenomenon and constructing a new architectural language adopting Woods's strategy of referencing the lost is the process. In Woods's works his principal process is his outcome; the hand drawings are derived from the rubbles of war and the war itself, bombshells and chaos. This section attempts to reveal a new interpretation of the act of deriving. It focuses on the process of this approach. John Hejduk was an architect, artist and lecturer; he is most recognised for his works surrounding issues of form, organisation and representation. His book *Victims* published in 1986 was a documentation of an entry for the 1984 Prinz-Albert-Palais competition in Berlin for a memorial park.

Image redacted

*Victims* saw the resulted outcome as a sequential environment, where there were 67 structures named and each had a three-point connective relationship with one another (Hejduk, 1986). The sequence was not rigid but flexible; the occupant and the erector had control over the time sequence these structures were built and the organisation of the structures. Hejduk saw his work as structures and elements instead of buildings; the elements together become the whole (Gilley, 2011).

Each of the elements or structures produced uses a foundation involving primary geometries: the cube, the cone and the triangle. The elements were named a function or narrative, such as The Drawbridge Man or quite simply, Security. Hejduk personified his elements and gave them occupations. Using a formal foundation and named occupation, Hejduk created an empirical vocabulary that inhabits the park. Through this formula, the park expressed a certain architectural language and identity. In the drawings of *Victims*, there were no sections, only elevation, plans and some axonometric drawings in the sketches. Hedjuk defines these drawings as tracings, and states that "Tracings are similar to X-rays, they penetrate internally" (Hejduk, 1986).

▲ Fig. 48. Victims Extraction, Site Plan.

► Fig. 49. Victims Extraction Showing The Empirical Vocabulary.

Hejduk proposed that the park be built over two thirty-year periods, but just like the arrangement of the site plan, it is simply a suggestion (Hejduk, 1986). The time and sequence are completely in control of the erector and the occupant. In the journey of discovering true meaningful processes for creating the architectural language, this thesis adopts the use of this sequential environment in reverse. Through the Taiwanese Fieldwork chapter, Taiwan's urban environment is treated as a sequential environment and the extensions along the way as the elements. This leads us to the concept of a Flaneur, introduced by French poet Charles Baudelaire, and later interpreted as a modern experience by Walter Benjamin. A Flaneur is one who wanders without a predetermined route and simply observes and in turn reads the city at its purest form (Frisby, 2001). The extension culture is then examined and extracted as an empirical vocabulary; the extracted forms are then organised as collages or "Montages", a sequential expression.

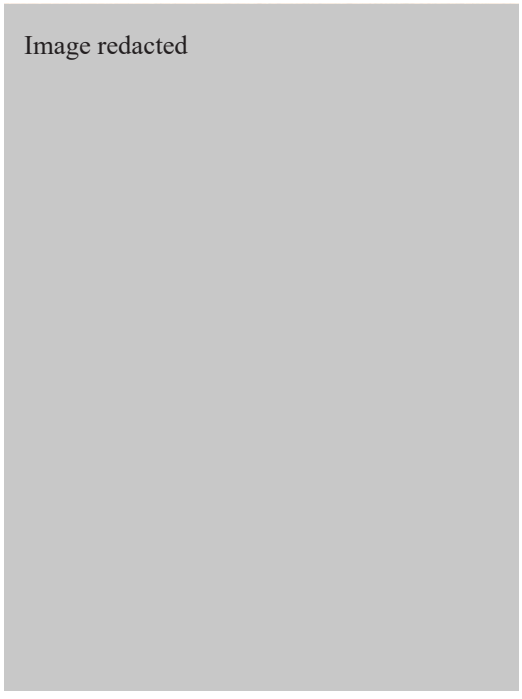
To determine a foundation much like the use of primary geometries by Hejduk, the montages are traced and treated as a palimpsest to create a formal foundation that is derived from the extensions but does not imitate it. This utilisation and interpretation of Hejduk's work assist this investigation in bridging the gap between the extension culture in Taiwan and Woods's approach in creating a new architectural language.

▲ Fig. 50. Venturi and Scott Brown on the Strip.

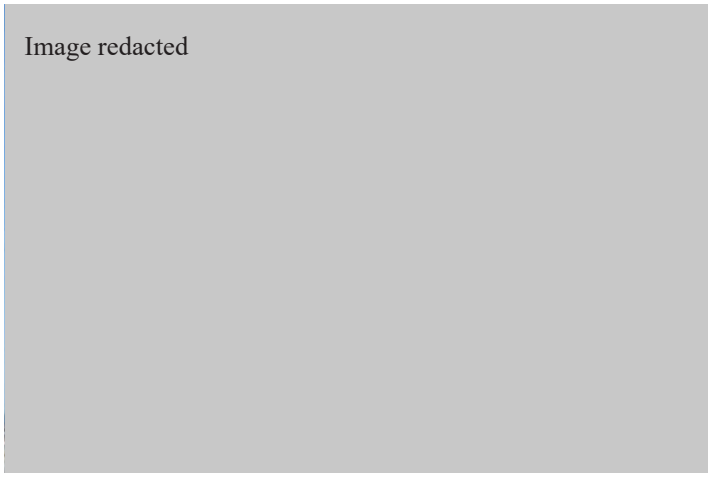
► Fig. 51. The Duck and the Decorated Shed.

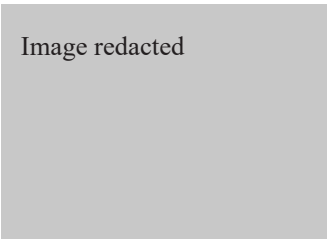
## Form Follows Obsession

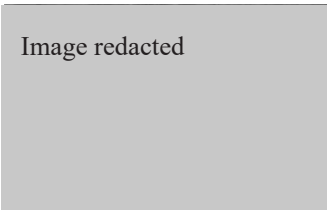
Robert Venturi, architect and educator, was highly influential regarding the post-modernist movement. His work questions the way architecture embodies iconography, critiquing orthodox modernism. In the late 1960s and early 1970s, Venturi and his wife Denise Scott Brown started teaching several studios at the Yale School of Art and Architecture. The most notable research studio was "Learning from Las Vegas, or Form Analysis as Design Research" (Venturi, Brown, & Izenour, 1977). Venturi and Scott Brown took a dozen students to Las Vegas in the hopes of exploring symbolism and architecture through a field study of the commercial strip. Venturi believed that "learning from an existing landscape is a way of being revolutionary for an architect" (Venturi, Brown, & Izenour, 1977). This is not in a way of obnoxiousness, such as tearing down Paris and starting again, as Le Corbusier suggested in the 1920s, or in this context, the elimination of the informal extensions. Venturi believed that architects lack the habit of observing without judgement and prefer to change the existing environment rather than improve what is there. This studio led to a highly influential book documenting their findings in the studio *Learning from Las Vegas*.

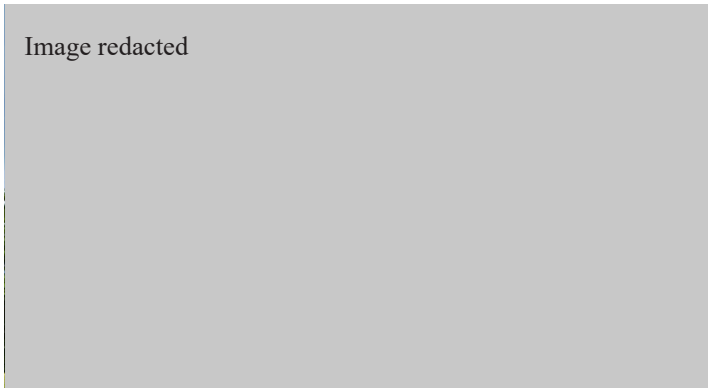



Along with many other theories, *Learning from Las Vegas* described the two main ways of expressing iconography in architecture; the duck and the decorated shed. To decipher this in the simplest manner, the duck is a formal expression of the architecture and the decorated shed is the ornamental expression of the architecture. At the risk of contradiction, this investigation is the duck, although it prefers to be in between the two. The overall form and volume does communicate the extension culture, yet the architectural language and elements are derived from ornamentation or, freespace as Woods would suggest. Nevertheless, utilising these expressions of iconography assists in the understanding of architecture as an identity communicator.



▲ Fig. 52. Comparison with Le Corbusier's Buildings, Unité d'Habitation and Chapelle Notre Dame du Haut and his "Obsessions".

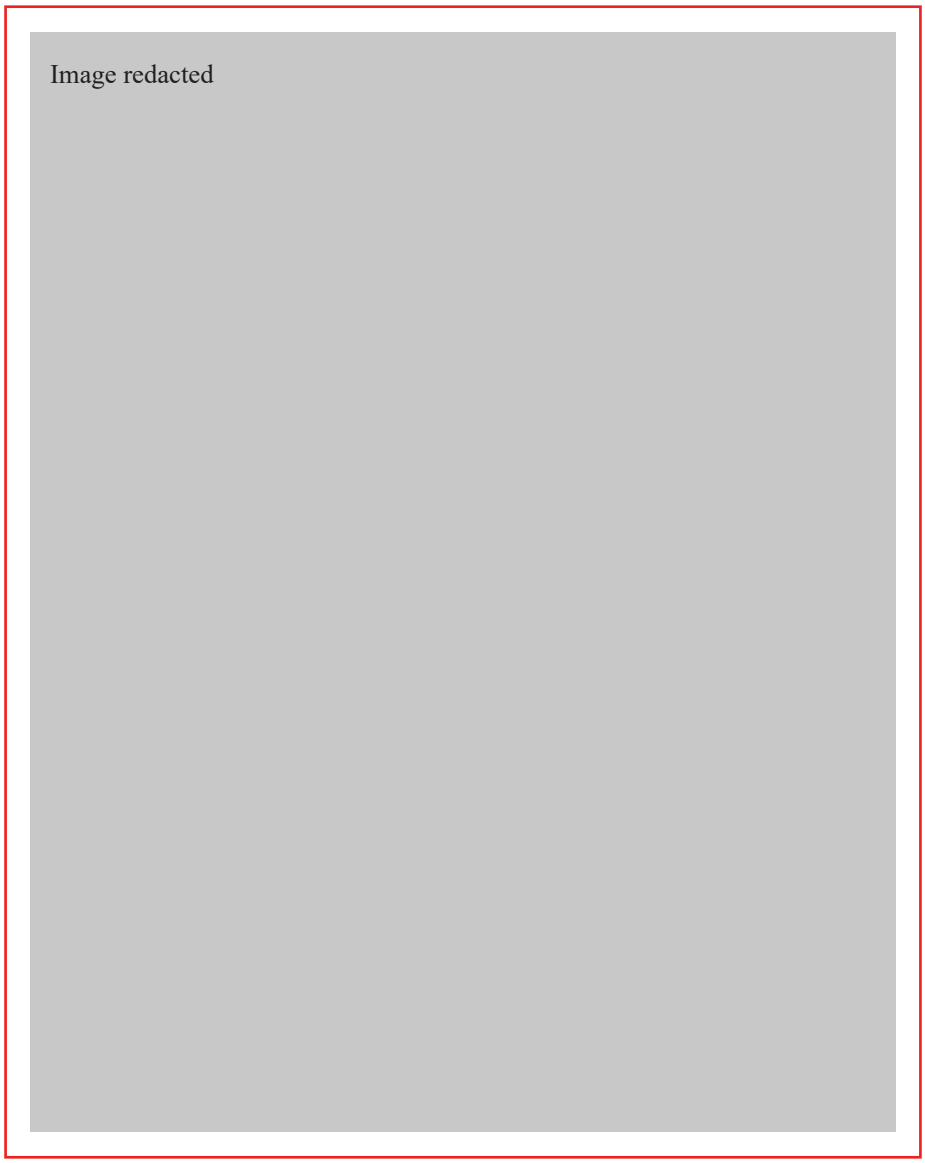
*Learning from Las Vegas* also pointed out that although the "fathers" of modernism strongly emphasised the dictum "form follows function", each of them appropriated an existing aesthetic and created a specific architectural vocabulary. The subjects of the forms are not entirely dictated by the function, it is dictated by fascination alongside function. Le Corbusier was obsessed with the machine and female forms; the Bauhaus was a factory; Mies references American steel factory details for concrete. Venturi states:

> Modern architects work through analogy, symbol, and image—although they have gone to lengths to disclaim almost all determinants of their forms except structural necessity and the program—and they derive insights, analogies, and stimulation from unexpected images (Venturi, Brown, & Izenour, 1977)

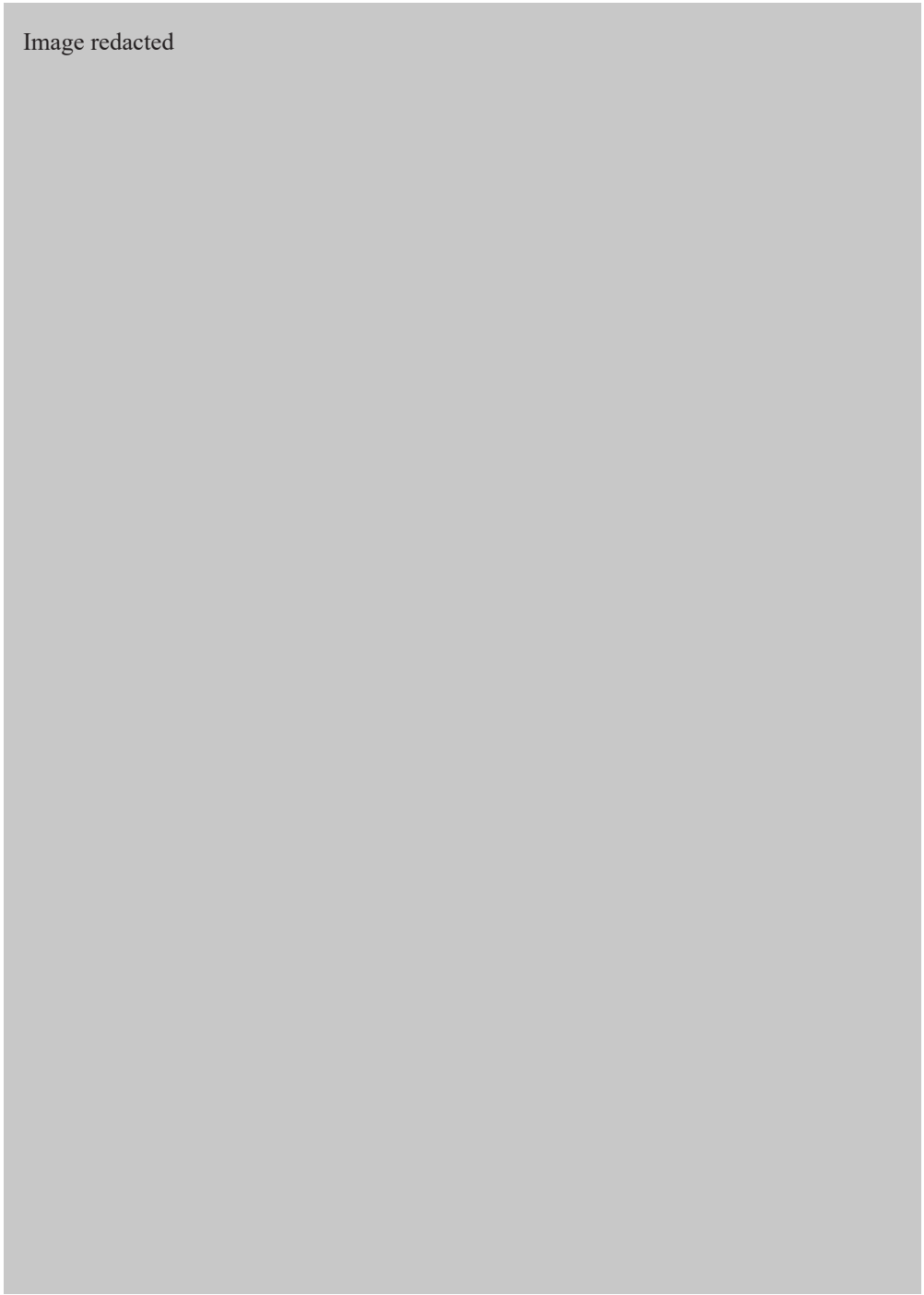
Therefore, the idea of "form follows obsession" was ignited. Most of the informal extensions are examples of forms following only function, which produced an architecture that serves the necessity; this also led to the dilemma of it appearing irregular and becoming an "eyesore". The difference here to Le Corbusier or other early modernist architects is that aesthetics was not considered at the erection of these structures. To resolve this without compromising the cultural integrity of the phenomenon in question is to create an architecture language with the current condition as the obsession. This links back Woods's approach and the strategy derived from Hejduk's work.

# Critical Reflection

Through the concise yet discerning literature reviews, this chapter assisted in constructing a theoretical approach and position in addressing the aims and objectives of this investigation. The integration of the approaches, strategies and processes of the three sections provided several design principals that will achieve new insights. The link between Woods's works surrounding architecture of destruction and the issue of informal extensions in Taiwan are currently facing is compelling. His approach to achieving an architecture language is adopted and executed with the aid of Hejduk's sequential environments. The "reverse interpretation" of Hejduk's *Victims* of an empirical vocabulary and tracings are vital and are believed to be essential in understanding the architectural language of the existing formal language of the extension culture in Taiwan. Understanding of architecture symbolism through Venturi and embracing his critiques in modernism assists in translating the existing extensions culture into a meaningful architectural language and expressing identity. Together, the insights provided by the literature reviews guide the design phase processes and overall structure of the thesis.




▲ Fig. 53. Matrix of Theoretical Approach Images.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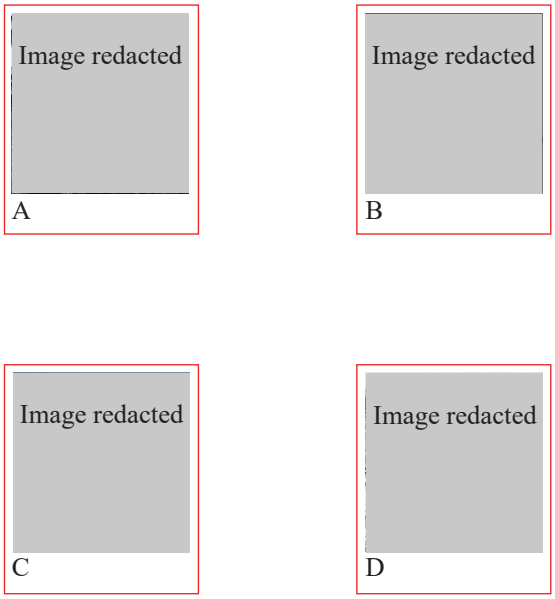
# Design Case Studies

# 4

◄ Fig. 54. Matrix of Clone House Multifunctioning Chambers

## Introduction

Throughout this thesis there are various case studies conducted in the chapters, each relating to the topics of the chapters. This chapter provides an exploration on architectural design work built and unbuilt, permanent and temporary, all of which can be of aid when conducting the design phase. Each relates to the research question in a distinct manner; the design case studies are as follows:




Together, the integration of this series of design case studies will provide information that will direct the succeeding design phase.

▲ Fig. 55. Thumbnails of the Four Case Studies.

A

City Experiment in Two Actions is an installation curated by Roan Ching-Yueh, who brought us the Illegal Architecture exhibition investigated in the Context Analysis chapter. Once again City Experiment in Two Actions addresses the architectural extensions culture at the heart of Taipei city, Songshan District.

B

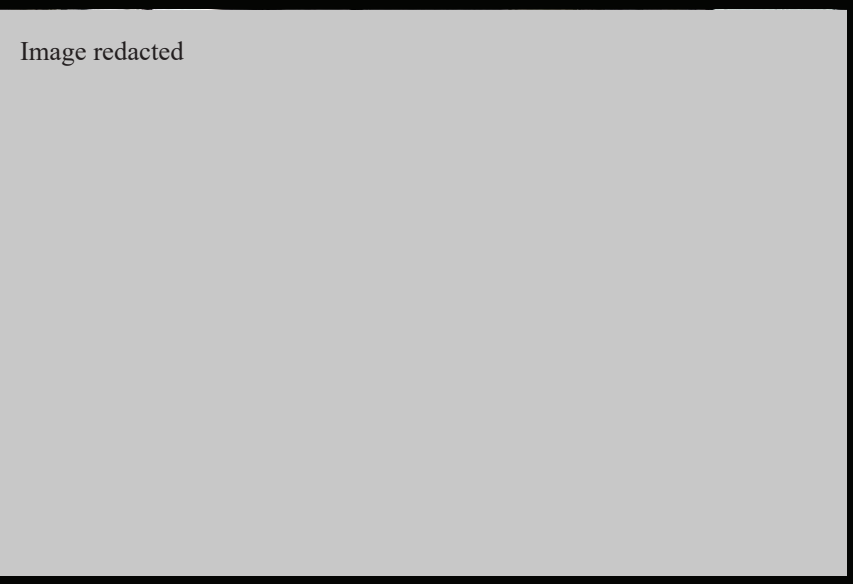
Clone House, a competition entry by CJ Lim, explored functions within restricted space. Multifunctional spaces and in turn interchangeable spaces were both developed with elegance. As the spaces that most apartments with extensions have are limited, Clone House provided insights regarding approaches for the design phases of this investigation.

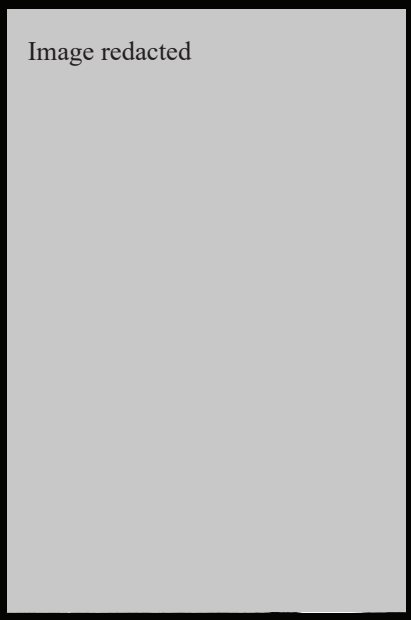
C

Sky Box, by the late New Zealand architect Gerald Melling, exhibited a Western extension approach. The project was constructed upon his Wellington office after a split with his partner; the project challenges the representation of domesticity and exhibits an unconventional take on the urban living environment. Sky Box assisted in understanding vertical living and although it is a Westernised take on extensions, it provided an example of what a constructed rooftop extension requires.

D

Plug-in City, an extremely speculative project by Sir Peter Cook of Archigram, reinterpreted how the urban environment should function. The project looked at the city as a connective whole and each building as an element that constructs the urban environment, not so dissimilar to Hejduk's view of his buildings as elements. Although extremely radical, this thesis illuminates the correlation of the concepts in Plug-in City and the intention of the extension culture in Taiwan. The extensions are perceived as the plugged-in elements in Plug-in City.



▲ Clockwise

Fig. 56. Lu Li-Huang Rooftop Intervention 1.

Fig. 57. Lu Li-Huang Rooftop Intervention 2.

Fig. 58. Hsiao Yu-Chi Micro House.

Image redacted

## City Experiment in Two Actions

JUT Architectural Academy
2013
Taipei, Taiwan

In 2013, the JUT Architectural Academy in Taiwan held an exhibition that tested the trajectory of revitalising an aging district through spontaneous architectures. The academy invited two architects and their teams to create installations that respond to the features of the neighbourhood.

The first was led by Hsiao Yu-Chi, who built a micro-scale timber "house", which only provided 4.29 square meters of interior space. However, it possessed multiple functions, including bedroom, kitchen, workstation and bathroom. The placement of the intervention was strategically next to a community-run vegetable garden, which facilitated people's desire for a "simple life" (JUT Architecture Academy, 2013). Inspired by studio apartments in the area, the micro-house exhibited an example of space-restricted living (Hsiao, 2013). Although not an extension itself, the project displayed the possibilities of spontaneous architecture and multifunctional spaces. The spatial arrangement in the space was one of thought; with the bed elevated, the storage and living area could inhabit the space below and create a separation without physically dividing the spaces. Hsiao also exhibited how applicable these spaces can be inserted into the urban environment, especially in such an active city like Taipei (Hsiao, 2013).

The second was led by Lu Li-Huang, who constructed five different follies, spreading them over a park, rooftops and walls of buildings. All interventions were made of light and accessible materials, such as timber, steel plates and plastic buckets (JUT Architecture Academy, 2013). The follies encouraged the community to socialise and explore the possibilities architecture can provide with simple materials and methods. Lu suggests that the extensions will communicate and integrate the community into the site through the familiarity of the extensions typology (Lu, 2013). The architectural language adopted is one of original nature, but the use of familiar materials and typology acted as the bridge between the public and the follies themselves.

City Experiment in Two Actions demonstrated the application of two aims of this thesis in addressing the research question. The use of a multifunctional dwelling in space restricted environments and the development of an original architectural language utilised in a familiar typology. The intelligent planning of a restricted space will assist in the development of DE1 and DE3, where the investigation will attempt to create functions and typologies that are concerned with the wellbeing of the inhabitants. The spirit of creating an original architectural language will be applied in DE2.

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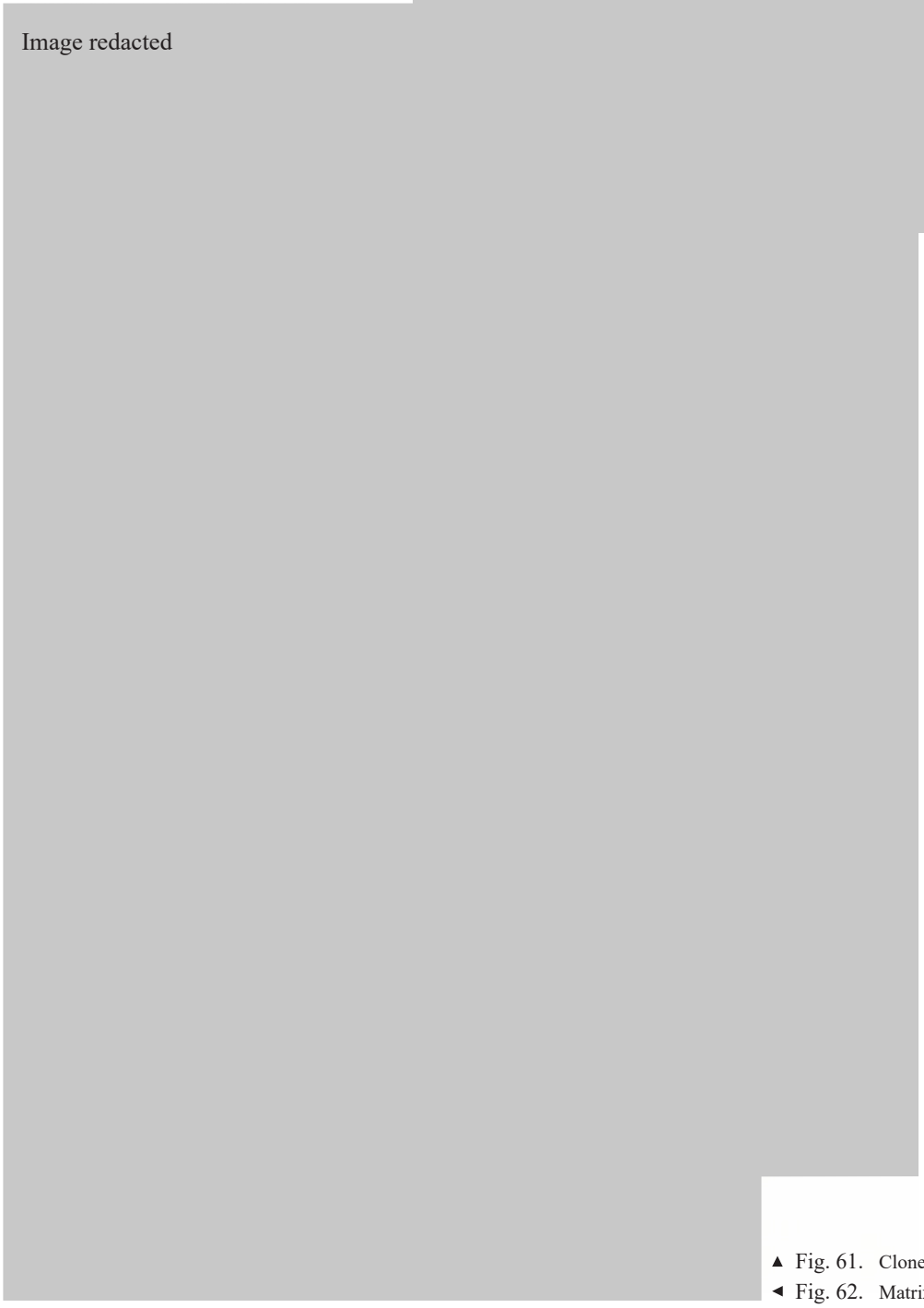
▲▲ Fig. 59. Construction of Lu-Li Huang Rooftop Intervention.
▲ Fig. 60. Lu-Li Huang Rooftop Intervention 1.

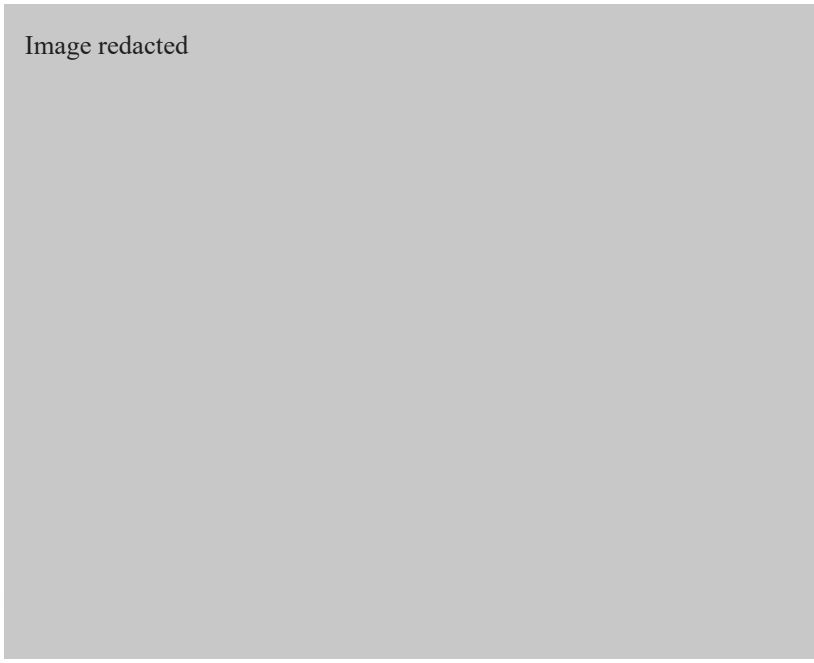



▲ Fig. 61. Clone House Exploded Drawing.

◄ Fig. 62. Matrix of Clone House Multifunctioning Chambers

## Clone House

CJ Lim Studio 8 Architects
1999
London, UK




In the 90s CJ Lim had been active and successful in architectural competition; Lim had always produced works that balance rationality and aesthetic. Although the Clone House came second in the competition and thus was not built, it is still extremely valuable. The proposed structure was a house made of four adaptable chambers, without any hierarchy; the function of each chamber accommodated the user's current and future needs (Lim, 2001). Lim's vision of the Clone House provided approaches that can shape aspects of the design outcome.

The nature of multifunctional spaces, and therefore interchangeable chambers, was the crux of this project. Clone House proposes a new system of house relations and interactions. The elimination of hierarchy in the spaces creates a commentary on the existence of a routine whether daily, weekly, yearly or generally (CJ Lim Studio 8 Architects, 2012). With no direct view out of the house except for the transparent roof, the project focuses on the internal, the activities within the multifunctional four chambers (Lim, Clone House, 2005). Clone House is an exploration on compact spaces and its possibilities.

Although extremely abstract, Clone House's study of the internal is noted, and much like the micro house in City Experiment in Two Actions, it presents an approach to space restricted dwellings. The exchangeability of the chambers is intriguing, but the application of this is out of the scope of this thesis. Despite this, the interpretation by this investigation of the exchangeable spaces is the multifunctional aspect. The idea, like micro house, is that a single space can be integrating multiple activities. This presents an opportunity to construct stimulating architectural components and spaces. Clone House demonstrates this within its architectural language and representation. The filleted edges creates a smooth and fluid formal condition. This suggests and expresses the adaptable nature of the intervention. The expression of concept through formal qualities is not anything new, it relates to Venturi's theory of the Duck and the Decorated Shed. Being a Duck, it requires additional deciphering to understand the relationship between the formal qualities and its function; and with this interpretation, it is a modernist gesture. This assists in critiquing the outcomes of DE2, and it further reflects on the nature of the architectural language. The representation of Clone House is one of interest; it illustrates different parts of the buildings as elements, and raises the question of the whole and the singular. Are each elements designed separately with the intention of relating to one another, or is the dwelling designed then dissected? This provides opportunity in DE3, where the elements of the extensions are individual but derived from the same intended architectural language, then tweaked to slot in with each other and create the whole.

▲▲ Fig. 63. Clone House Perpective Drawing.
▲ Fig. 64. Clone House Interiors.

▲ Clockwise

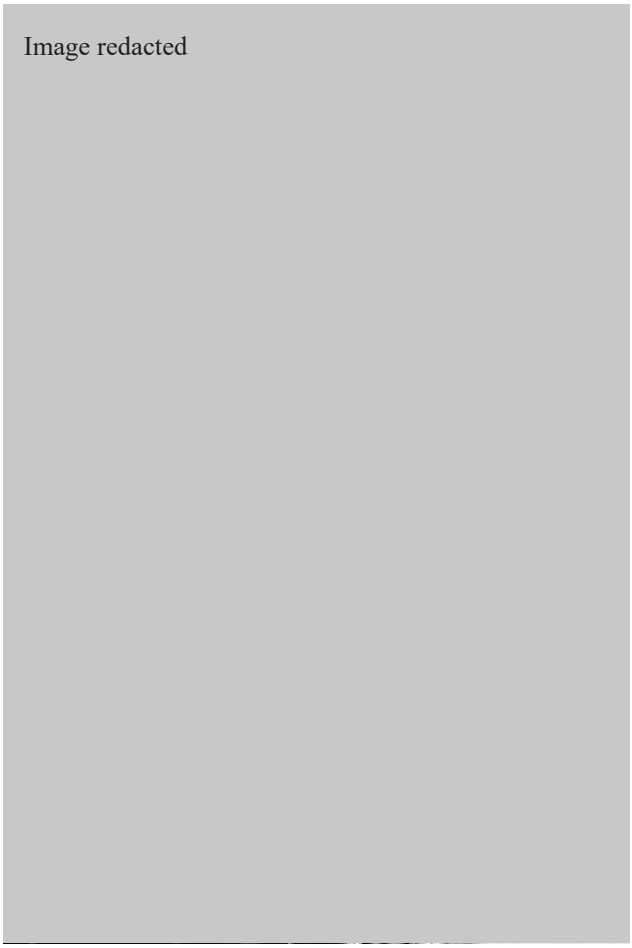
Fig. 65. Sky Box Exterior.

Fig. 66. Gerald Melling in Sky Box.

Fig. 67. Sky Box Street View Exhibiting Permanent Crane Structure.

## Sky Box

Gerald Melling, Melling Architects
2001
Wellington, New Zealand




Whilst redefining the Te Aro roof line, the dwelling introduced a new typology; in the same realm as informal extensions in Taiwan, the Sky Box is considered a Wellington landmark when it comes to innovative living. After splitting with his partner and needing a new home without owning any other properties, the late Gerald Melling built his new home as a rooftop extension to his Te Aro office on Egmont Street (Architecture Now, 2013). Towering over the 100-year-old brick factory was this extraordinary dwelling, which broke most conventions while challenging notions of domesticity, construction and form (The Design Guide, 2016). The slender three storey extension is supported by an I-beam frame that scaffolds over the building it is inhabiting. The intervention presents innovations for low-cost building and the inhabitation of a challenging site. Although not informal, it provides several correlations to the extensions culture in Taiwan. The Sky Box is a beacon for how parts of the urban environment can be reimagined.

Although it is a Western take on the extension's phenomenon, the Sky Box is in many ways relevant to the Taiwanese extension culture. It essentially creates a building similar to the traditional modernist house in Taiwan, with the ground floor being the occupant's business and the upper being the living quarters. Although the overall form is one of simplicity, the intervention identifies various functional aspects such as typology demands: for example, the attachment of a permanent crane, which protrudes out of the balcony for ease of transportation of goods. Sky Box is by far the most rational in this series of the case studies; it confirms that such extensions can be constructed and inhabited permanently. The project assisted in the understanding of functionality in extensions, which aided DE1 and DE3 in developing operable elements.

▲ Fig. 68. Sky Box Bird's Eye View.

▲ Fig. 69. Plug-in City Section.

## Plug-in City

Peter Cook, Archigram
1964
London, UK

Through hypothetical projects, Archigram developed a series of works that would critique the lifestyles of their time in terms of architecture and urban design. These were presented through a series of "pamphlets" or journals. In Amazing Archigram 4 – Zoom, Archigram member Sir Peter Cook presented Plug-in City. The scheme was a critique of London's property boom at the time; it proposed a radical and unconventional urban environment. Instead of viewing the urban environment as disconnected buildings, Cook envisioned a city as a megastructure with plugged-in exchangeable and operational elements. The city was a frame waiting for accessories to be implemented, updated and exchanged. Each element in Plug-in City were expandable and could be dismantled and reassembled (Spiller, 2008). The intention was that, although the units could become obsolete, the city lives on as they can be renewed and replaced. The megastructure itself serves as the veins of the cells, or units; it provides the necessary services to each unit much like conventional city's drainage, electricity and data networks, which are mostly underground. The project was part of several visionary proposals critiquing the urban environment, Archigram was actively producing works that questioned the direction modernist architects were heading. Archigram's David Greene stated in their first pamphlet:

> A new generation of architecture must arise with forms and spaces which seem to reject the precepts of 'Modern' yet in fact retains those precepts. We have chosen to bypass the decaying Bauhaus image which is an insult to functionalism (Greene, 1961)

Plug-in City suggests an alternative way of life and a liberation from the modernist answer of suburbia; this correlates with the birth of the Taiwanese extensions. The extension culture is a critique of the modernist standards the Japanese introduced; although it assisted in the urban environment in various manners, the homogenous concrete building blocks could not sustain the rapid rise of population. Taiwanese people took control of the issues when the KMT neglected the livelihoods of the people and produced their own functional plugged in elements.

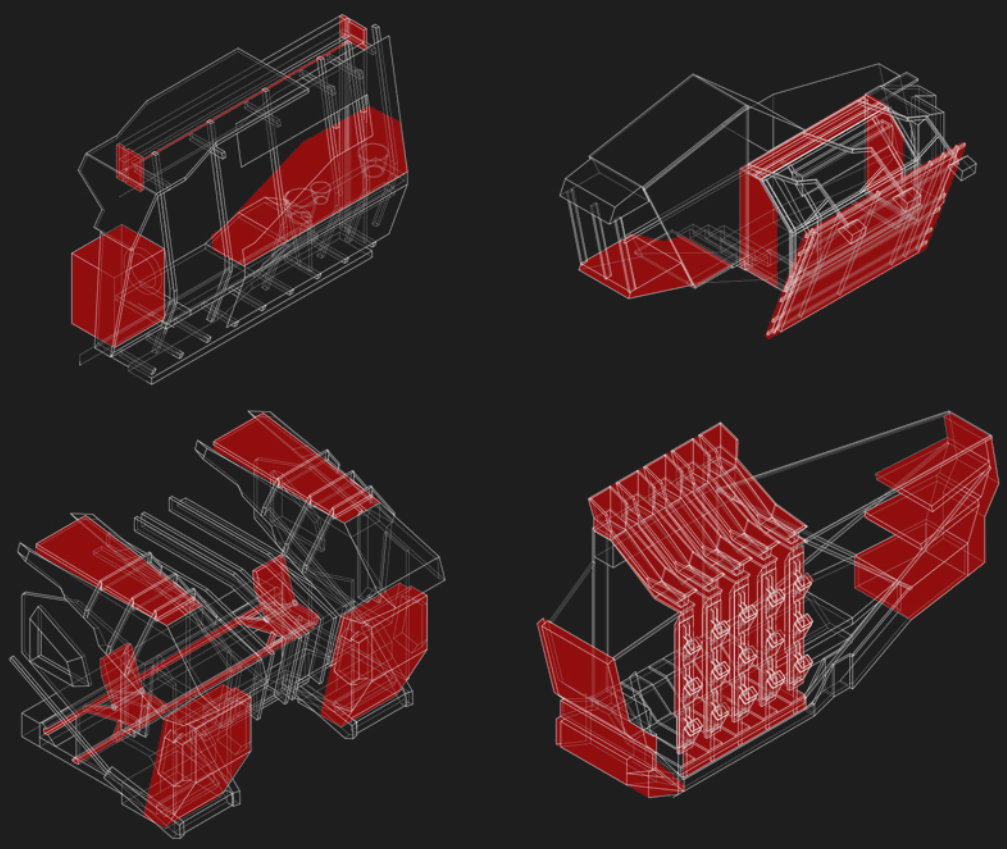
The concepts initiated in this project, although wild and radical, are extremely relevant. Despite this, a critique on the rigidity and severity of the Megastructure is essential (Banham, 1976). Romanticising over "paper" architecture has always been appetising, but these concepts need to be considered with reservation. With this in mind, Cook's interpretation of a city made of functional elements is utilised in the context of this investigation when thinking about the elements within an extension, in line with Lim's representation of Clone House and Hejduk's structures. This assists in the process of configuring elements in DE1 and DE3.

▲▲ Fig. 70. Plug-in City Axonometric Drawing.
▲ Fig. 71. Plug-in City Living Unit Drawing.

# Critical Reflection

The examined case studies—City Experiment in Two Actions, Clone House, Sky Box and Plug-in city—each contributed a different strategy that can be utilised when addressing the research question. Although not all four of these case studies directly relate to the phenomenon in an immediate sense, the relationship of these projects to the investigation initiated numerous interpretations of the extension culture in Taiwan. This chapter predominantly assisted in the design process of DE1 and DE3, providing insights into multifunctional spaces in restricted dwellings, the integration of individual operable elements related through architectural language and the functional needs of such elements.

▲ Fig. 72. Matrix of Theoretical Approach Images.



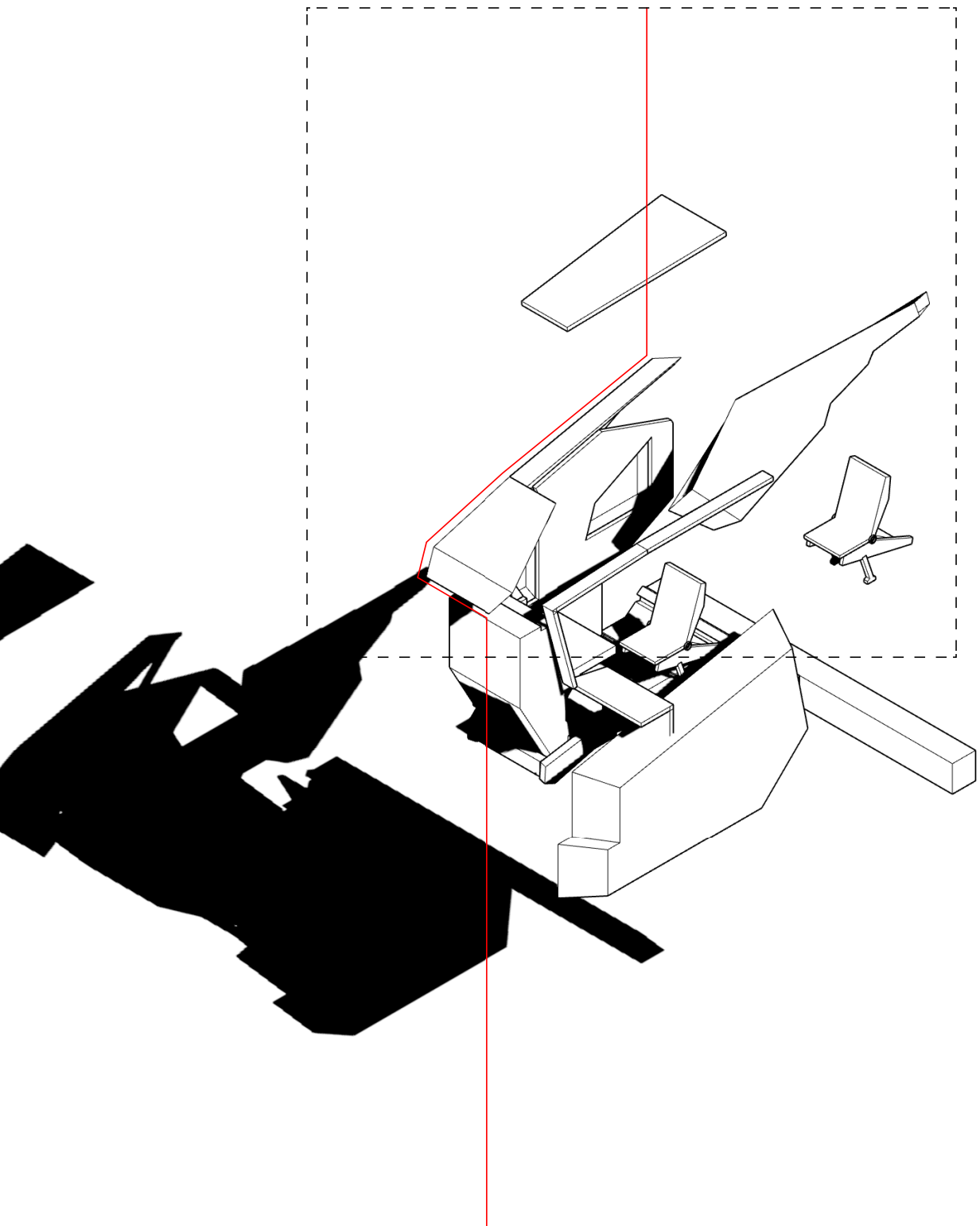
▲ Fig. 73. Axonometric Drawings of Design Experiment One.

# Design Experiment One

# Aim

The aim of the first design experiment was to understand the current and potential typologies of the phenomenon at hand and test how these typologies can be combined into small yet functional spaces. Furthermore, it aims to discover how these extensions may appear if the informal characteristics have been semi-formalised, designed and/or reconfigured.

► Fig. 74. Exploded Axonometric of Self-Sustaining Office.



# Method

This experiment was initiated through the making of a series of scalless kitbash models that can be considered as parti models, and are utilised as a precursor to the outcomes of this experiment. These models are made from arbitrary artifacts or objects found from around homes, workshops and studios, connected together with no other intention than to capture the notion of "addition" and "configuration". The models also used folded card which gives the overall object volume and bind the separate elements into a whole.

These models tested how formalisation of seemingly unconnected and non-systematic found objects can manifest themselves into a re-energised aesthetic. Much like the extensions in Taiwan, they are almost always made from things most accessible to the occupant/erector; it is these informal gestures that created the vernacular architecture language that these extensions all possess.

The difference between the models made and the extensions are that the aesthetic aspects of the extensions were created unconsciously; the aim of these extensions were their functions and their necessities to the occupants.

Therefore, the design tests were based upon initial findings on existing typologies of facade extensions from Chapter Two, Context Analysis. It was discovered that throughout the 12 main districts of Taipei, the three functions that were constant are:

1. Air Conditioning Unit
2. Garden
3. Laundry

Additional to this, a list of speculated potential typologies and multi-use spaces that may improve the occupants' well-being joined the list of functions that assisted in generating the outcomes.

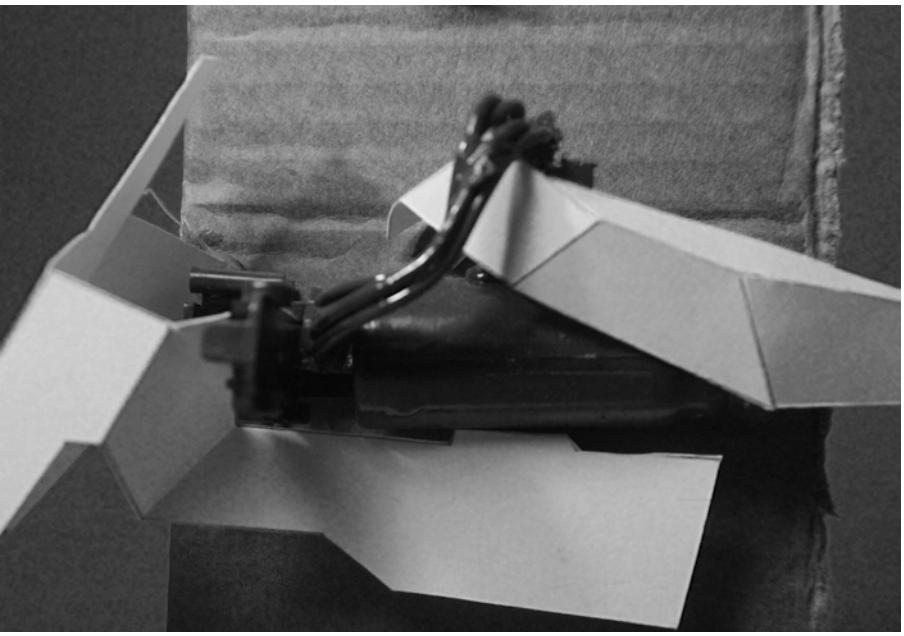
1. Billboard/Bedroom Unit
2. Hydroponic Growing System
3. Rainwater Collection System
4. Solar Powered Office/Library

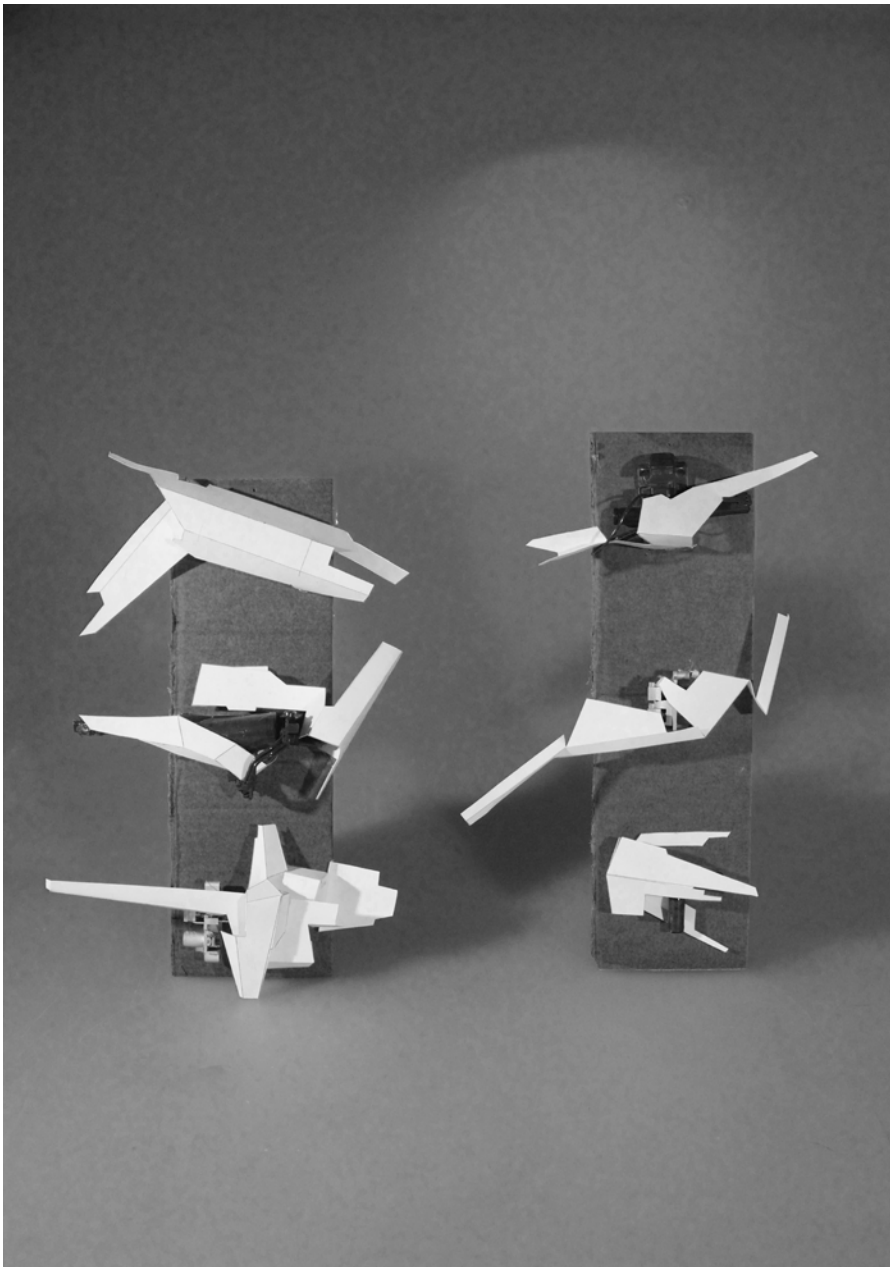
A set of generalised building and threshold dimensions was established through study of the mid-rise buildings in Taiwan, on which each design test was based.

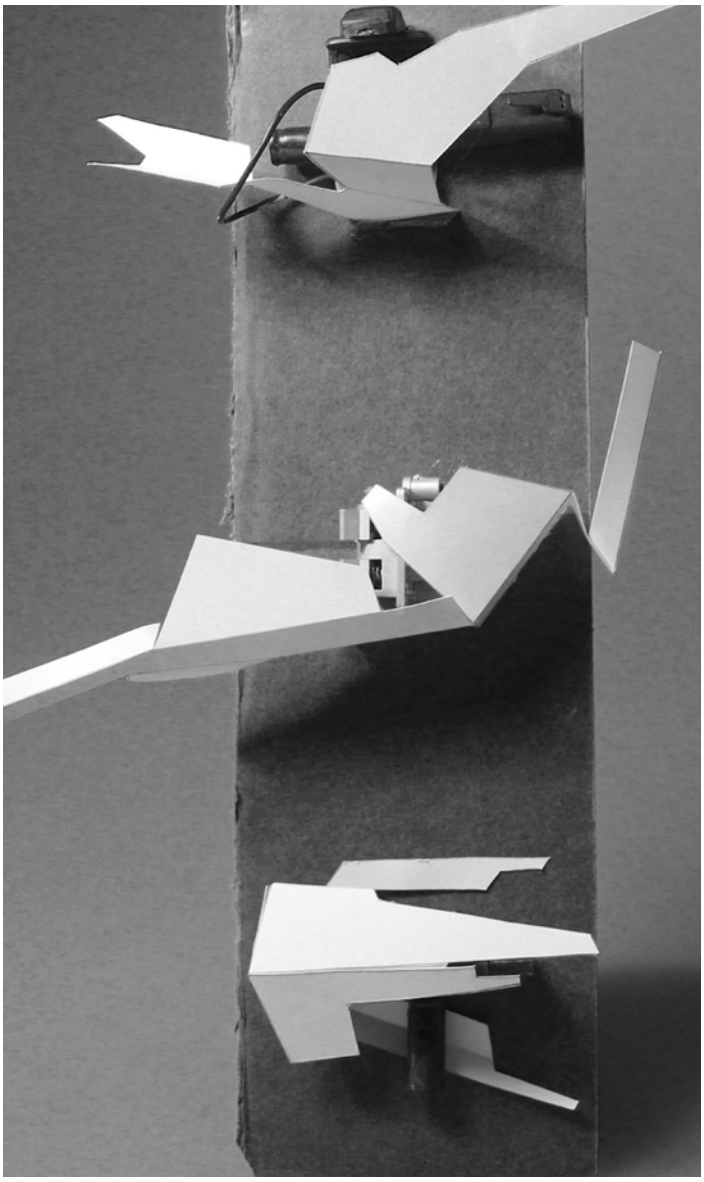
With the notion of "addition" provided by the parti models and the list of typologies explored and speculated in mind, the design was sparked through iterations executed by means of a series of hand sketches, digital 3D modeling and concept compositions.

► Fig. 75. Closeup of Parti Model.

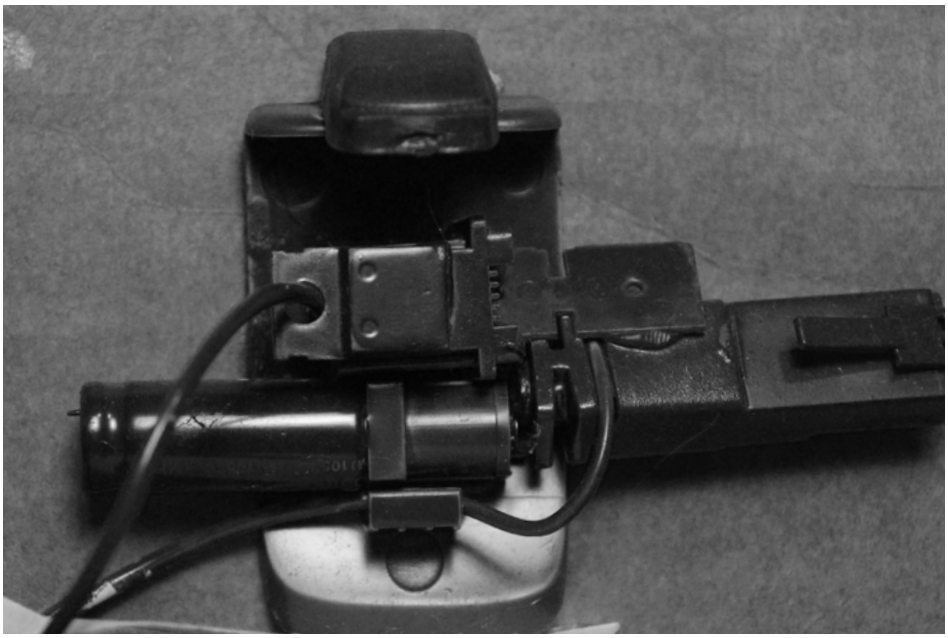
►► Fig. 76. Series of Parti Models.

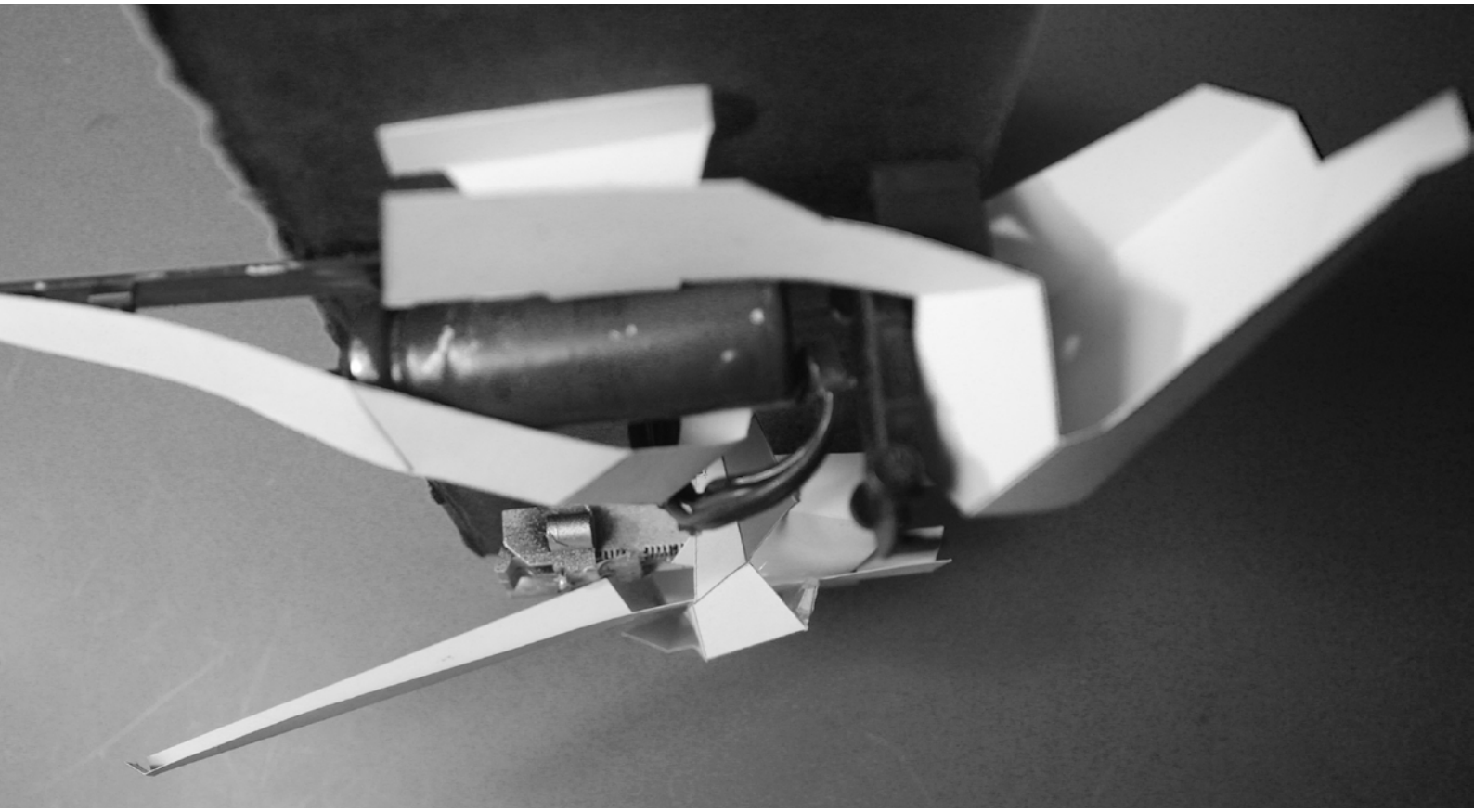


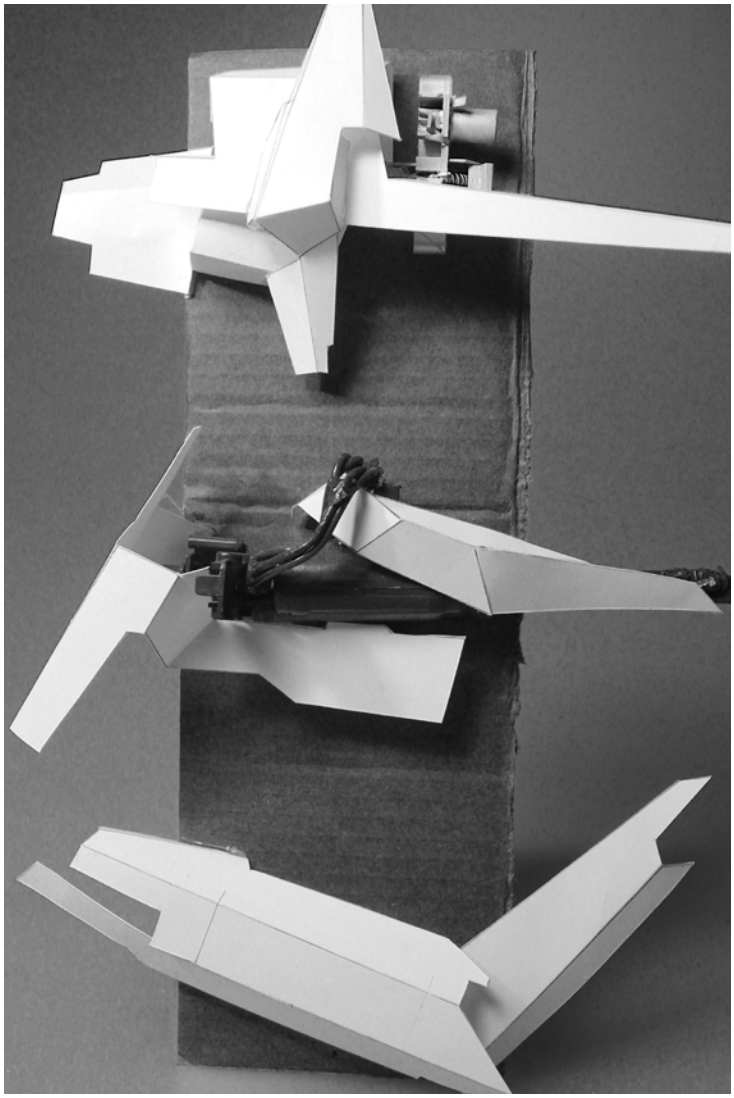




▲ Fig. 77. Collage of Parti Models.

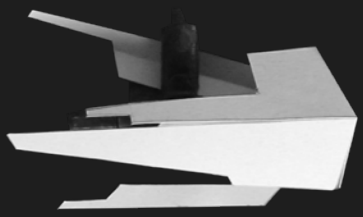


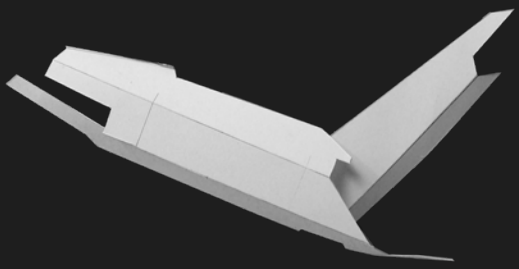


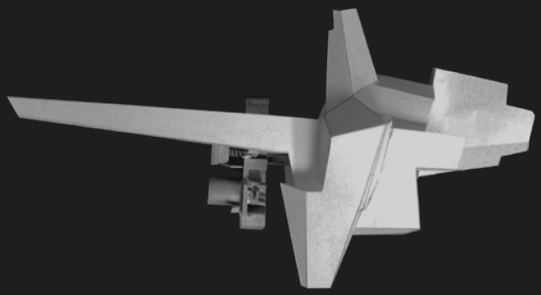


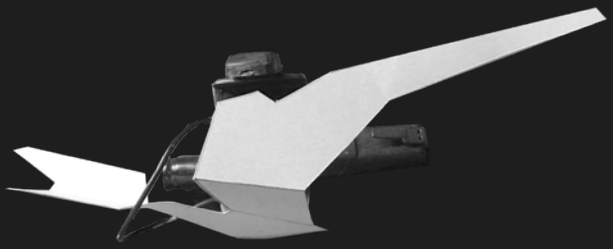
▲ Fig. 78. Series Two Parti Models.

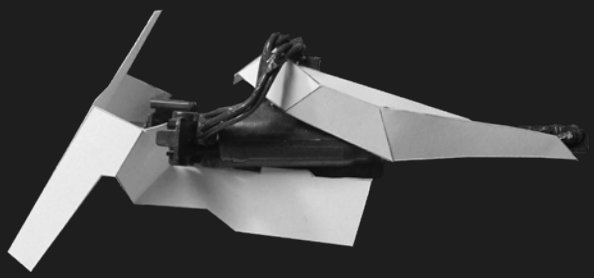
► Fig. 79. Parti Models as Components.

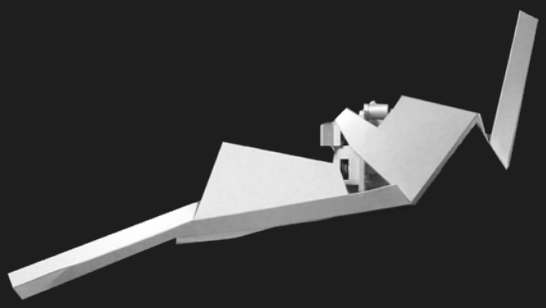


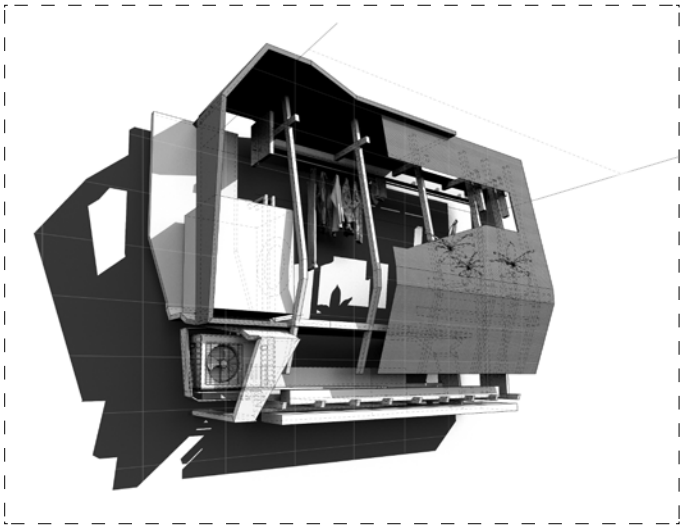












## Existing Typologies

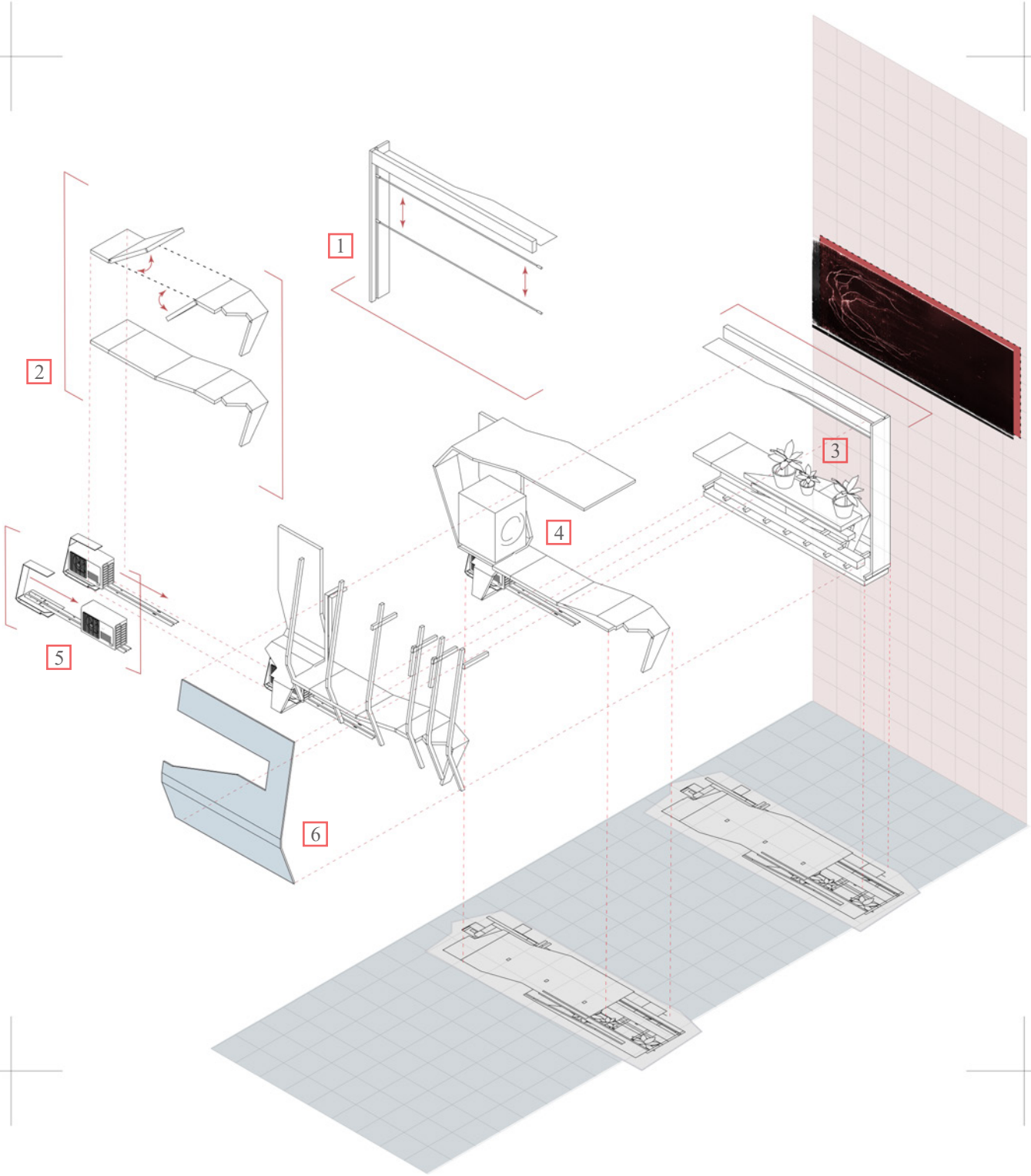
The first of four outcomes yielded from the first design test was a façade extension that amalgamated the three existing typologies into one multifunctional space; the laundry, AC unit and a garden.

The undulating outer shell allows clearances for activities within the micro-space; the openings punctured into the shell allow ventilation and natural light into the space and the existing unit the extension is inhabiting.

The volume of the extension serves mainly as a multi-use space consisting of the laundry, washing machine and garden; the drying rack is on a vertical tracking system that enables the rack to be hidden when necessary and lowered when it is in use. The air conditioning unit is situated on a separate tracking system under an operable floor; this enables access for maintenance and replacement, whilst creating a concealing envelope.

▲ Fig. 80. Perspective of the Existing Typologies Test.

► Fig. 81. Existing Typologies Exploded.




1 Drying Rack on Vertical Tracking System

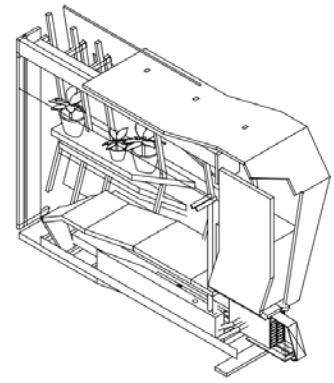
2 Operable Floor

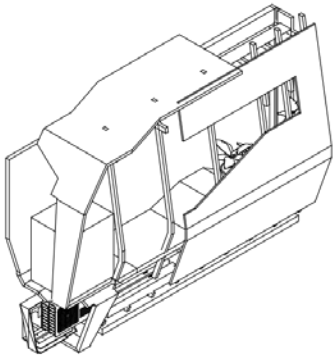
3 Garden

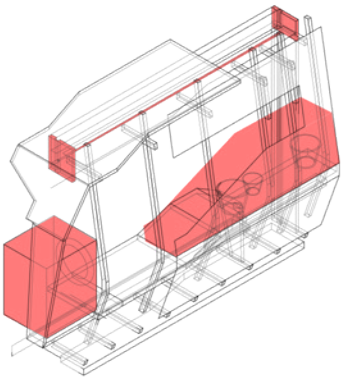
4 Laundry

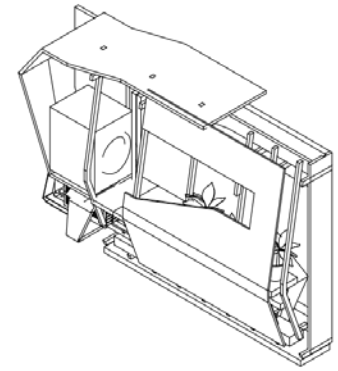
5 Air Conditioning Unit on Tracking System

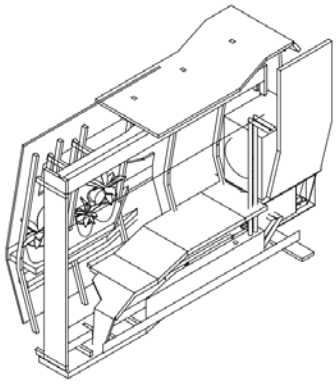
6 Undulating Shell





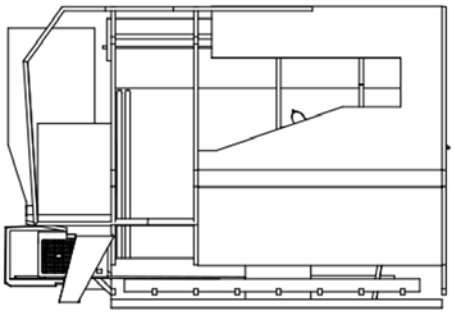


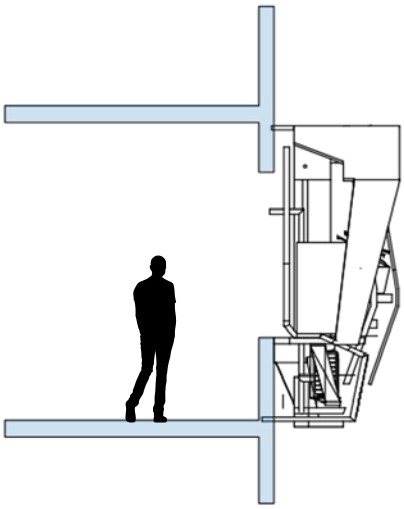




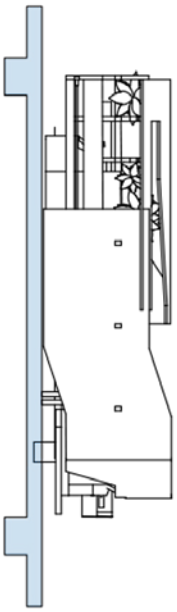
▲ Fig. 82. Existing Typologies Axonometric Drawings.

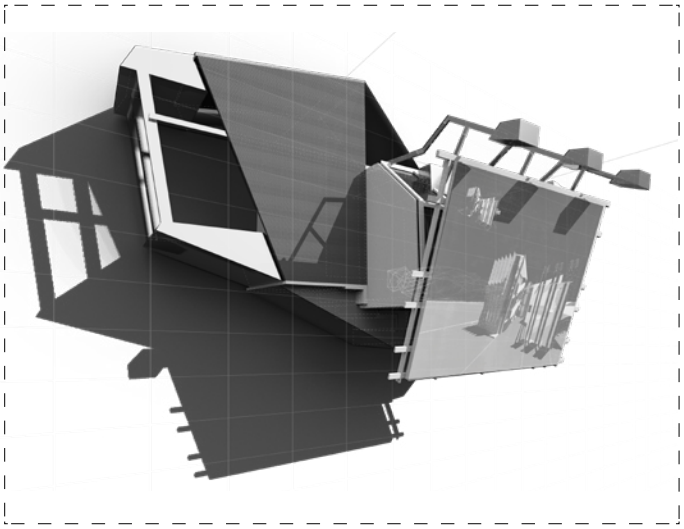
► Fig. 83. Existing Typologies: Elevation, Section and Plan.





This resulting design tested the nature of combining typologies into one confined space; the focus became the configuration of how the various components can function together within the same space. It can be perceived as the succeeding adaption of the initial kitbash parti models. The intervention still displays the notion of addition and configuration, the variable being each component possesses a function.



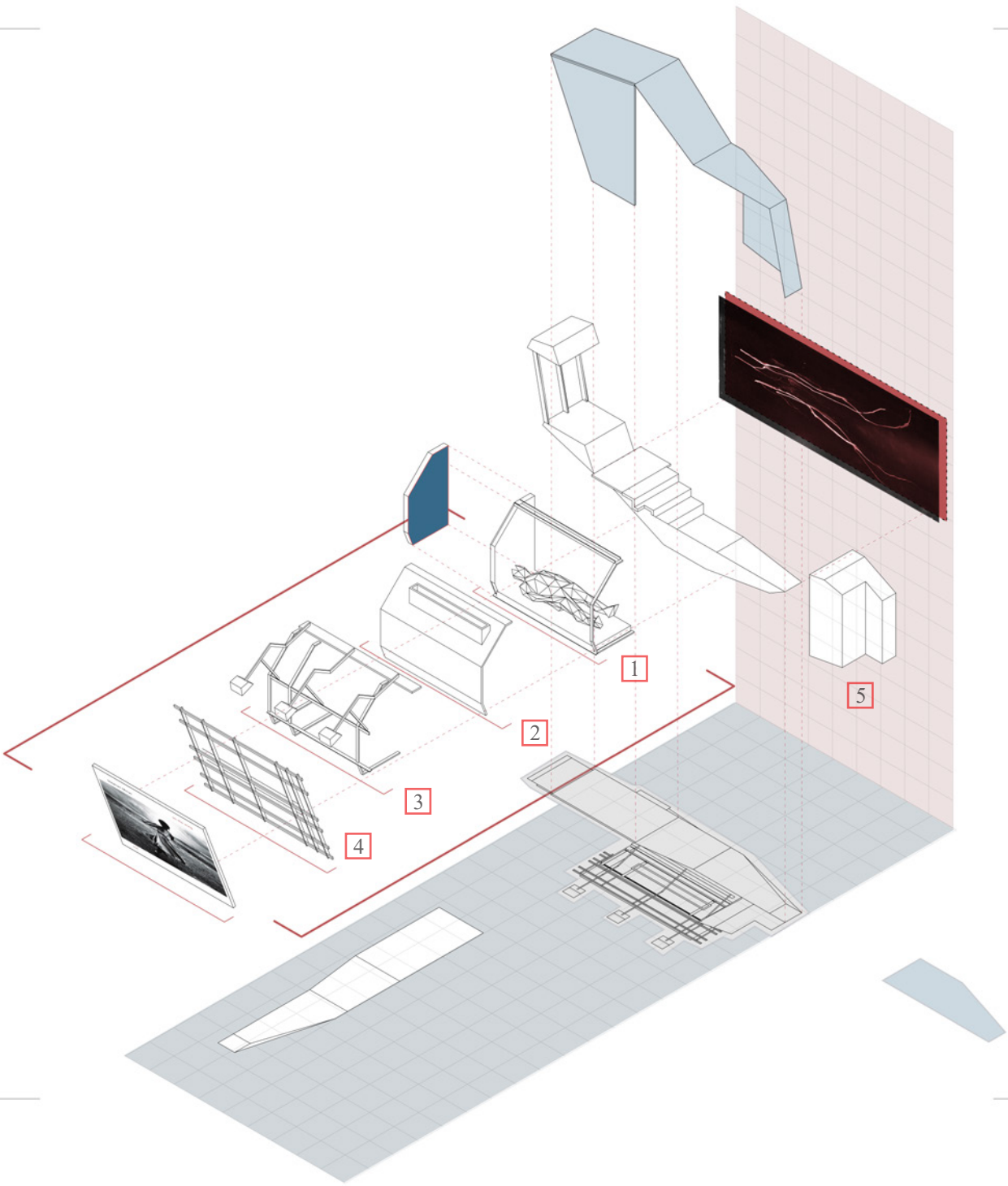


## Billboard Dwelling

The second outcome attempted to create an extension of a sleeping space and storage whilst addressing an economical issue by simply providing a passive income source: the Billboard. Taipei's urban street views are dominated by billboards and signs of what is offered on street level; subsequently many of the larger billboards end up covering the windows behind, blocking natural light and occasionally ventilation. The Billboard Dwelling uses that as an opportunity to provide an extra space for either an extra bedroom or extended lounge.

▲ Fig. 84. Perspective of the Billboard Dwelling Test.

► Fig. 85. Billboard Dwelling Exploded.



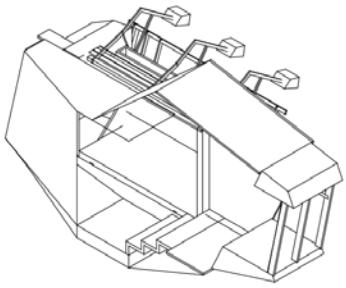

1 Sleeping Space

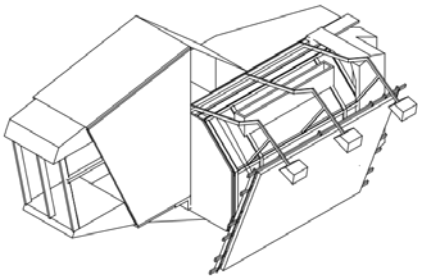
2 Shell with Skylight

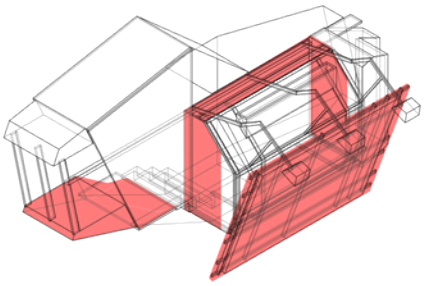
3 Primary Framing and Spotlights

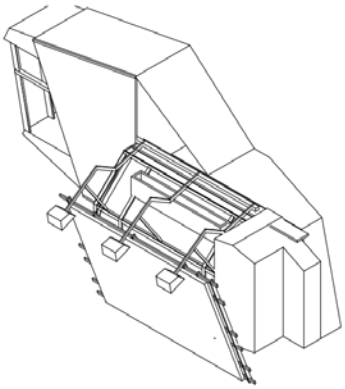
4 Billboard Structure

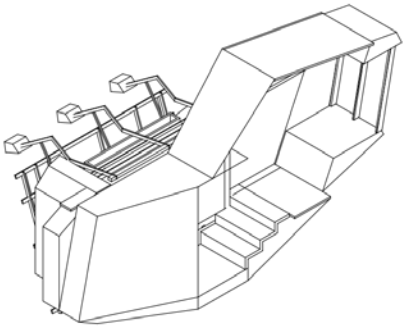
5 Storage





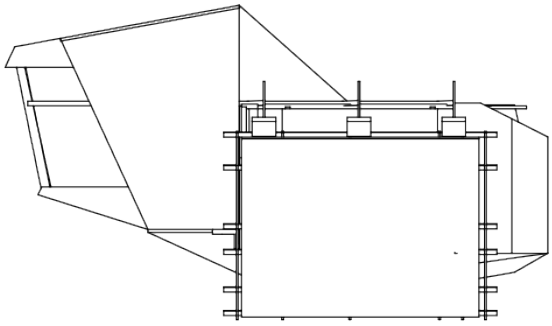


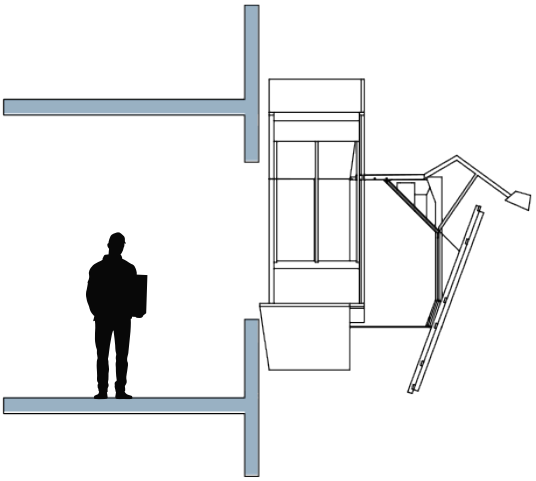




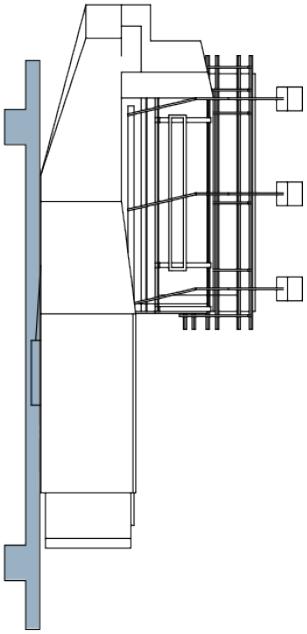
▲ Fig. 86. Billboard Dwelling Axonometrics Drawings.

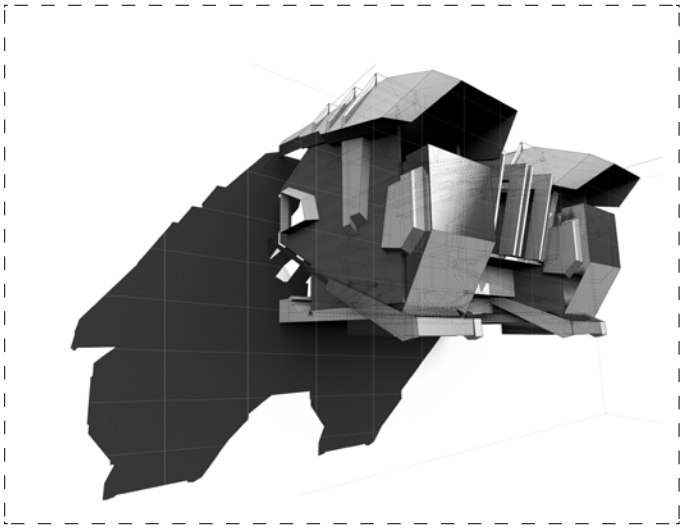
► Fig. 87. Billboard Dwelling Elevation, Section and Plan.





The intervention steps down from the entrance which allows for a portion of the existing threshold to function for natural light and ventilation, there is also an opening located on the side elevation where the entrance is located, allowing light into the extension and the space which the intervention is latching onto. Directly above the sleeping space there is also a sky-light to provide natural light for the space itself.



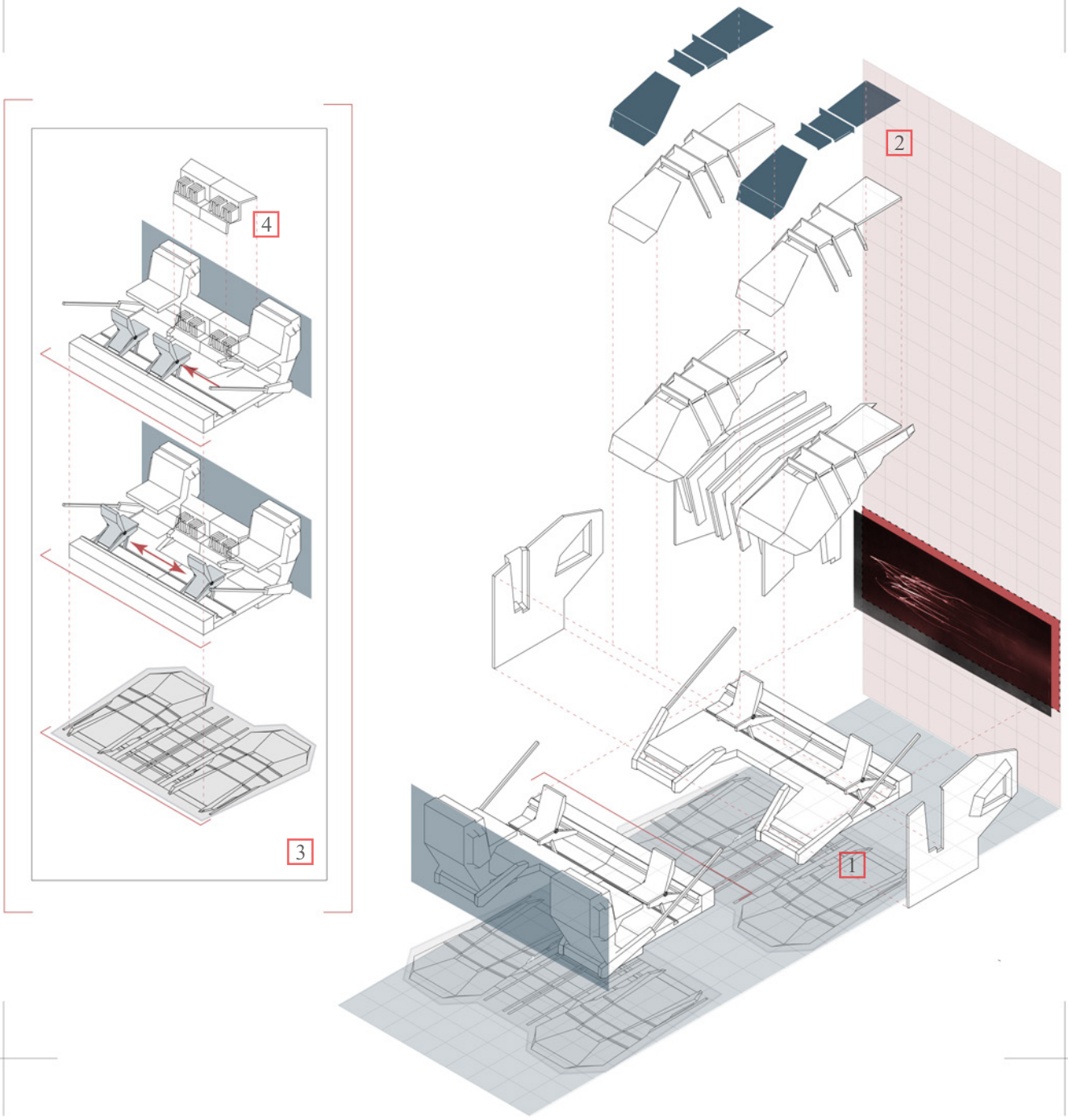


## Self-sustaining Office

The third outcome sought to attack the economical issue in a more discerning manner. Understanding that the future of office working spaces will most likely be at home or at a coworking space, the intervention envisioned a self-sustaining office extension. Both adult members in most Taiwanese families have their own respective careers therefore, the intervention created two separate working units connected by a library or storage space, whilst the chairs are on a tracking system allowing directional movement for collaboration or simple maneuver to access the library.

▲ Fig. 88. Perspective of the Self-sustaining Office Test.

► Fig. 89. Self-sustaing Office Exploded.

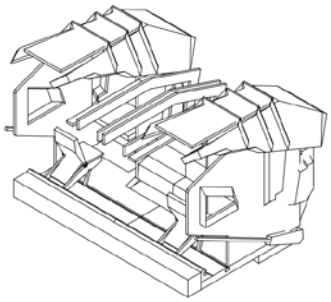


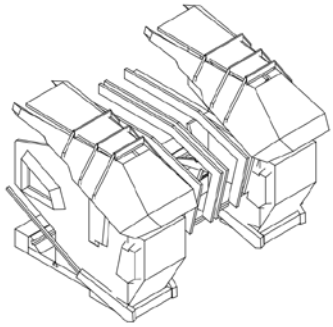

1 Office for Two

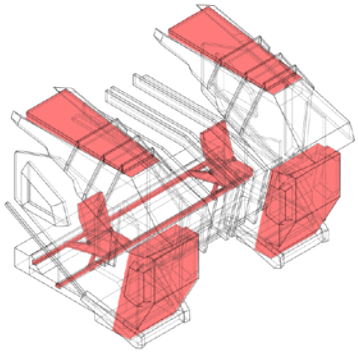
2 Photovoltaic Panels

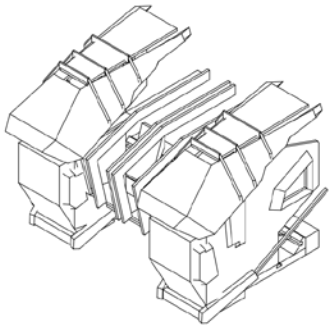
3 Chairs on Tracking System

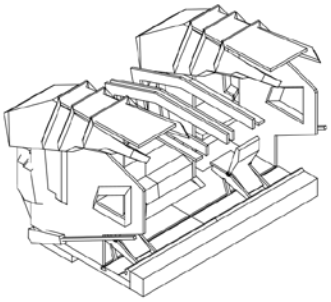
4 Library / Storage





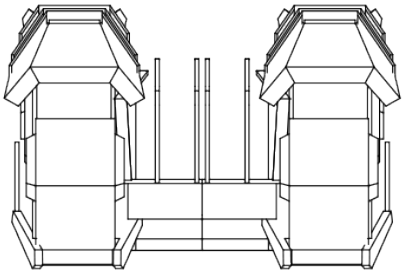


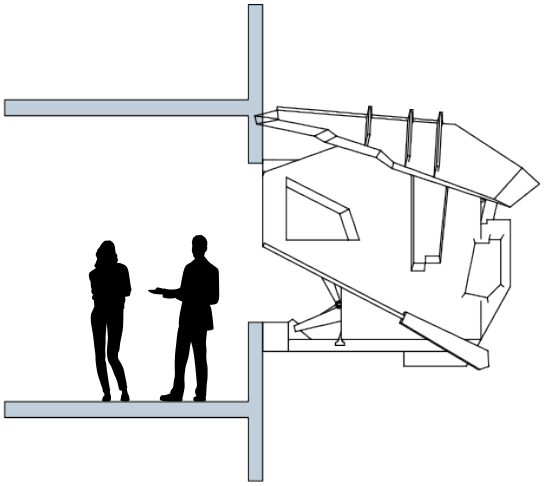




▲ Fig. 90. Self-sustaining Office: Axonometric Drawings.

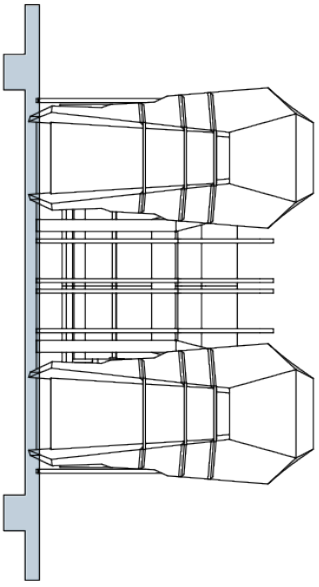
► Fig. 91. Self-sustaining Office: Elevation, Section and Plan.



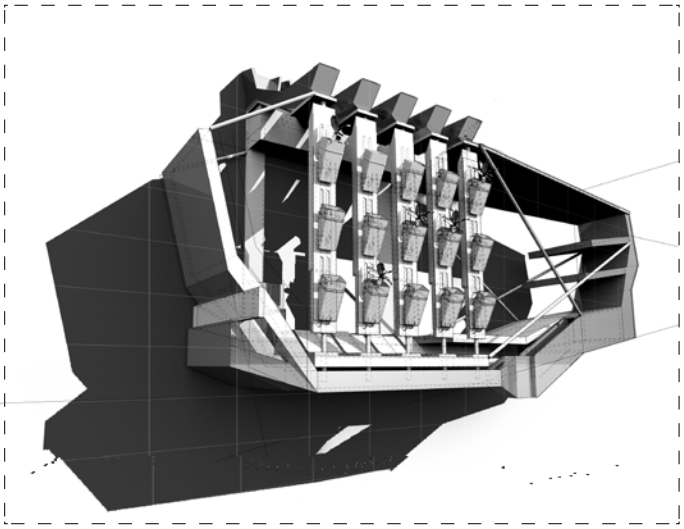


The two working units are both enclosed with a single opening, whilst the connecting library is encased with glazing allowing natural light to penetrate both the intervention and the space on which it is latching.

As the intention is for the unit to be self-sustained, the roof of the working unit is intended to be covered with photovoltaic panels, providing the necessary electricity for each working unit: low voltage outlet for laptops, tablets and lamp.



# IV

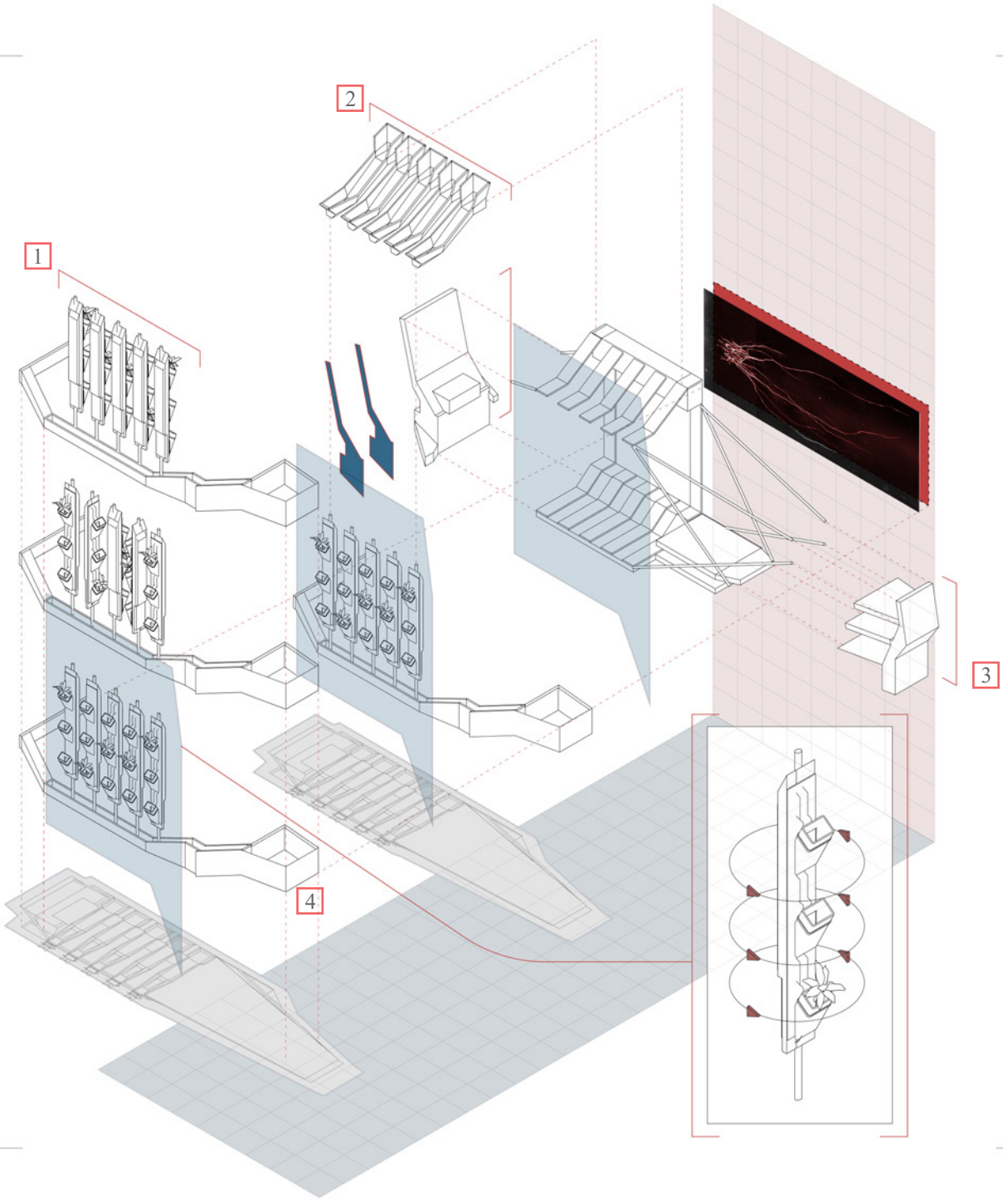


## Micro Garden

It is evident that lack of outdoor space, which comes with high density apartment living, resulted in occupants wanting to increase greenery where possible. The Micro Garden allows effortless greenery by incorporating a hydroponic growing system integrated with a rainwater collection system. One end of the intervention allows for seating and storage whilst the other is a separate horizontal planting area, consisting of three layers of planting dishes. Although the intervention is wider than the threshold to which it is designed to be attached, half of the intervention is tapered outwards leaving only half of the threshold covered and the other half to still receive natural light and ventilation.

▲ Fig. 92. Perspective of the Micro Garden Test.

► Fig. 93. Micro Garden Exploded.

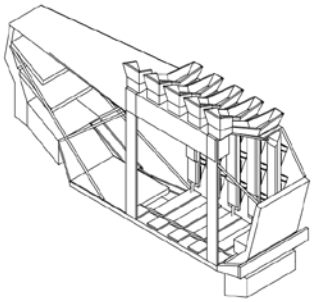


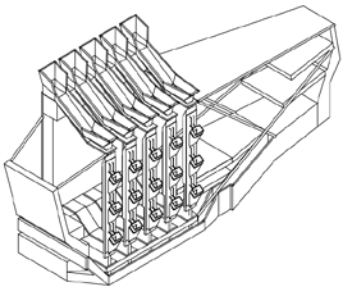

1 Rotating Hydroponic System

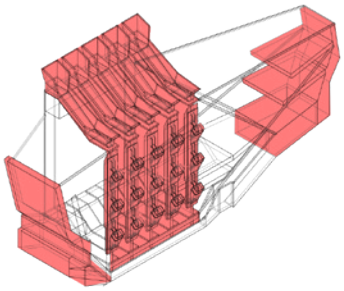
2 Rainwater Collection System

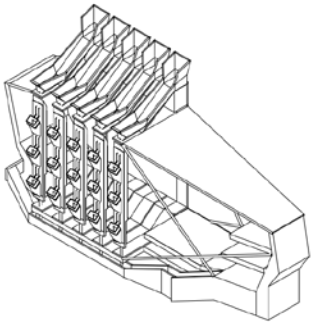
3 Horizontal Planting Area

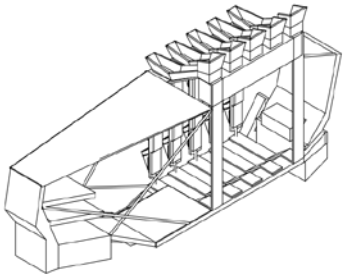
4 Drainage System





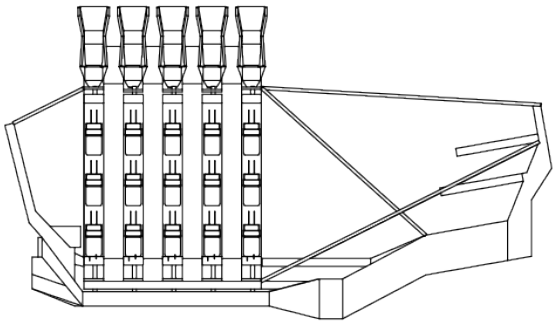


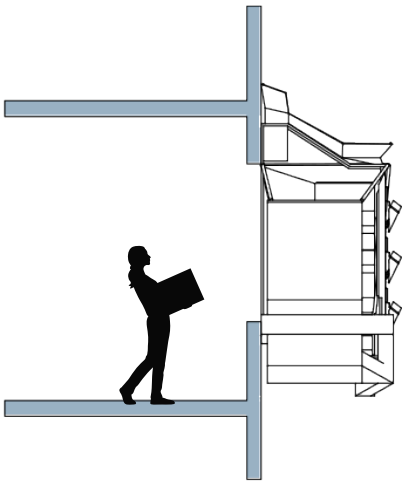




▲ Fig. 94. Micro Garden: Axonometric Drawings.

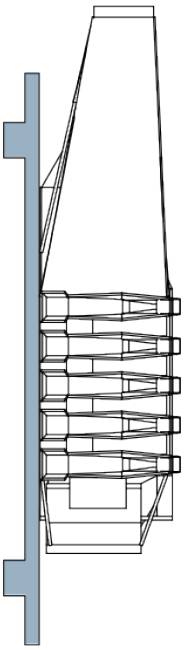
► Fig. 95. Mirco Garden: Elevation, Section and Plan.





Located on the front facade of the extension are five groups of vertical hydroponic planting system, with three planters each. These are intended for edible vegetation such as herbs or leafy greens; each member is rotatable for ease of harvesting and direct natural light when necessary. Above each group of planters, there is a rainwater collection gutter that provides hydration for the vegetation.

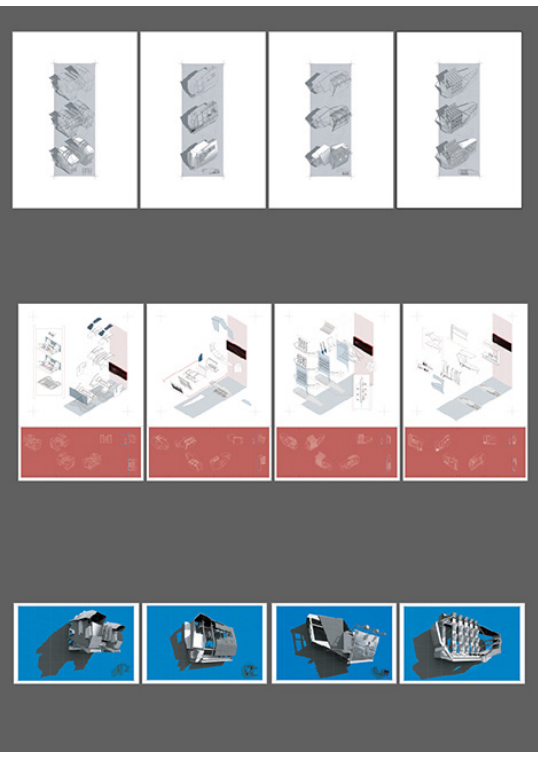
On the boundary of the accessible floor is the necessary drainage for the two types of garden mentioned above; the front elevation is also tapered for ease of drainage downfall.



# Review One

The first review took place at an early stage of research. The first design experiment had concluded, which was introduced along with design case studies and early context analysis. With a limited body of work, the discussion mainly focused on the direction of the investigation.

It was apparent in the discussion that there was an obvious influence from the aesthetic and formal qualities of the design case studies presented. Juxtaposed with the topic of informal settlements, questions and suggestions were raised. The main discussion concentrated on the need to settle on a direction between an investigation into speculative architecture or informal settlements. The reviewers divided, and the discussion delved into somewhat of a pros and cons conversation. A suggestion was made that proposed the idea that these types of informal settlements are a form of speculative architecture; these occupants erected the structures with only their own intention in mind. This gave the investigation a more discerning direction: a creation of a speculative architecture language that considers the existing and potential functionalities of the phenomenon.

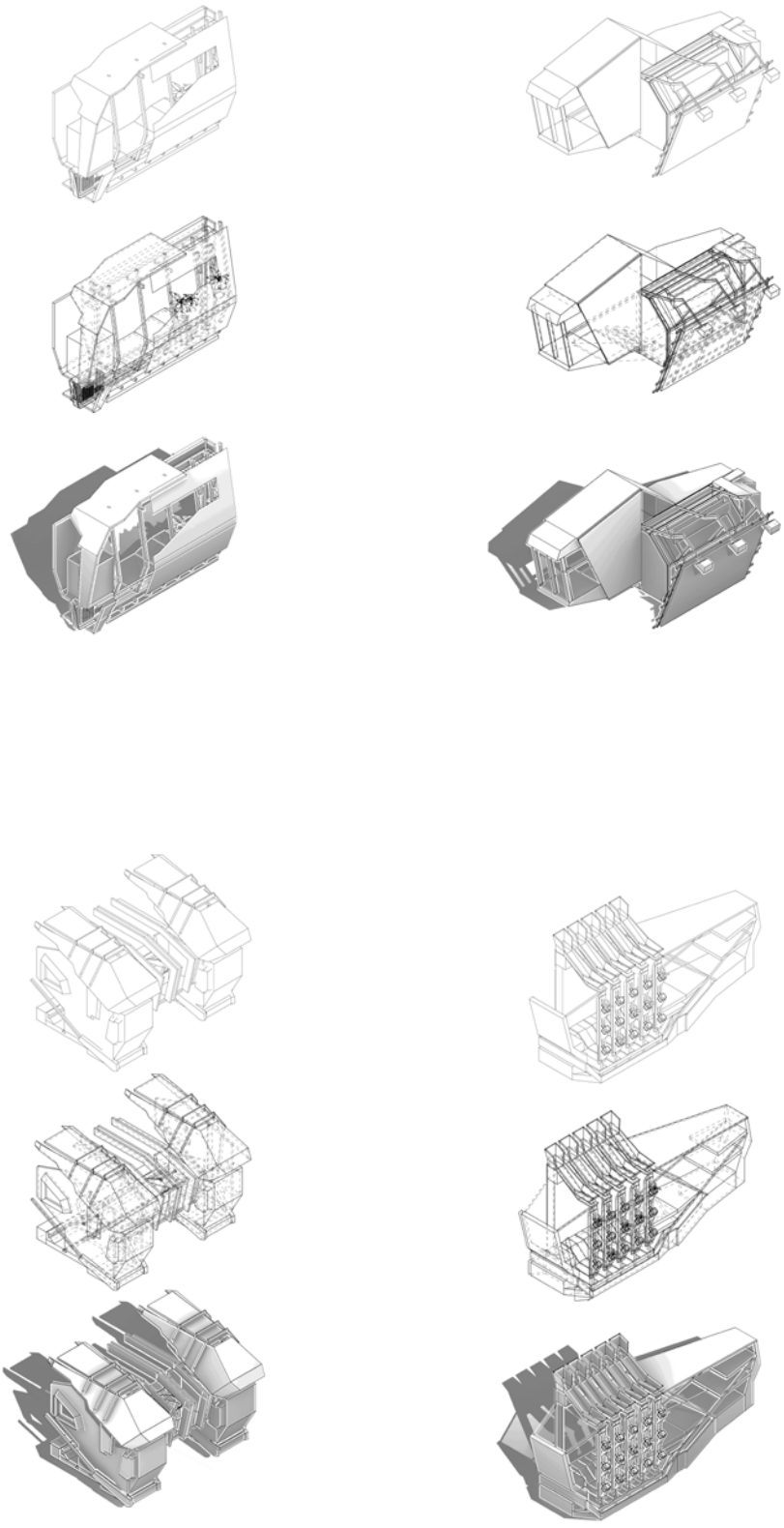


▲ Fig. 96. Review One Layout.

◄ Fig. 97. Review One Presentation.

# Critical Reflection

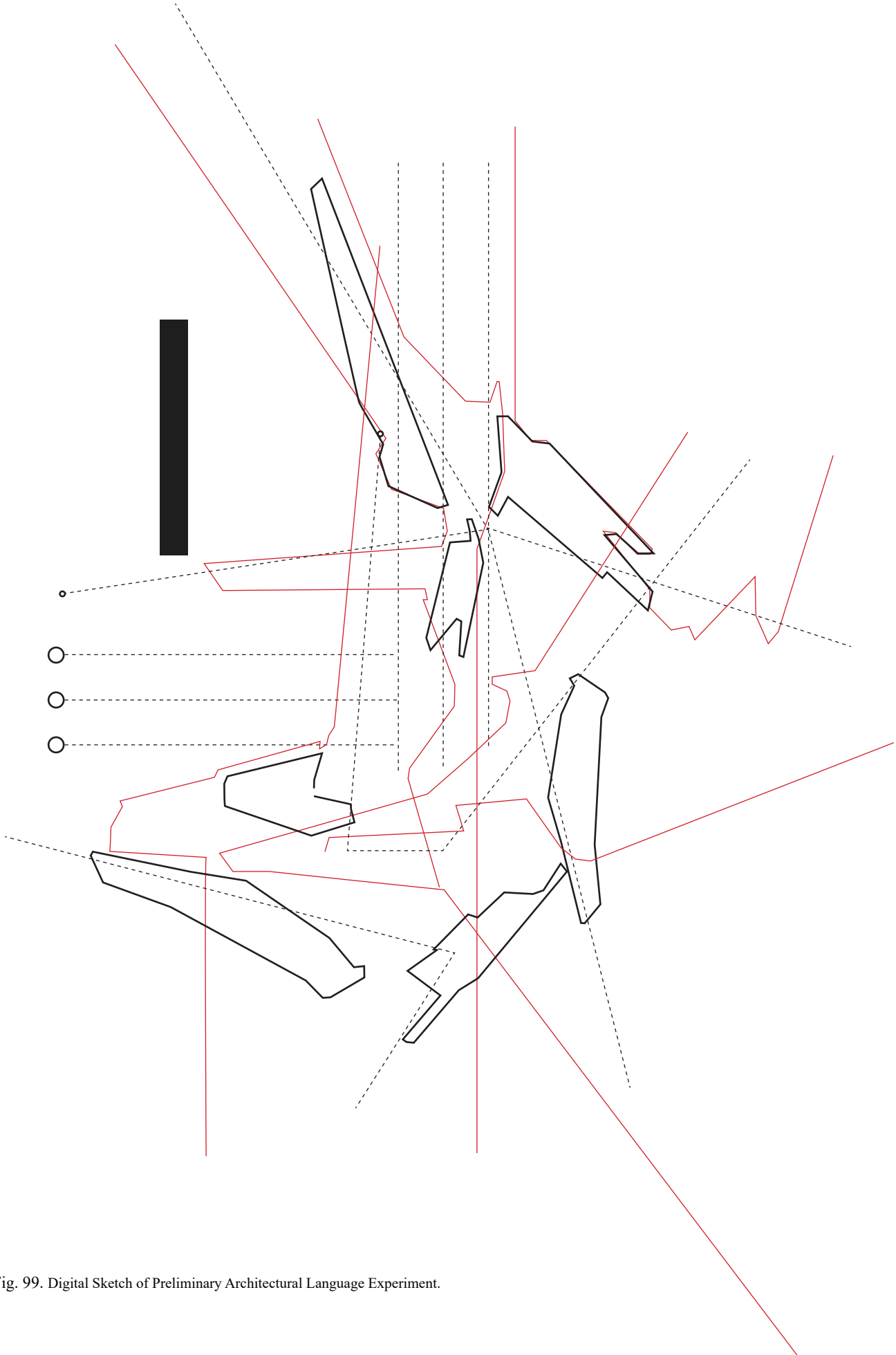
This design experiment offered insights into typologies and their configurations within a limited space. It aimed to concentrate on speculating and exploring potential typologies that might assist in bettering the occupant's lifestyle. By formalising elements that are informal within the phenomenon, the outcomes expressed a certain characteristic, but the formal qualities were not informed by just the typologies and configurations. It is apparent upon reflection that there were other considerations involved. As discussed in the review, there were obvious influences in aesthetics and form from the design case studies. Therefore, Design Experiment Two will develop an architectural language that is phenomenon-responsive. The architectural language will strive to reference but not imitate the existing phenomenon.



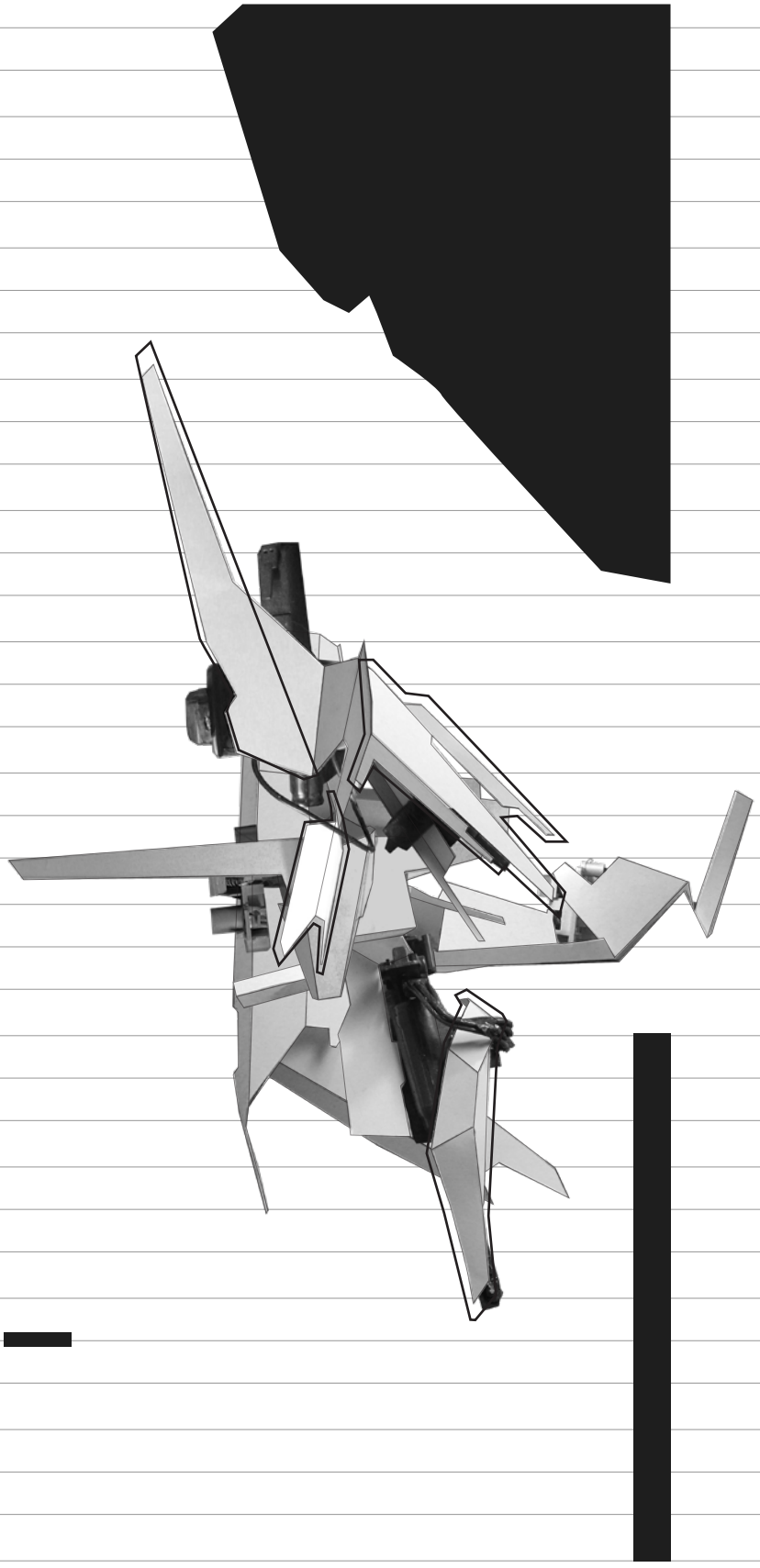
▲ Fig. 98. DE1 Axonometric Drawings.

# Architectural Language Test

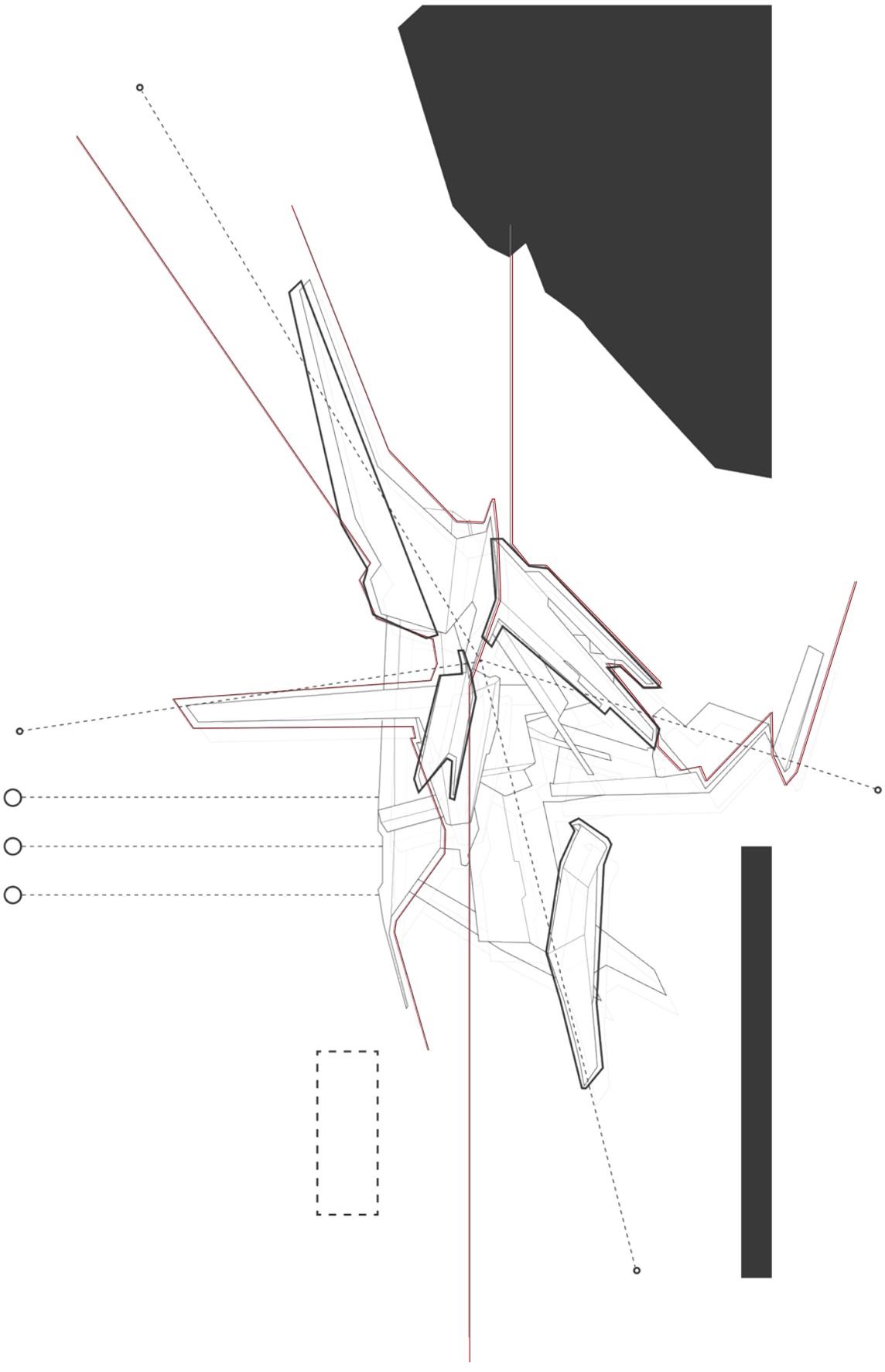
To test the methods for developing an architectural language, a series of collages and palimpsests was conducted as a preliminary experiment after the conclusion of Design Experiment One. This series is derived from the initial kitbash models made, and it interrogates the formal and compositional capabilities of these methods.



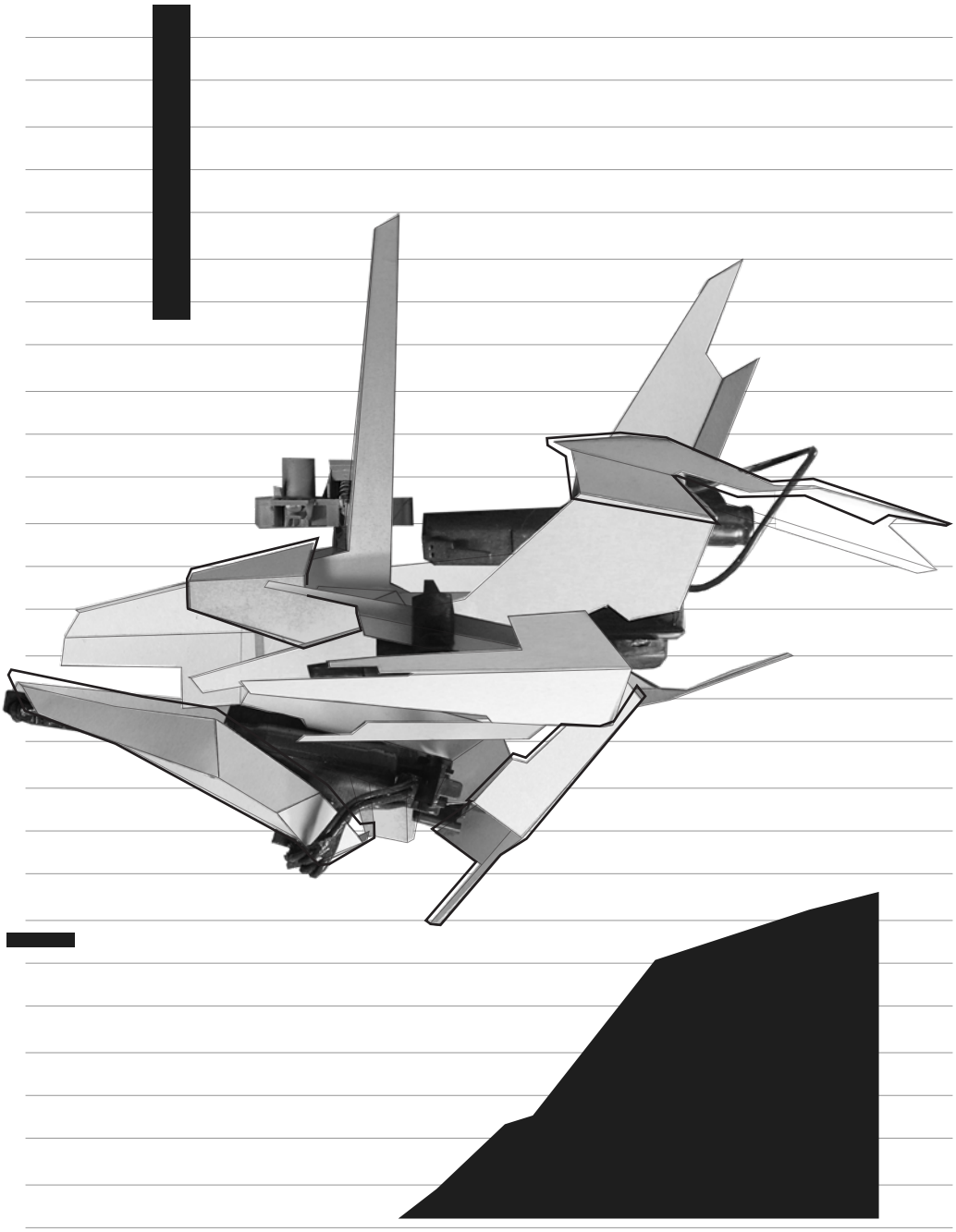
▲ Fig. 99. Digital Sketch of Preliminary Architectural Language Experiment.



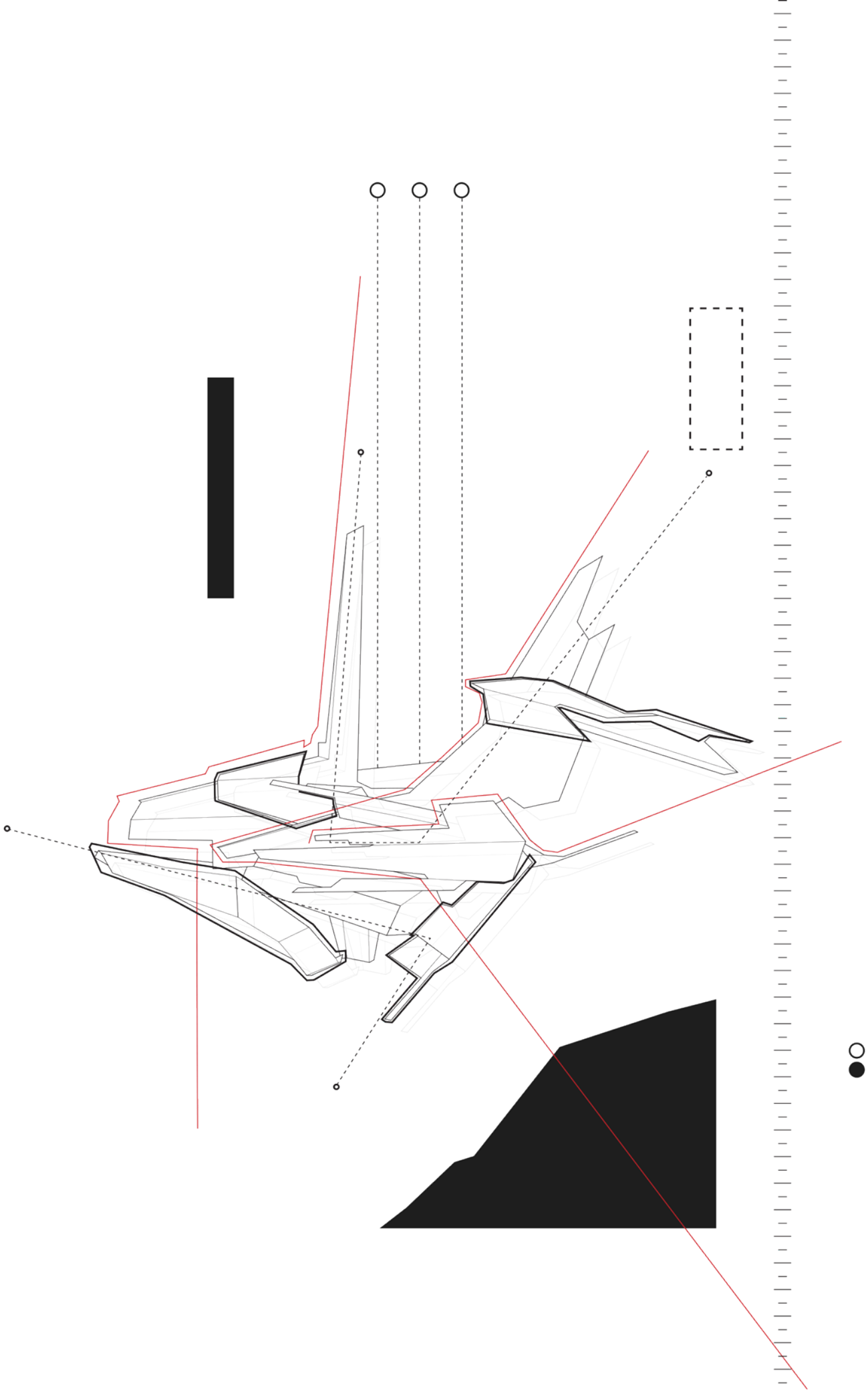
▲ Fig. 100. Collage of Parti Models.



▲ Fig. 101. Palimpsest of Collage.



▲ Fig. 102. Collage of Parti Models.



▲ Fig. 103. Palimpsest of Collage.

有福豆花
中工店
冰
芙樂
LOVE
フクフク飲みましょう
苔飯卷
皆有
2+1
WO&ONE
海苔飯卷
九份芋圓
薏仁湯
綠豆湯
外送專線:2358-6976
海苔飯卷
有福豆花
小館
麻醬
世貿店
LOVE
フクフク飲

# Taiwan Fieldwork

# 6

◄ Fig. 104. Signage from Flâneur.

# Introduction

This chapter investigates Taiwan's extension culture through an ethnographic field study consisting of three components; Flaneur, participatory observation and case studies. Thus producing an empirical vocabulary that illustrates an experimental perspective of the phenomenon, which will serve as a prelude to design experiment two, establishing an architectural language.

The act of a "flaneur" enables a certain understanding of the city and in turn the extensions that inhabits it (Lucas, 2004). The observations will not only capture the spatial qualities of the city, but the very flesh and soul of the urban environment. The experience of the extension culture is then realised and emphasized.

Flaneurie can be considered as a portion of an ethnographic method, but it is not the whole. Participatory observation through informal discussions with various people, were then made. These were casual conversations made in their homes, on the street or in their extensions. The conversations revolved around their background, lifestyle and opinions on the extension culture that surrounds them everyday. This form of participatory observation enabled a deeper understanding in the lifestyle effects of these extensions. It can also recognize the people's view of these extensions, additionally, how they react to certain questions can reflect their opinion of the issue at hand even further (Linda N Groat, 2013).

Case studies were also performed alongside the two components. Firstly, an investigation into the architectural language of Taiwanese pigeon lofts was performed. Secondly, a visit to the Jin-Mei Pedestrian Bridge by Taiwanese architecture firm Fieldoffice was executed to investigate more into the multifunctional nature of the project.

The three components are to be performed alongside each other, allowing each component to inform and guide one another. Thus, creating a more comprehensive perspective and standpoint of the extension culture in Taiwan.

▲ Fig. 105. Facade Extensions.
◄ Fig. 106. Rootop Extensions element.

南無阿彌陀佛

# Flâneur

When one is travelling through their own city on their day-to-day commute, it is easy to lose track and be desensitised to their surroundings. One should instead notice the world outside your route and the soundtrack in your earphones should be kept to a minimum. The current fast pace lifestyle of the contemporary world often eliminates the idea of a wanderer. Therefore, this investigation adopts John Hejduk's use of a sequential environment and reverses it. It treats the urban environment of Taiwan as a sequence that is not predetermined, introducing the Flâneur. The Flâneur is a character of leisure that strolls without a destination; the intention is to satisfy their overdeveloped sensibilities through observation (Shaya, 2004). Although the Flâneur in architecture often describes the audience of architecture, this thesis uses it as a research tool, a casual yet discerning observation of the city. Flâneurie as an exercise includes observation and what Walter Benjamin describes as reading the city (Frisby). This means reading the city like you would read a book, but the narration is not linear or static; the Flâneur dictates the direction.

◄ Fig. 107. Travelling to Yilan.

This wandering and observing takes place in three areas of Taiwan: Taipei City, Taichung City and Yilan County. During this experiment there were no predetermined routes or locations to reach; the only intention was to be involved with the urban environment and observe the phenomenon through human scale. Photographic documentation was used to record the experiment, which is presented in the next two pages. The matrix shows the distinctive nature of the phenomenon, but also the consistency of it throughout the country. A challenge while compiling and reviewing the documented photos was that it was extremely difficult to differentiate the city or county in which it was taken. Although each of the extensions photographed was unique, the architectural language was consistent. This further supports the previous exercise through Google Earth that the phenomenon is present and occurring in all areas of Taiwan.

Fig. 108. Taipei Rooftop Garden ►

DABANA
REGISTER IN SARIN
丹博娜泳裝·韻律服連鎖專賣店
www.dabana.com.tw
復興店2721-5368
典高戶外旅遊精品世界
dankao
典高戶外旅遊精品世界
www.dankao.com.tw
復興店2721-5368
正傳陳老師穴筋按摩
請上三樓
TEL
2740-3788
0935-499-913
康是美
C. KISS COFFEE & CAKE
布朗製菓
CHIRLE BROWN
25週年瘋狂清倉
THE NORTH FACE
TAX-REFUND
momo

▲ Fig. 109. Matrix of Photographs Documented.

金宜興汽車修

The architectural language is distinct yet unintentional; the structures observed all serve one if not multiple purposes, and nothing else but the purpose. This represented a vernacular nature that the phenomenon possesses, architecture of only necessity. These necessities include anything from space issues, signage, ventilation, privacy and security to even circulation. All of the structures studied express a consistent notion, and that is inhabitation. While some of the structures cannot physically be inhabited, they are being used; it is serving their function without being concerned with their appearance. The structures are built on top of each other when it is needed; the signage reaches out further if it is being blocked by the signage of the business next door. The erector uses materials available and conventional construction methods, but each structure is distinct due to the individual needs of each. The vernacular nature was extremely evident; it can only be realised completely by witnessing the residents interacting with the structures.

▲ Fig. 110. Inhabitable Billboard.

► Fig. 111. External Lift Extensions.

▲ Fig. 112. Collage of Flaneur.

▲ Fig. 113. Signage Captured.

FamilyMart
ATM
汽車修配

Non-inhabitable structures were also brought to attention during the Flâneurie process. The steel members supporting signs, ventilation, air conditioning units and billboards were of the same need-based nature. The formal languages created are of interest; the undulating and angular forms whether a surface, volume or single members generated characteristics that are atypical. Evidently, the geometrical characteristics of the non-inhabitable structures are more drastic than ones of inhabitable nature. This provides a more exaggerated example of the formal language; sampling from these magnified forms will assist in developing a more substantial set of architectural vocabulary.

▲ Fig. 114. Inhabitable Structures of Street Vendors.

▲ Fig. 115. Travelling to Taichung.

90

▲ Fig. 116. Interior of Balcony Extensions.

# Participatory Observation

A series of casual anonymous conversations was conducted, with only the participant's unspecific background revealed. The conversations included discussions about their own situations, but also their view on the extensions. This process was recorded through written notes, regarding their answers and also their position on the subject, which can be driven by their manner of answering the question. The focus of this exercise is to observe, not just the conversation but also the way the subject interacts with the extensions, both physically and mentally. Some of the discussions were also recorded through photographs, interior of extensions from the interiors to further understand the functions of the extensions.

▲ Fig. 117. Diagram Showing the Extended Portion.

► Fig. 118. AC Unit.

The aim of this exercise was to understand the role they play in the people's lives and the people's perspective on the matter. Five conversations were conducted: the participants were student, recent graduate, young professional, ex-employee of the social ministry and architect. The first three are people who have extensions in their homes and the latter two are people who have relevant opinions concerning the extensions. This was most effectively executed through observation and casual conversations to eliminate any pressure of conforming to a certain expectation. The relaxed and anonymous nature of the conversations allowed the subject to speak and react freely. By focusing on unstructured discussions, a more emphasised interpretation of meanings and functions of the human action was produced (Linda N Groat, 2013).

The findings are presented in an empirical manner; it is an impression of the discussion. The notes were executed with a combination of the conversation and observation.

**Student**

It was evident that this participant's view on his situation was one of a desperate nature; as a student, it is common to have economic difficulties when it comes to one's living situation. The participant resides in a division of a single floor rooftop extension near his university in the heart of Taipei city. It is one of eight studio apartments; the units are made out of corrugated iron and his unit is windowless with a ventilation fan, which meant the living condition was severely unpleasant, hot in summer and cold in winter. He also mentioned aesthetic issues of his living situation multiple times, saying that it was "ugly" and "disorderly". Although rent was still relatively high, it was the only apartment he could afford. He mentioned a common misconception of the "greedy" landlords; he understands that the landlords built the extensions due to the fact that they also have high rent to upkeep themselves, and the extra economic value of eight more studio apartments to rent out is important for their financial well-being as well.

The participant seemed conflicted when asked about his views on the extension culture; it was clear that although his living condition was less than acceptable he understood that if it was not for the extensions, he would be forced to relocate somewhere inconvenient, and the living condition might not improve either.

► Fig. 119. Interior of Balcony Extensions.

**Recent Graduate**

This participant was in a more fortunate situation compared to others; with the help of her family, she resides in a two-bedroom apartment with a balcony extension. Although the rent is considered to be at the higher end for someone in their early twenties, the apartment itself is still very small, at an estimated area of thirty metres squared. It is essential to have the extended balcony; otherwise the space would be extremely restricted. The balcony is used for storage, laundry and the air conditioning unit.

The conversation with this participant focused around the aesthetic and spatial elements of the extensions. It was clear that the restricted space of her apartment meant that organisation was difficult; storage space was not enough, which led to pathways being blocked and leisure spaces sacrificed. Much like the previous participant, she expressed the need for extensions, and that extensions are a part of a reaction towards limited space. The main issue she has with the state of extensions in Taiwan is that it looks unorganised and creates clutter. The extension in the apartment made the apartment more livable and created a more comfortable space. The multifunctional nature of the space was also a focus, where she pointed out that if the apartment did not have the extension the laundry would have to be in the bathroom, which was already extremely small.

**Young Professional**

The young professional working at an IT company lives in a rooftop extension at his family home; the extension includes a bedroom and ensuite. With the extensions connecting to the main apartment, he shares the living spaces with his family. Due to his family's financial struggles, a decision was made to move back home and assist them financially through paying off their mortgage with what would have been rent. The discussion took place on the street outside the apartment; the participant expressed that although it is not ideal, he is grateful that he could help out his family. It would have been extremely challenging without the extension. He would have had to share a room in the apartment or rent elsewhere eliminating the possibility of him helping.

This participant had a strong opinion when it came to the extensions culture; he expressed that if you can not feed your family due to economic struggles, the priority of being law abiding falls below survival. The main issue with the extensions is that when they are trying to demolish people's homes, they are not providing an alternative or any efforts to preserve the way of life these people have been living for generations.

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► Fig. 120. Highlighting Rooftop and Facade Extensions.

**Ex-Employee of the Social Ministry**

The first discussion focused around the legality of the extensions; the erections of rooftop extensions were outlawed in 1995. Any enclosed rooftop extensions that were constructed after 1995 are demolished immediately. Extensions built before 1995 are not immediately demolished, as there are far too many. But a schedule of demolition is in place.

The participant expressed that she understands that these extensions emerged from the need of space and limited economic resources. But as importantly she pointed out that there are also a great amount of dishonest operations—mainly stemming from the "greedy landlord" previously mentioned, landlords who build these extensions without the occupant in mind, creating foul living conditions and often unsafe structures. Although often stemming from desperation, these extensions are unacceptable, and they are the main cause of these structures being outlawed.

The conversation then proceeded to a discussion about the culture of the issue, and whether or not it should be preserved. The participant agreed that extensions have been a part of day-to-day life and are important as a part of Taiwanese architecture, but it is difficult to differentiate the safety of these extensions, as they are so unconventional and there are so many of them.

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► Fig. 121. Highlighting AC in Extension.

**Architect**

This conversation focused on the architectural culture of the extensions. It was evident that the participant felt strongly about the phenomenon in question, stating that it is due to decades of negligence by the government that these vernacular structures occurred. For a long time the government was uninterested in the needs of their people and did not provide any guidelines or assistance in spatial issues stemming from spatial scarcities.

It is precisely due to this negligence that the Taiwanese people ere compelled to deal with this obstacle in their own manner, taking it into their own hands generating architectural elements that are unique and functional, creating a vernacular yet contemporary architectural approach. The main issue is not whether it is safe or not, as most of these structures have stood against the test of time, but it is the view of them by those in more fortunate positions. Those who are lucky enough to have homes that do not share the same spatial issues do not understand the necessity of these extensions fully, and perceive them as eyesores due to their convoluted nature.

Through casual and anonymous discussion and observation, it is evident that these extensions are a major part of Taiwanese lifestyle. They play a significant role in the well-being of countless Taiwanese people, the main issue that was consistent throughout the discussions was the complex and disorderly nature of these extensions. This was a result of past negligence by the government; although the current government is attempting to solve the problem by demolishing them, it is simply too late. If the structures are demolished without providing an alternative, the impact on this aspect of Taiwanese lifestyle would be undesirable.

The findings also expressed the importance of the functionality; the multifunction qualities of these structures addresses spatial issues effectively. Therefore an exploration into these multifunctional methods will be conducted. It is crucial that the culture is preserved and the way of life that millions of Taiwanese people have lived stay un-interrupted or even elevated. To address the issue of the convolution and disorder that this vernacular architecture possesses, it is imperative to determine an architectural language that draws out the architectural characteristics from the current state of the phenomenon.

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► Fig. 122. Streetview in Taipei.

渡小月
法吉歐里
泰山路
Taishan Rd
2-3樓
神農路老店
魚丸米粉
肉饌
青肉饭
東方美

▲ Fig. 123. Thumbnail of Case Studies.

IIII

# Case Studies

In order to further recognise and understand the crux of the phenomenon, two additional case studies were conducted onsite. The first was an investigation into the architectural language of Taiwanese pigeon lofts; this typology is unique to Taiwan, and more often than not built upon existing dwellings. The elevated and undulating qualities of these structures amplify the architectural language of the more common extensions. Then, a study on Field Office's Jin-Mei Pedestrian Bridge was conducted. It focused mainly on the multifunctional nature of the project, and the manner of references to the extension culture in Taiwan that the Project embodies.

**Taiwanese Pigeon Lofts**

The Japanese introduced pigeon racing during their rule in Taiwan (Turton, 2007). The combination of sport, gambling and animal husbandry caught the people's attention and became the centre of thirty thousand Taiwanese lives (Ko-shang, 2005). Additionaly, unlike horse racing, the raising and training of pigeons are immensely more feasible within the Taiwanese urban environment. Despite this, the spatial issues are still present; thus marks the birth of the urban Taiwanese pigeon loft extensions.

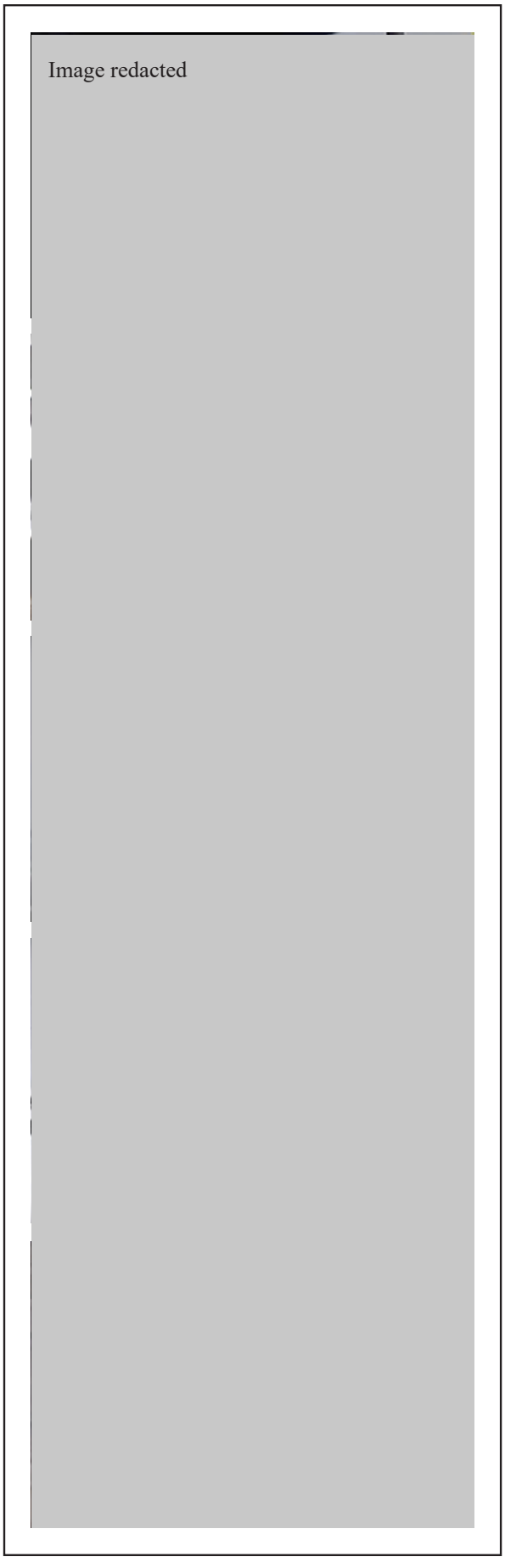
The typical pigeon loft consists of four main elements: waiting tower, landing board, racing lofts and breeding lofts (Ko-shang, 2005). A central foyer connects these spaces. It is essential for the loft to be elevated above the dwelling it inhabits: depending on the surrounding structures it can be elevated up to ten metres on top of the existing structure. The waiting tower is often accessed from a set of stairs wrapping around the main loft space, creating an undulating volume. Much like the more common extensions in Taiwan, these lofts are constructed with easily accessible materials such as steel members, corrugated iron and timber. Conventional pitched roofs are implemented for each element of the structure; combining different oriented roofs creates a further undulating volume.

Although the typology of pigeon lofts is not the focal point of this thesis, the context-specific architecture is distinctively Taiwanese. The formal qualities of these dwellings are taken into account for developing an architectural language in the next design experiment.

▲ Fig. 124. Pigeon Lofts in the Skyline.

► Fig. 125. Tracing Pigeon Lofts.

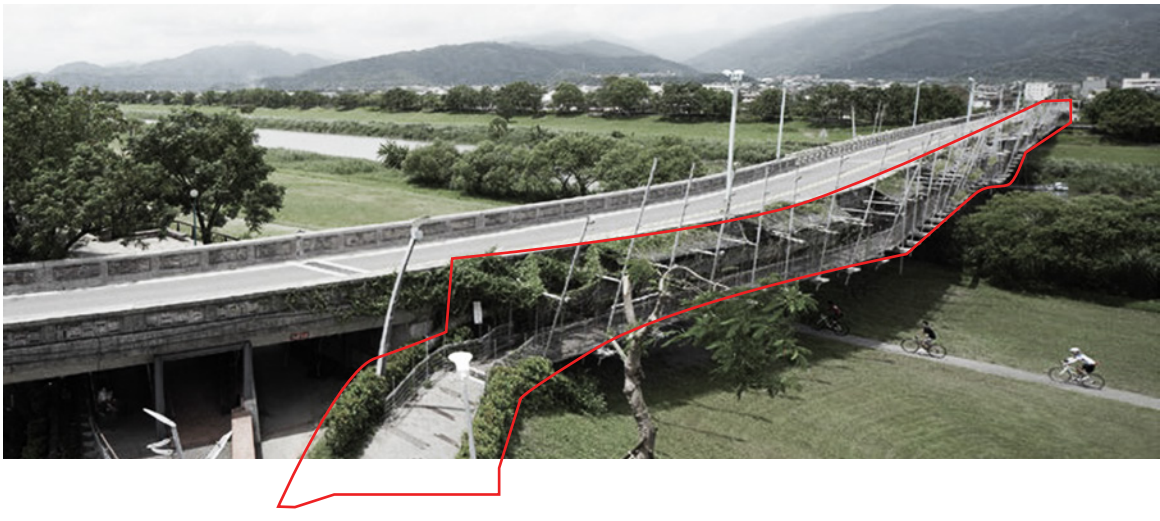
▲ Fig. 126. Collage of Pigeon Lofts.




▲ Fig. 127. Screenshots of Pigeon Loft Documentary.
► Fig. 128. Pigeon Loft.

**Jin-Mei Pedestrian Bridge**

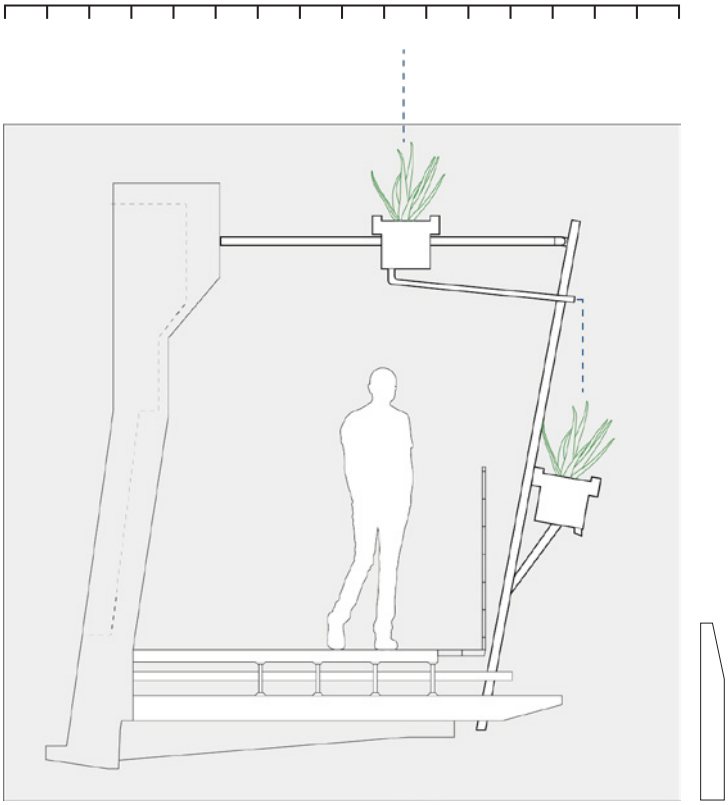
The Jin-Mei Pedestrian Bridge is an alternative pedestrian pathway attached under an existing bridge in the city of Yilan; it is an extension within a series of projects by Taiwanese architecture firm Fieldoffice (Sheng-Yuan Huang, 2016). The pathway was constructed as a continuum of another project, which was the west bank bridge and Yilan riverside green path that was completed in 2004 (Architecture and Urbanism, 2018). Since Fieldoffice's birth, it has always been about people and time; their work in Yilan county focused on creating architecture that preserves the old by creating something new that fits in with the existing "cityscape". The projects have always strived to coexist and gather different generations (Architecture and Urbanism, 2018)—always creating a dialogue with its audience, but more importantly providing opportunities for the audience to have a dialogue with the urban environment, past, present and future. The Jin-Mei Pedestrian Pathway exhibits this by blurring the edges and boundary of the pathway and the original bridge (Bruyas, 2018). By keeping the existing bridge, the project avoids unnecessary demolition of an established part of Yilan. Instead of elimination, the project revives this infrastructure by providing an alternative safe pathway for the public through a low-tech attaching system (Architecture and Urbanism, 2018). Through the use of recycled materials and architectural fragments, combined with preserving existing infrastructure (Bruyas, 2018), Fieldoffice have generated a part of Yilan city that protects and enhances the fruitful history and lifestyle of this small town in Taiwan.



▲ Fig. 129. At Venice Biennale.
► Fig. 130. Bird's Eye View.

▲ Fig. 131. Jin-Mei Pedestrian Bridge Collage.

▲ Fig. 132. Jin-Mei Pedestrian Bridge.



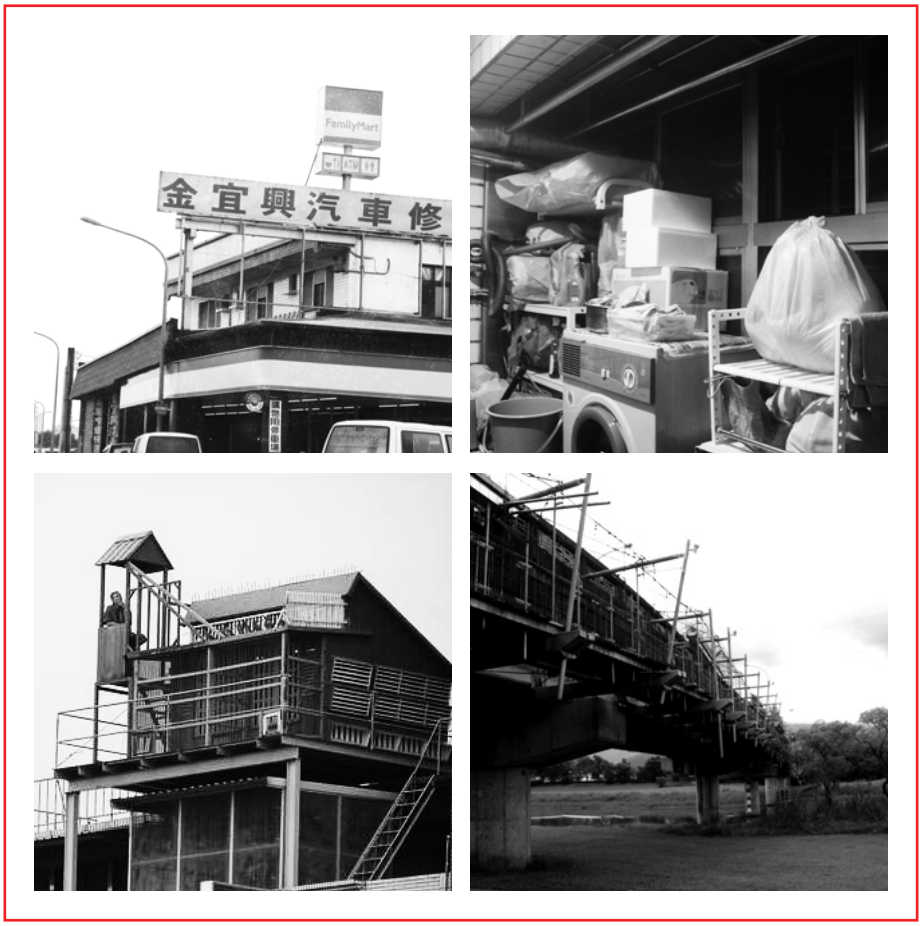
The pathway itself possesses various characteristics: narrower sections to enhance interaction, wider sections with seating providing social spaces and all of this is covered with structures that serve as planters for vegetation. The planters utilise a very primitive passive drainage and irrigation system. The planters above catch rainwater for hydro-nutrients and the drainage pipe simply angles out over the pathway and recycles the water for the planters below located on the balustrade of the pathway. The attaching and multifunctional nature of this pathway have numerous similarities with the structures of extension culture; it is an example of formalisation of the informal that this thesis is investigating. The manner of composing these functions into one project can assist in the design of components within Design Experiment Three.

▲ Fig. 133. Diagram Showing the Planters System.
◄ Fig. 134. Jin-Mei Pedestrian Bridge Inhabited.

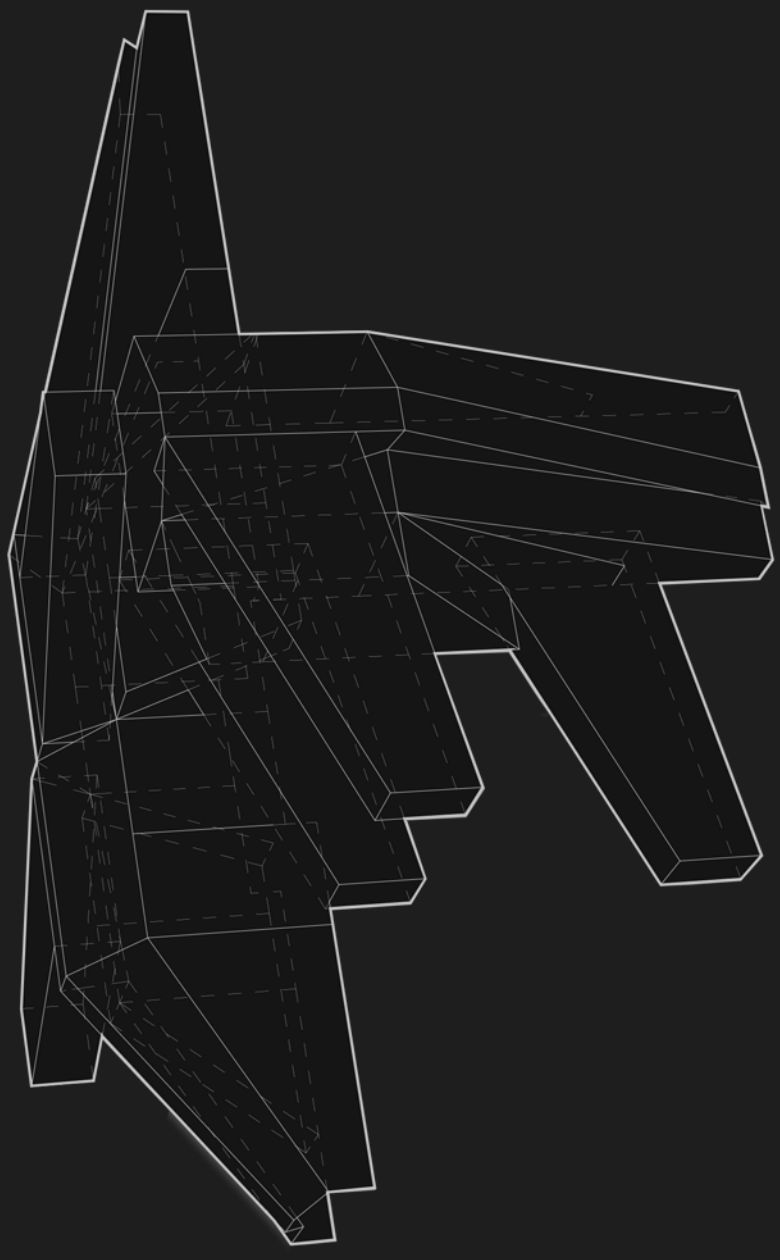
▲ Fig. 135. Jin-Mei Pedestrian Bridge Collage.

# Critical Reflection

By conducting the three components in this chapter, this field study has successfully assisted in establishing a vital set of design principles that will be incorporated into design experiments two and three. Through the flâneurie process of casual yet in depth observation of the city, the very soul of the extension culture is captured and experienced. The architectural language of this vernacular movement is amplified through a study of various structures including inhabitable and uninhabitable typologies. Through participatory observation, the needs, background and perceptions of the Taiwanese people are understood and sympathized. It is evident that to preserve the extensions culture, an alternative including two main elements are imperative to be addressed. The two elements being the architectural language and the need for multifunctional typologies. The foundation for these two elements is directed by the two case studies studied. The next chapter will generate an architectural language based upon findings from the flâneurie process and the study on Taiwanese pigeon lofts.




▲ Fig. 136. Matrix of Taiwan Fieldwork.



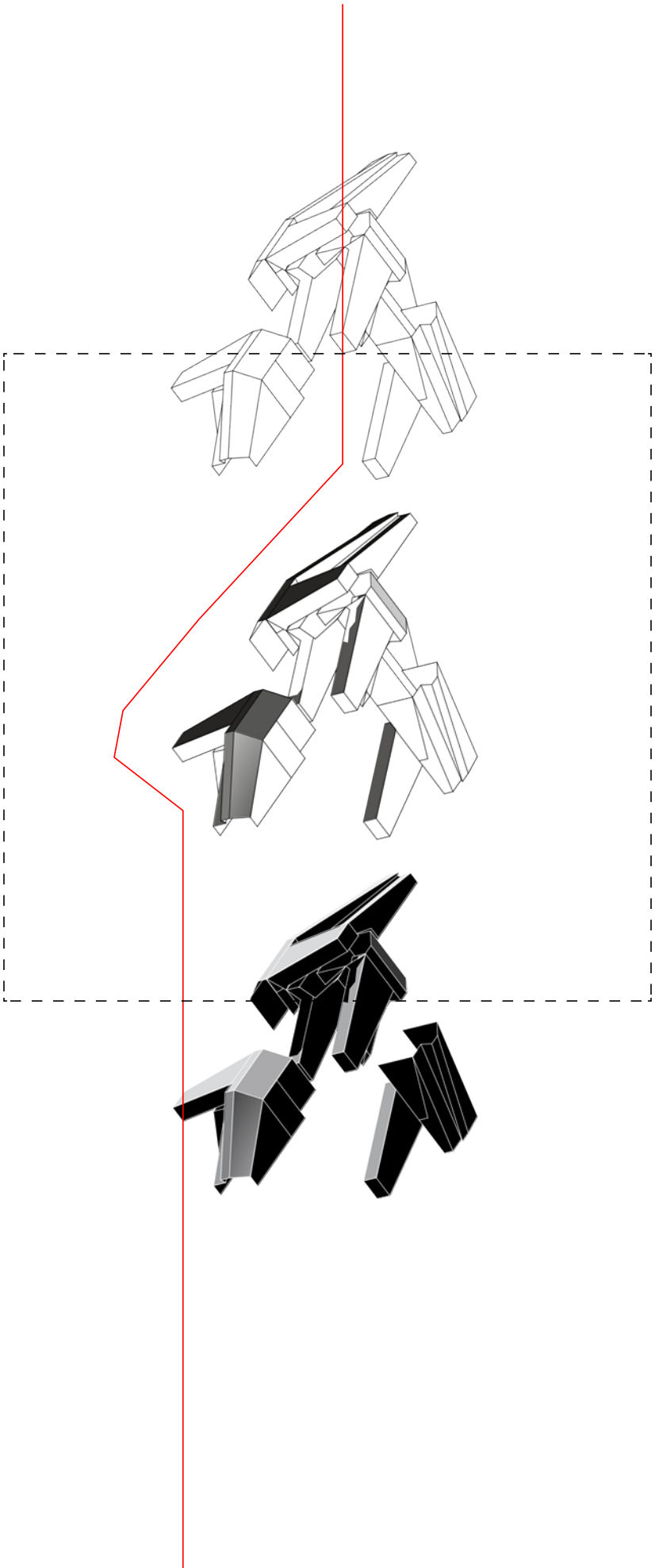
# Design Experiment Two

# 7

◂ Fig. 137. DE2 Drawing.

# Aim

The aim of the second design experiment is to decipher the findings from the fieldwork and translate them into an architectural language that retains the culture and identity of Taiwanese architectural extensions. This will act as an alternative for the future of extensions in Taiwan that references the current phenomenon without simply imitating it. The outcome of this experiment is intended to create an expressive architectural language, and the interventions yielded are only concerned with the formal conditions. It thus follows Lebbeus Woods's concept of freespace, which is used to emphasise the identity of Taiwan through formal exploration. The iterative nature of the transition from two dimensional photomontages to three dimensional formal investigations enables the experiment to result in a phenomenon specific appearance.



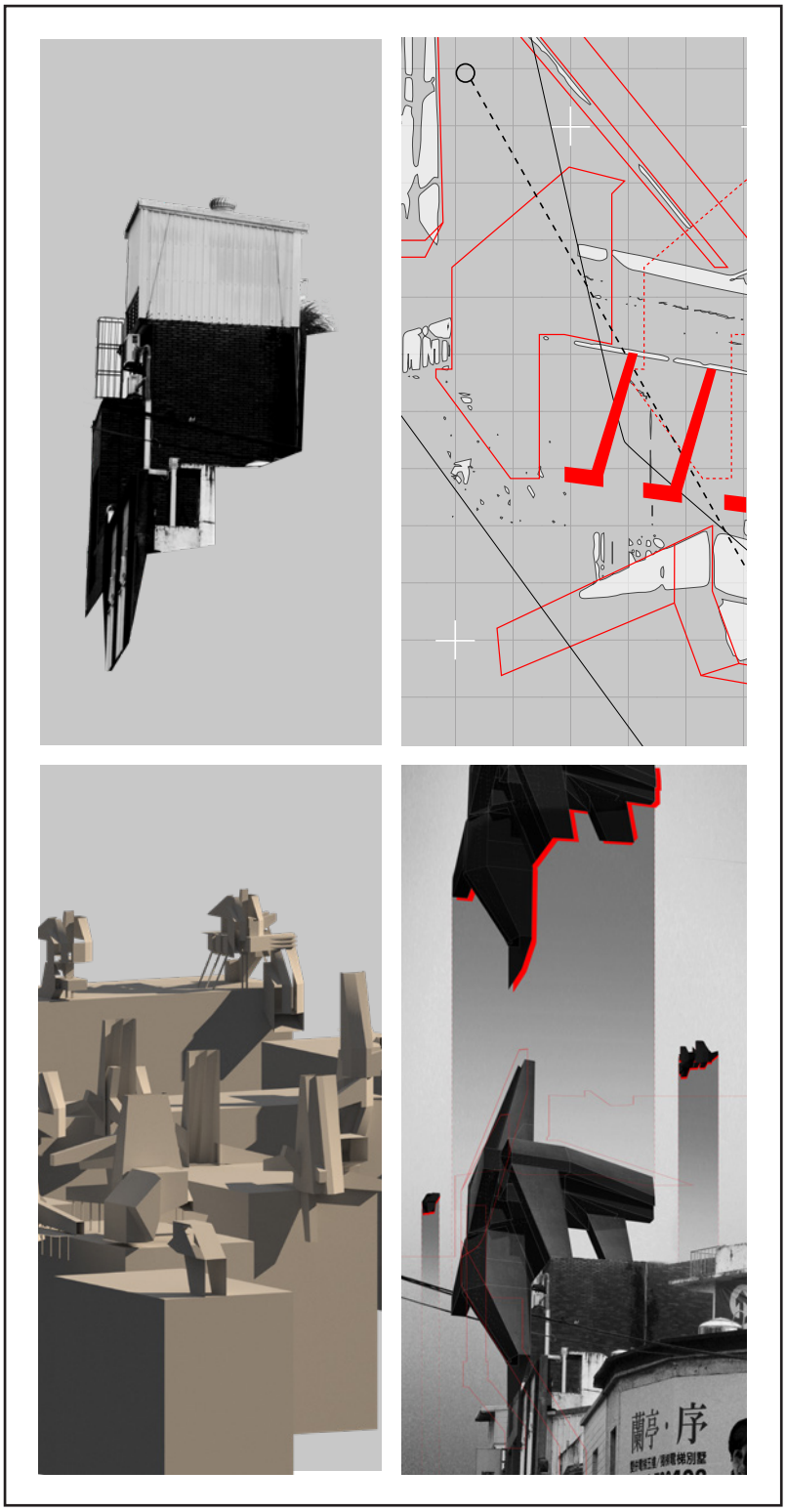
▲ Fig. 138. DE2 Parallax.

# Method

The Flâneur section within the Taiwan Fieldwork chapter observed the current condition of the phenomenon, documented through photographs. This section provided the most visually discerning insights from the research for design sections. The extensions are extracted from the findings and created an empirical vocabulary. This process tested John Hejduk's concept of sequential environments, interpreting the urban environment of Taiwan as a whole and the extensions within it as elements of a whole. As Hejduk's intentions were for the occupant to dictate the sequence taken, a series of photomontages was developed creating two-dimensional expressions of the phenomenon. This creation of photomontage experimental expressions investigated spatial and formal juxtaposition of the extension culture of Taiwan (Shields, 2014).

With the initial photomontages, a series of tracings and palimpsest layer was conducted to emphasise the soul of the phenomenon. This develops an interpretation that will be utilised in creating a three-dimensional architectural condition. The intention of the tracings and palimpsest layer is to emphasise formal qualities and characteristics of interest. This process of photomontage and drawing superimposed on perspective images penetrates the structures internally and externally (Hejduk, 1986), thus capturing aspects of the extensions never before seen.

These initial tests created two-dimensional interventions that assist in addressing the aim of this experiment. A formal language is then created through analogue and digital sketches, creating a series of three-dimensional iterations. This showcases a new architectural language of Taiwanese extensions that are self-similar but not identical (Rhowbotham, 1999). A process of dissecting formal outcomes and reconfiguring was also implemented to further push the formal capabilities of the outcomes yielded.



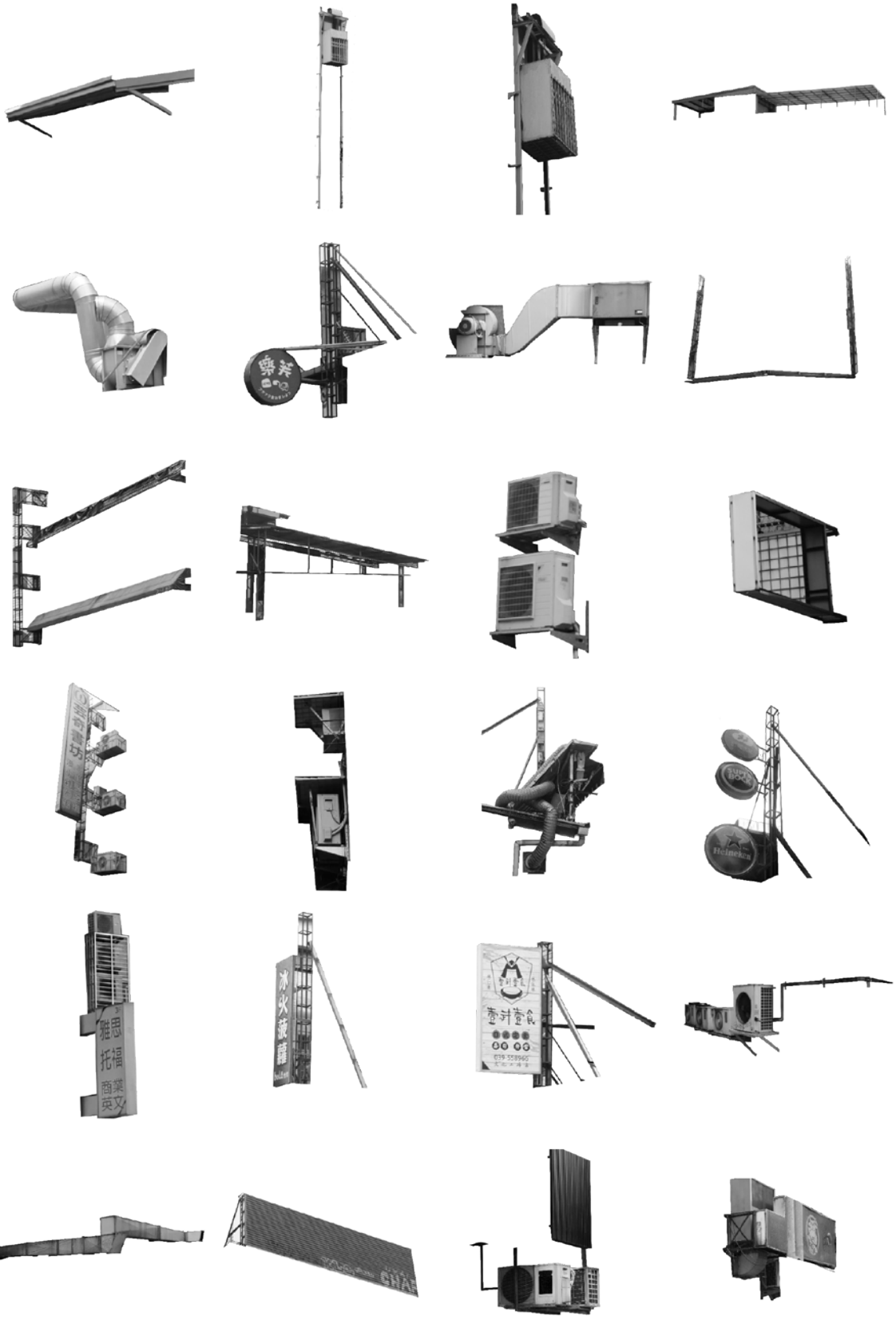
▲ Fig. 139. Matrix of DE2 Processes.

## Empirical Vocabulary

The photographs documented from the Flaneur section presented various formal characteristics of the phenomenon. The extensions, whether inhabitable or uninhabitable, are carved out from the photographs to enhance the characteristics of interest. The act of eliminating the background brings attention to the geometric conditions of the structures, thus creating an empirical vocabulary of the extensions that clearly illustrates the existing vernacular architectural language.

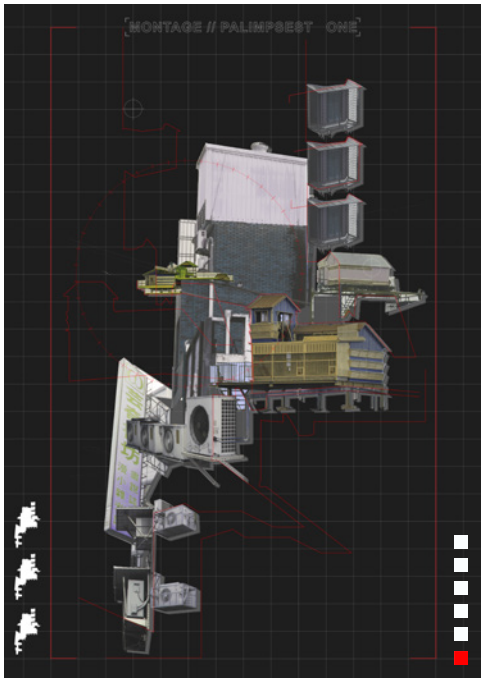
The first series concentrates on the pigeon lofts studied; this showcases the more volumetric qualities of the extension culture. The second series concentrates on uninhabitable structures; this showcases the more drastic aspects of the phenomenon. The last series concentrates on inhabitable structures; this showcases the most common formal characteristics of the phenomenon.

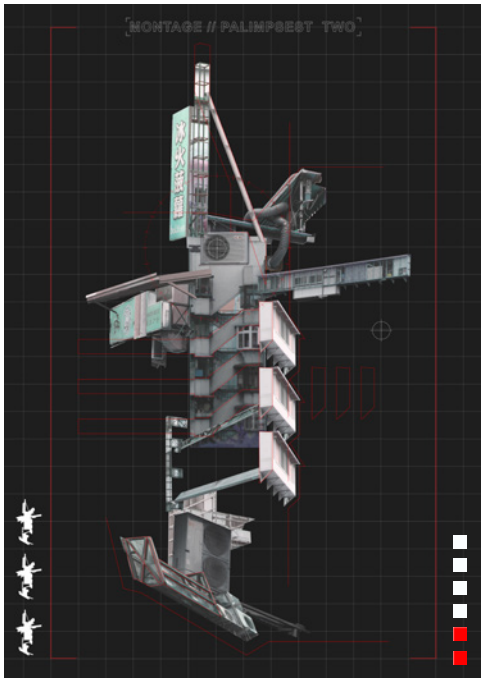
▲ Fig. 140. Flaneur Empirical Vocabulary - Pigeon Houses.



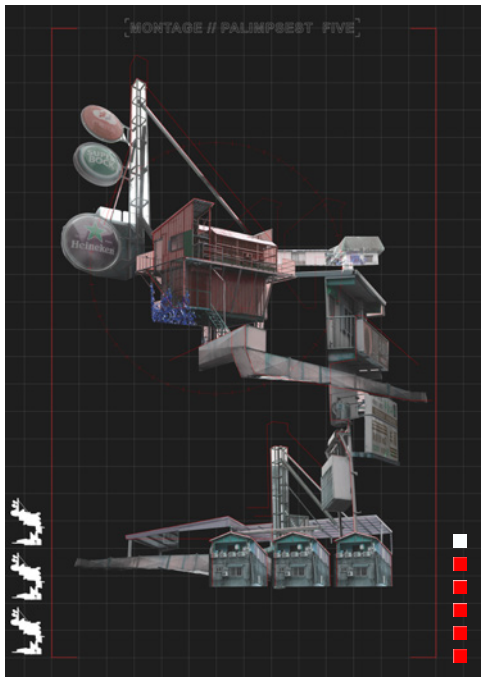

▲ Fig. 141. Flaneur Empirical Vocabulary - Uninhabitable Structure.

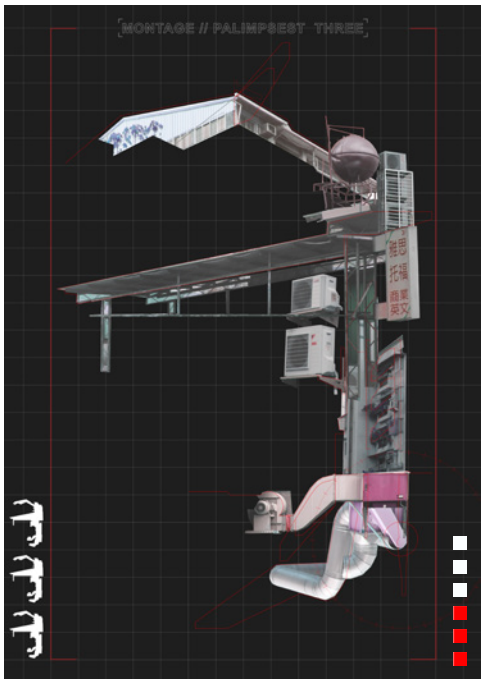
▲ Fig. 142. Flaneur Empirical Vocabulary - Extensions.

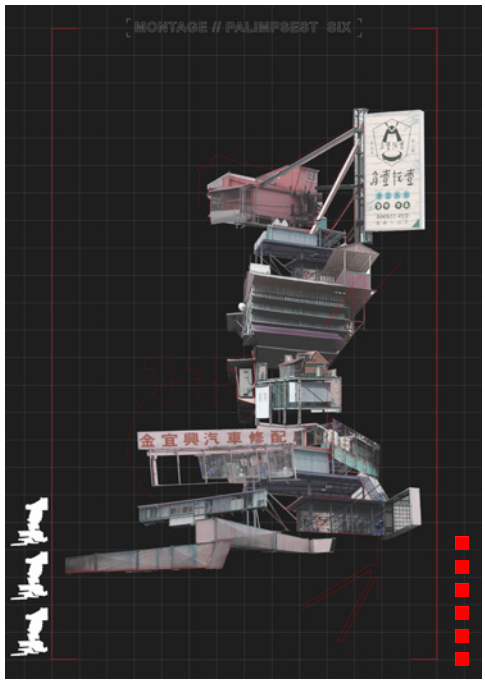

MONTAGE // PALIMPSEST ONE

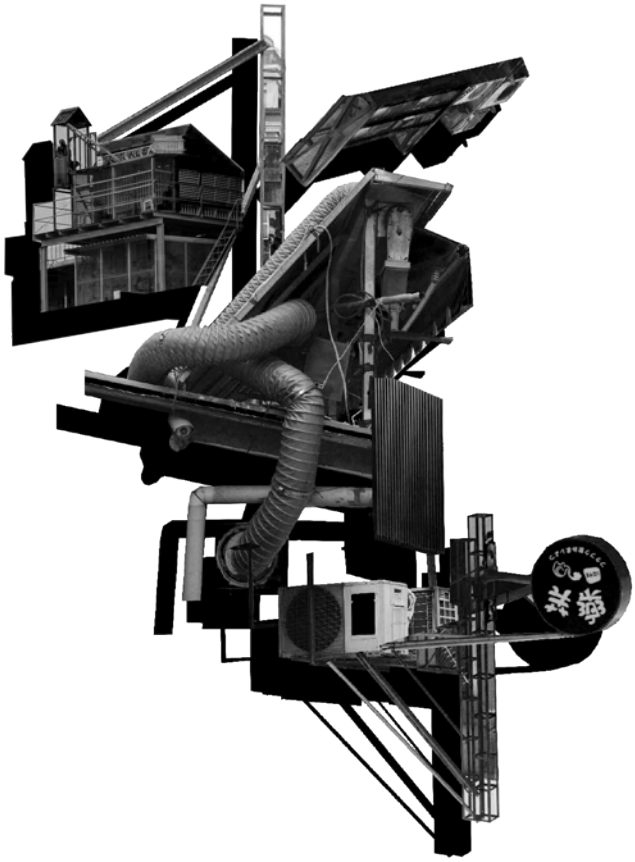

MONTAGE // PALIMPSEST TWO

MONTAGE // PALIMPSEST FOUR


MONTAGE // PALIMPSEST FIVE


MONTAGE // PALIMPSEST THREE


MONTAGE // PALIMPSEST SIX
金宜興汽車修配

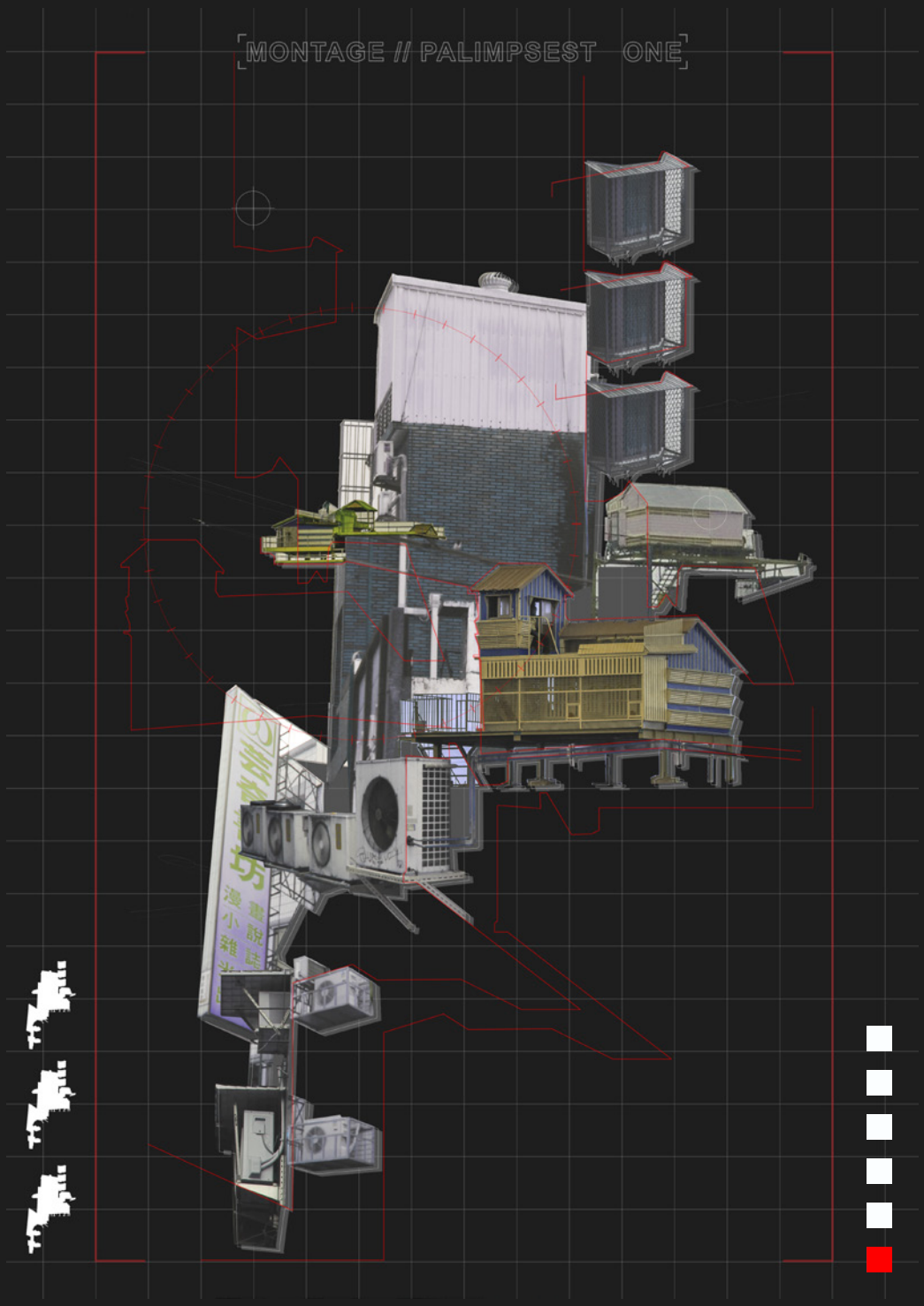


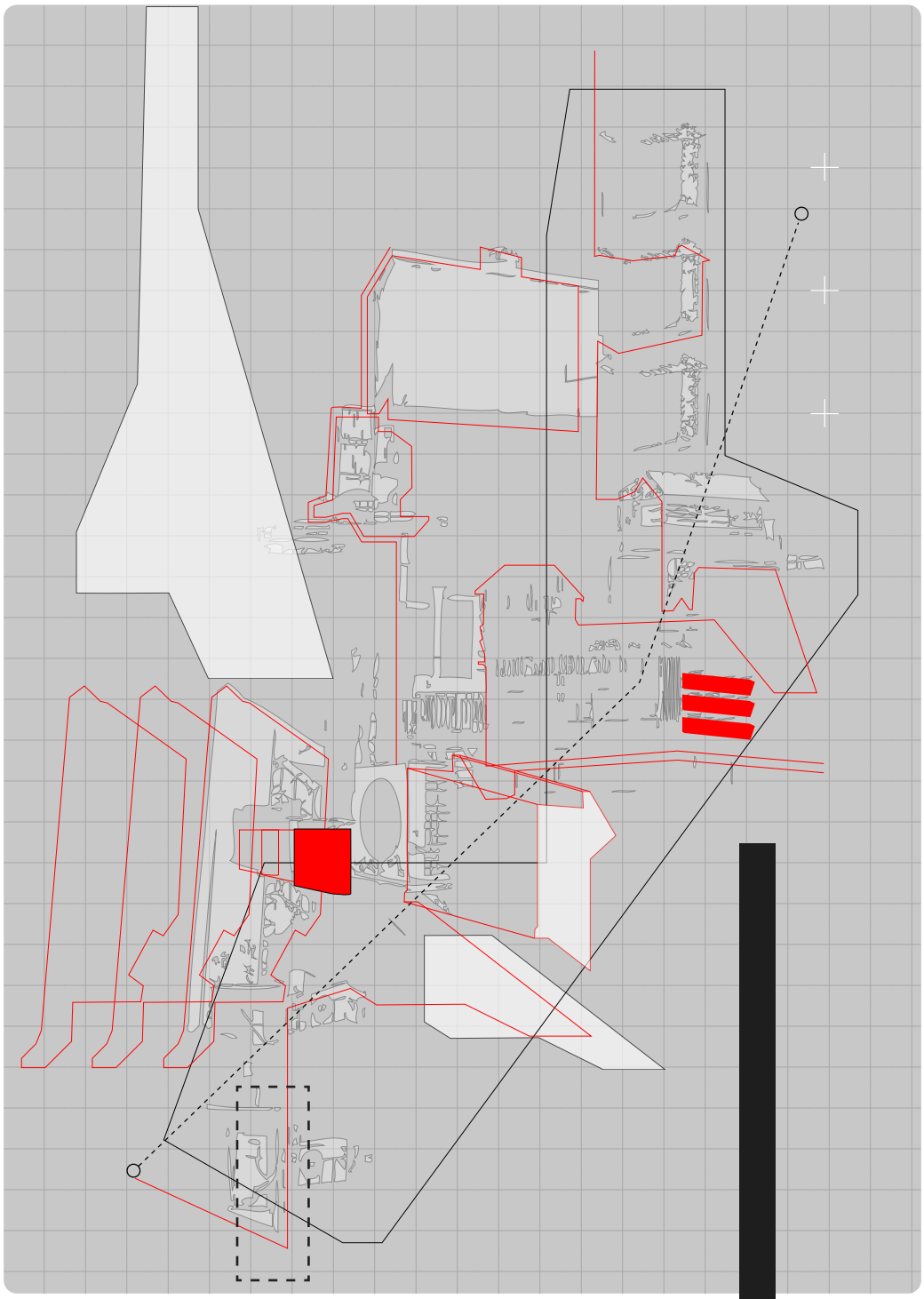
## Photomontage

Utilising the idea of "Form Follows Obsession" derived from Robert Venturi's critiques of modernist architecture, this investigation sees the informal extension structures in Taiwan as the obsession. The photomontage series, or collages, applies the empirical vocabulary to create two-dimensional interventions that illustrate sequences that express the extension culture in Taiwan. By interpreting the urban environment of Taiwan as a sequential environment, the series of photomontages identifies the relationships between the elements and accentuates the geometric coherence these informal structures possess. Each intervention abstractly integrates elements from the three series of empirical vocabulary to articulate formal organisations and juxtaposition.

▲ Fig. 143. Montage Test.

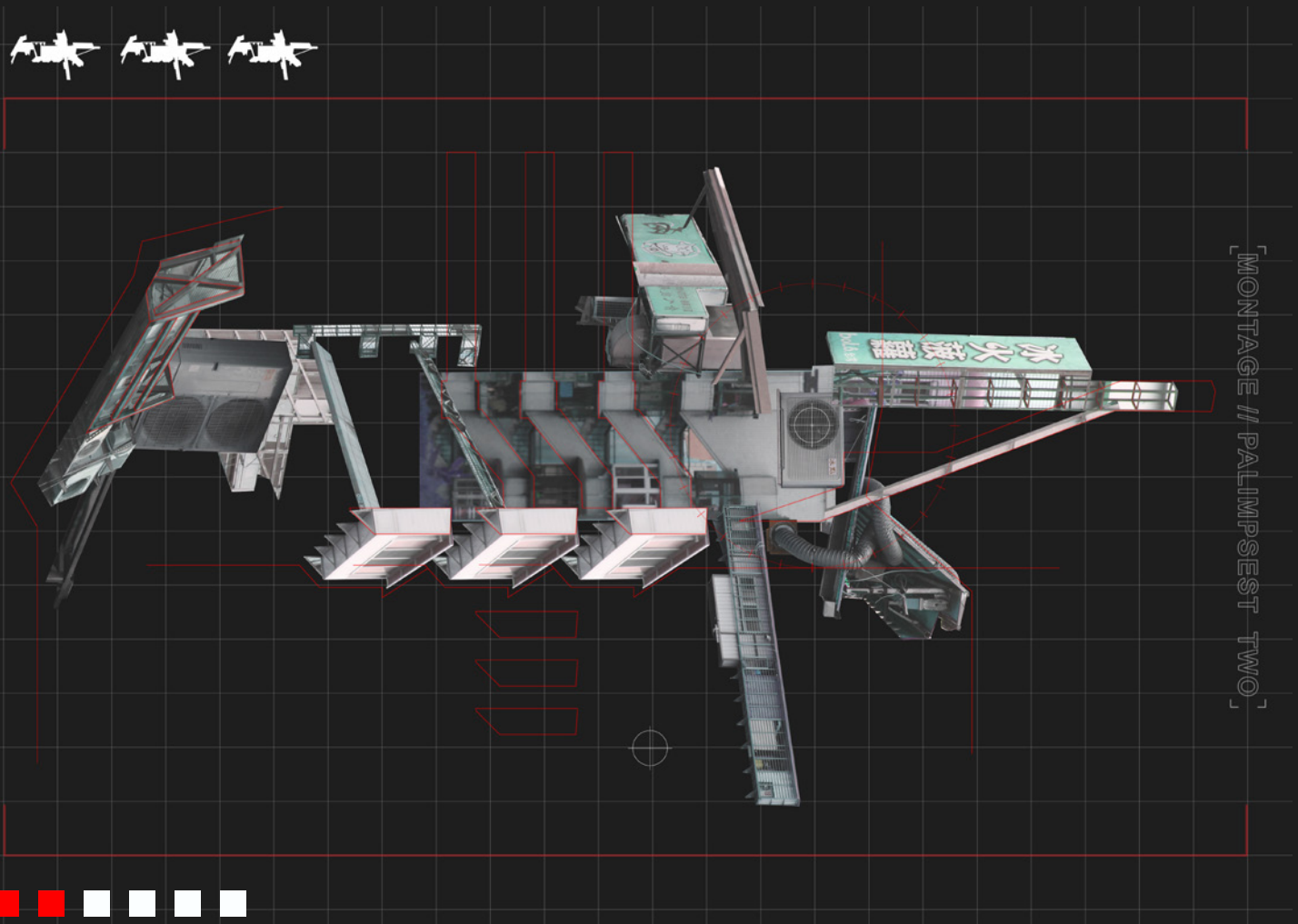
◄ Fig. 144. Matrix of Montages.

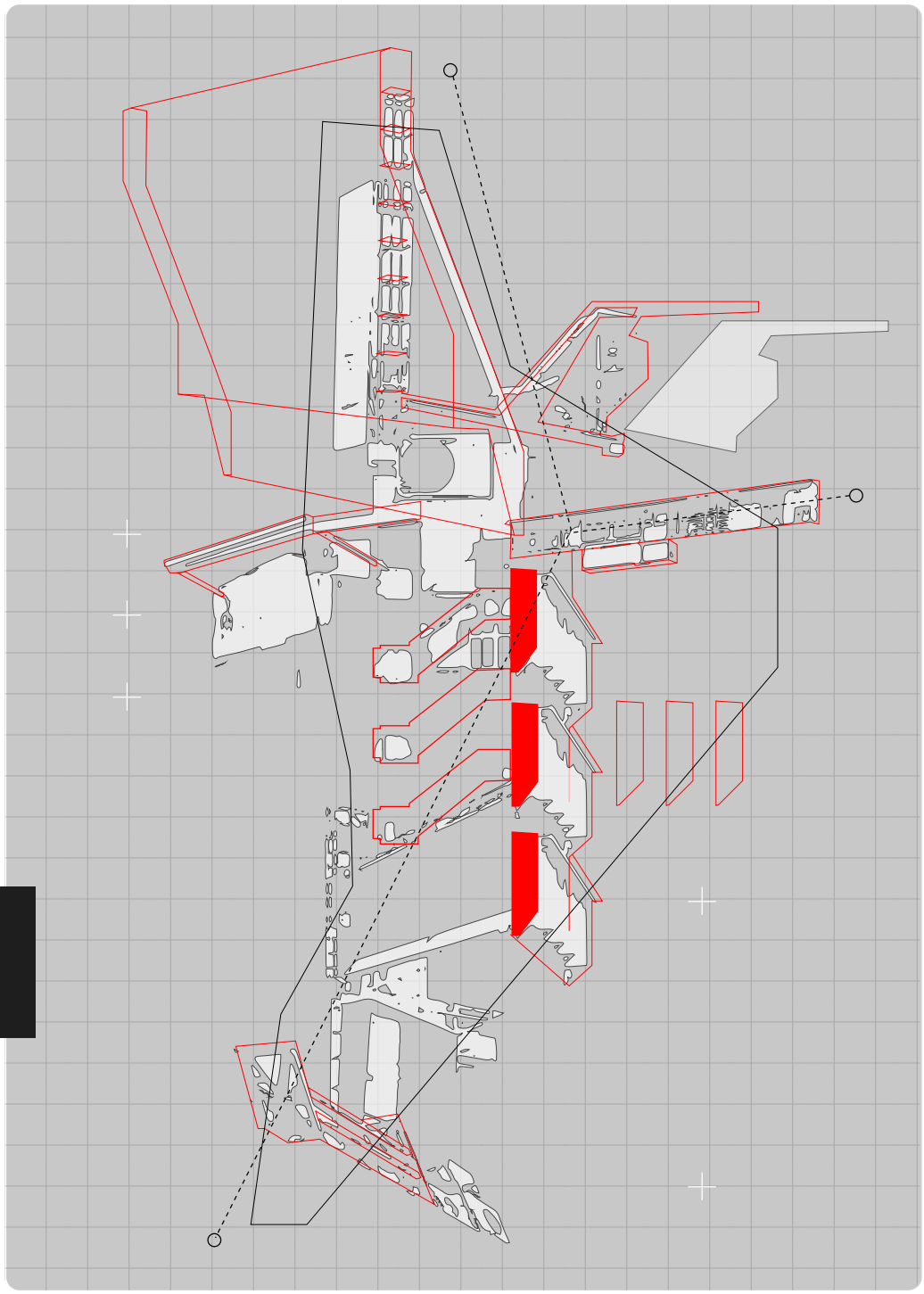

MONTAGE // PALIMPSEST ONE



▲ Fig. 145. Palimpsest One.

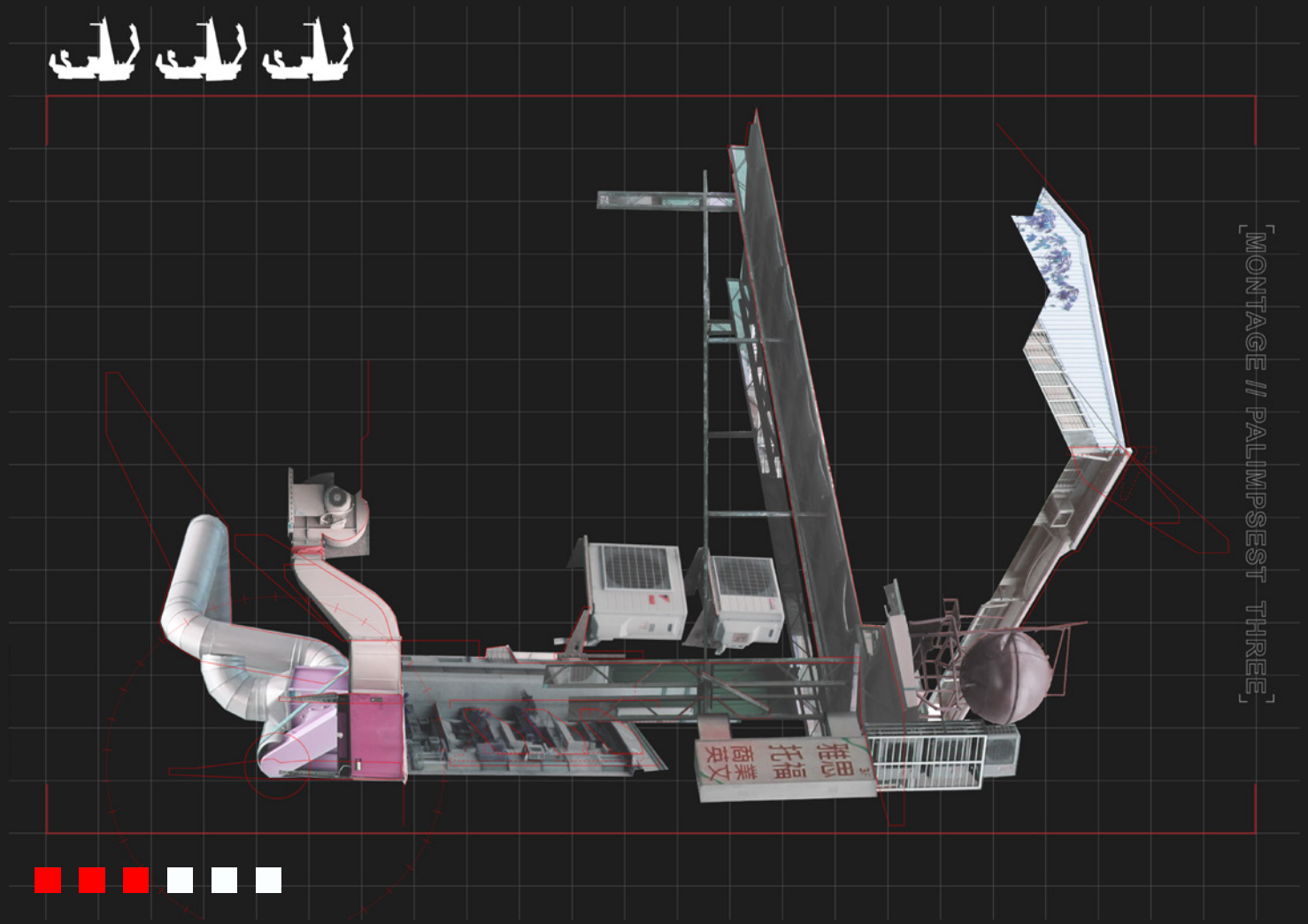
◄ Fig. 146. Montage One.


「MONTAGE // PALIMPSEST TWO」

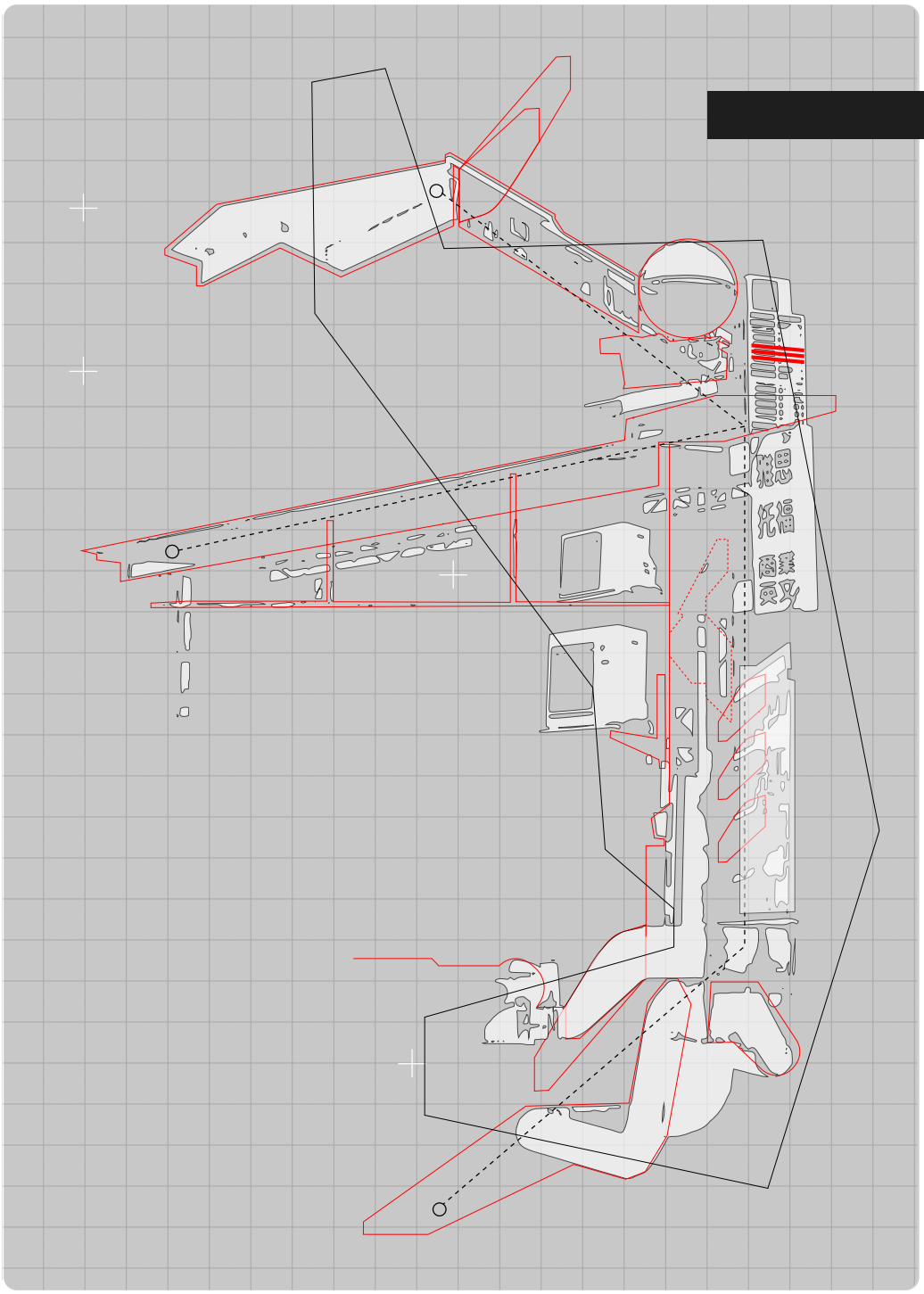


▲ Fig. 147. Palimpsest Two.

◄ Fig. 148. Montage Two.



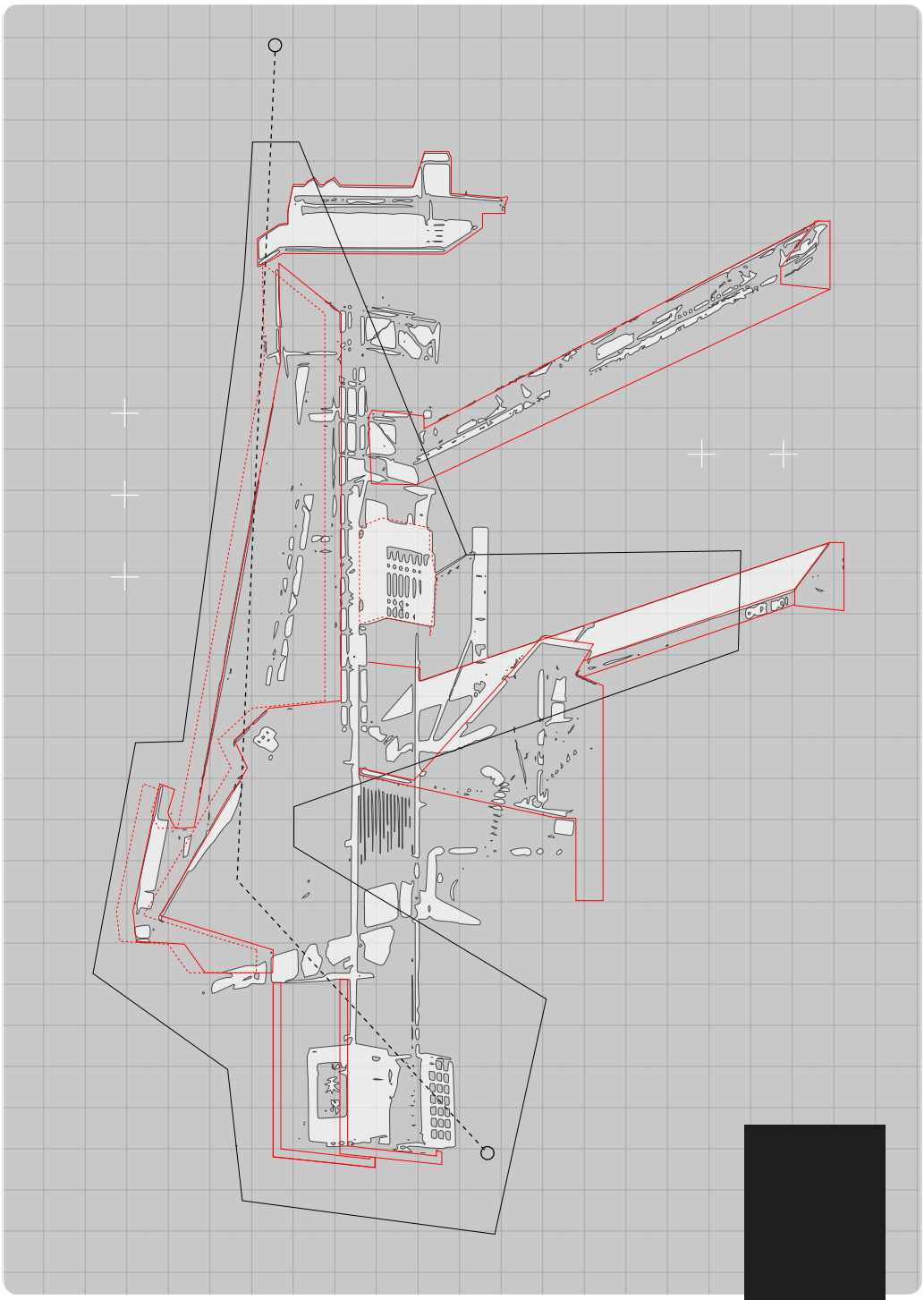

「MONTAGE // PALIMPSEST THREE」



▲ Fig. 149. Palimpsest Three,

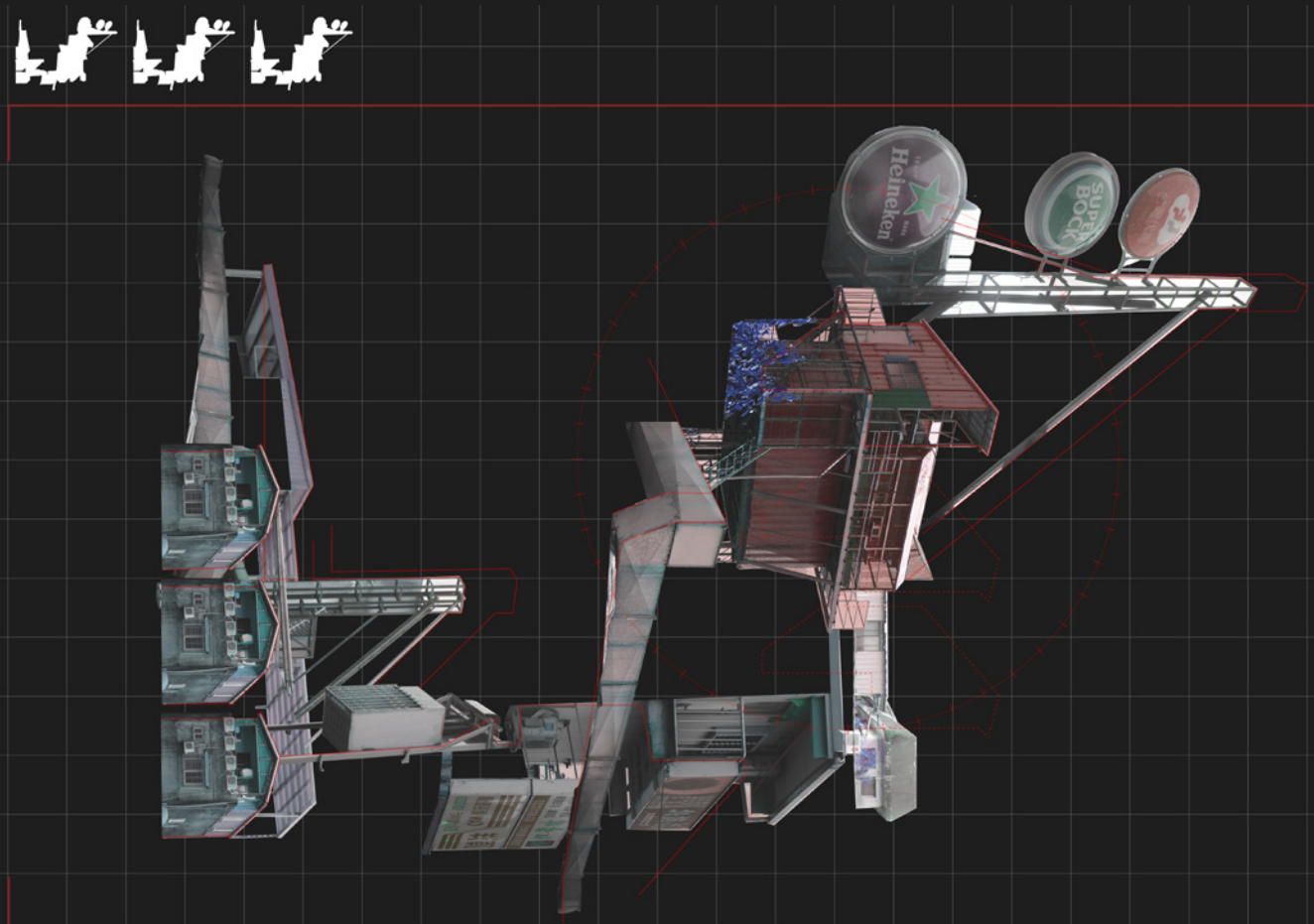
◄ Fig. 150. Montage Three.

[MONTAGE // PALIMPSEST FOUR]

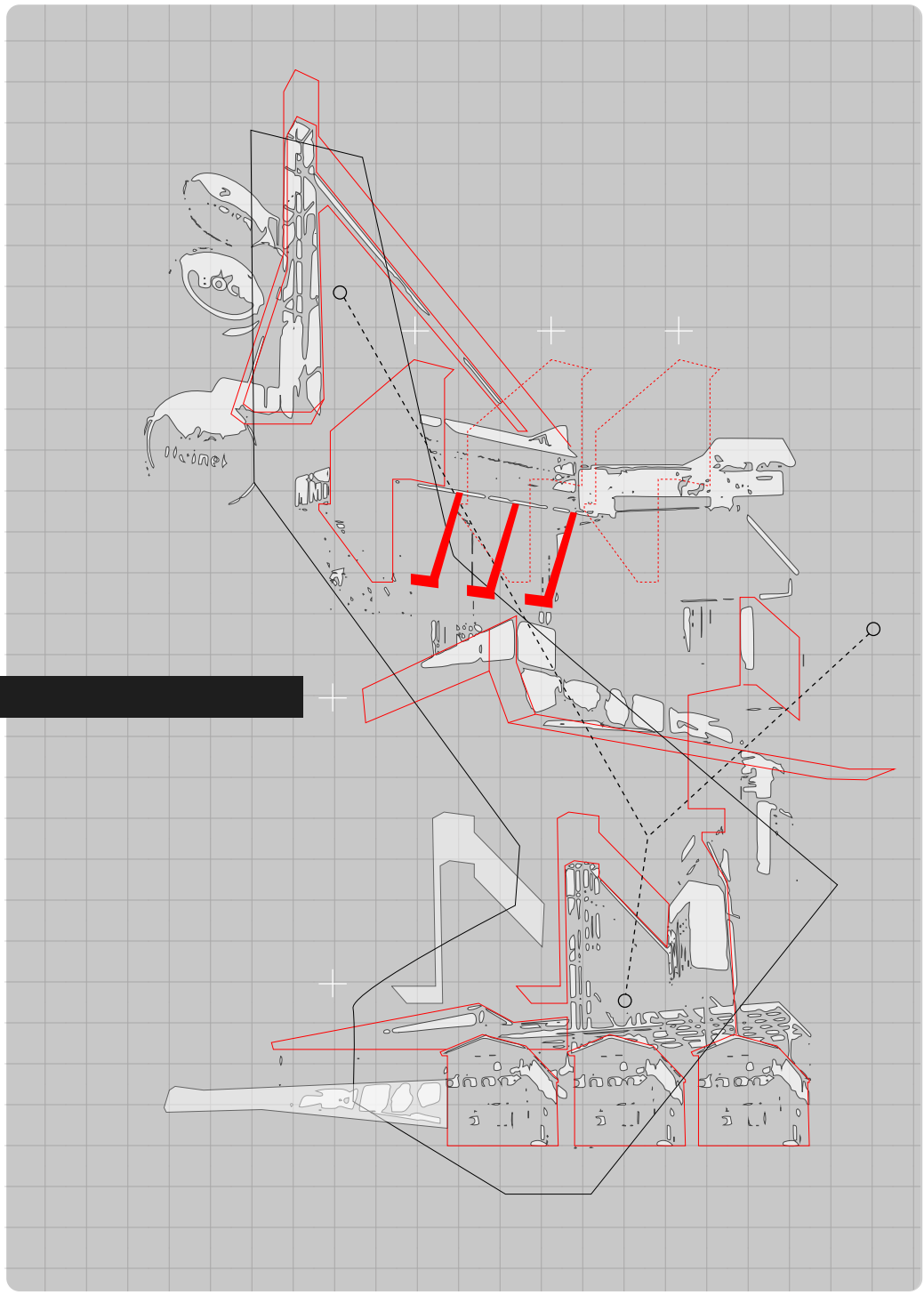


▲ Fig. 151. Palimpsest Four.

◄ Fig. 152. Montage Four.



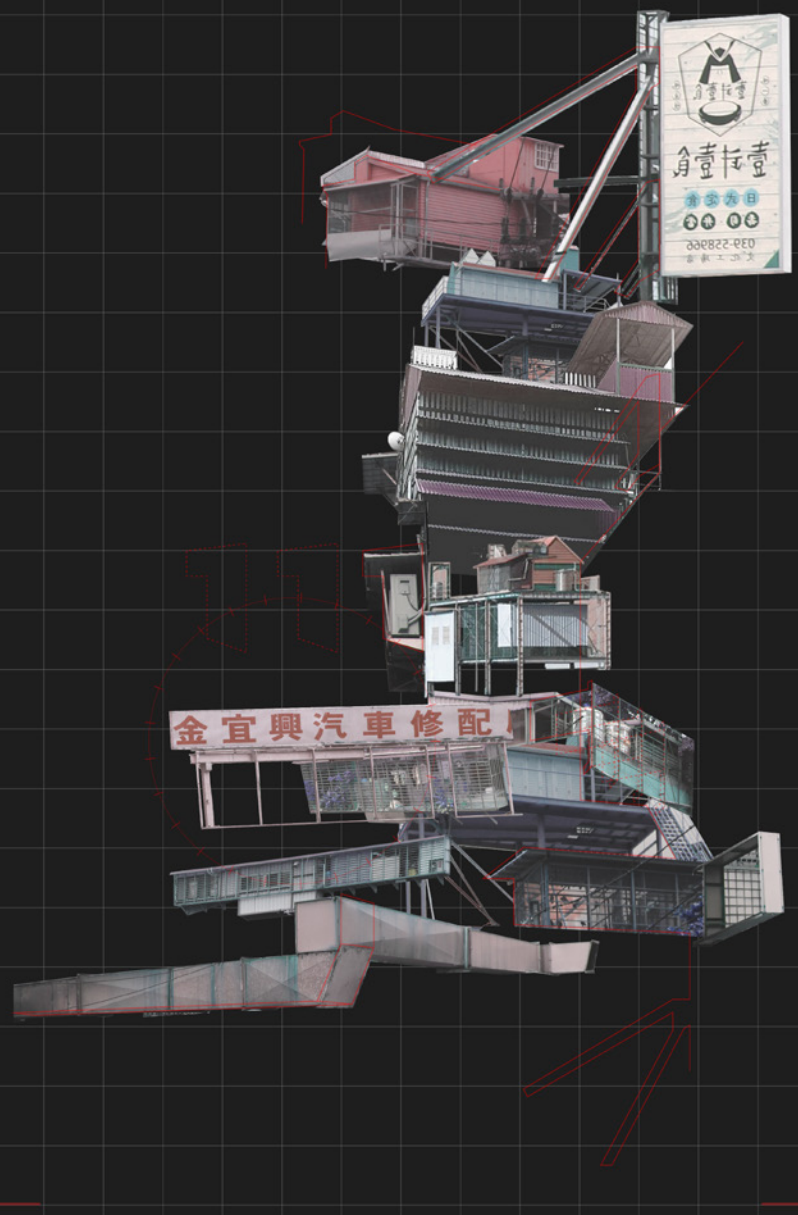

「MONTAGE // PALIMPSEST FIVE」

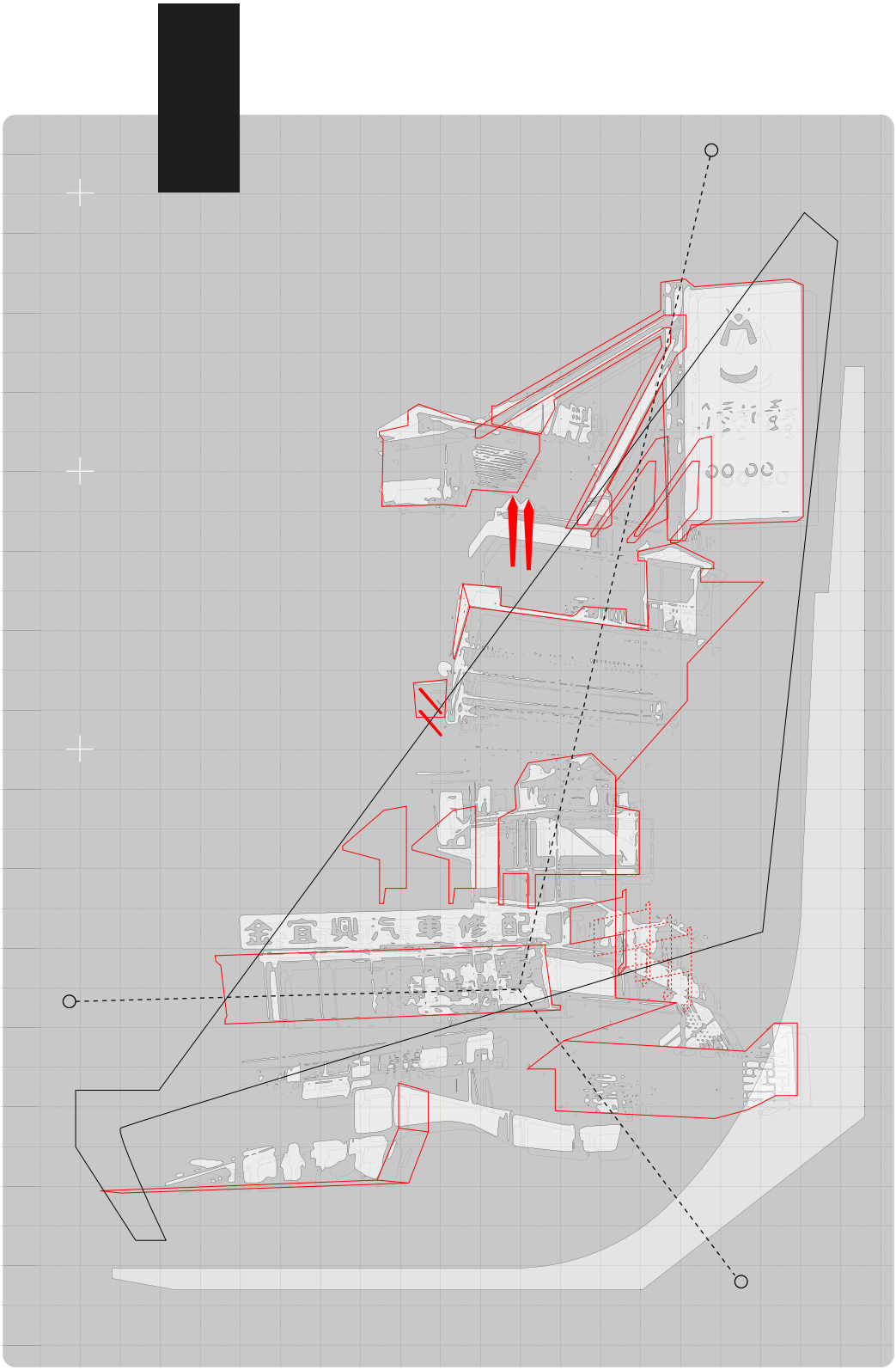


▲ Fig. 153. Palimpsest Five.

◄ Fig. 154. Montage Five.

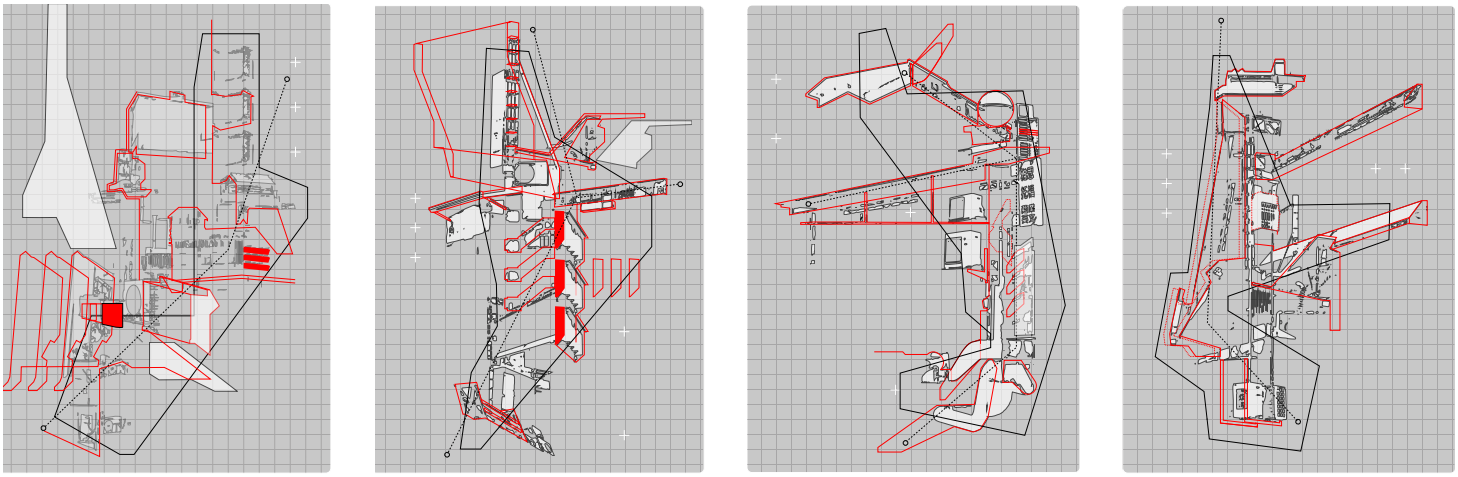
MONTAGE // PALIMPSEST SIX

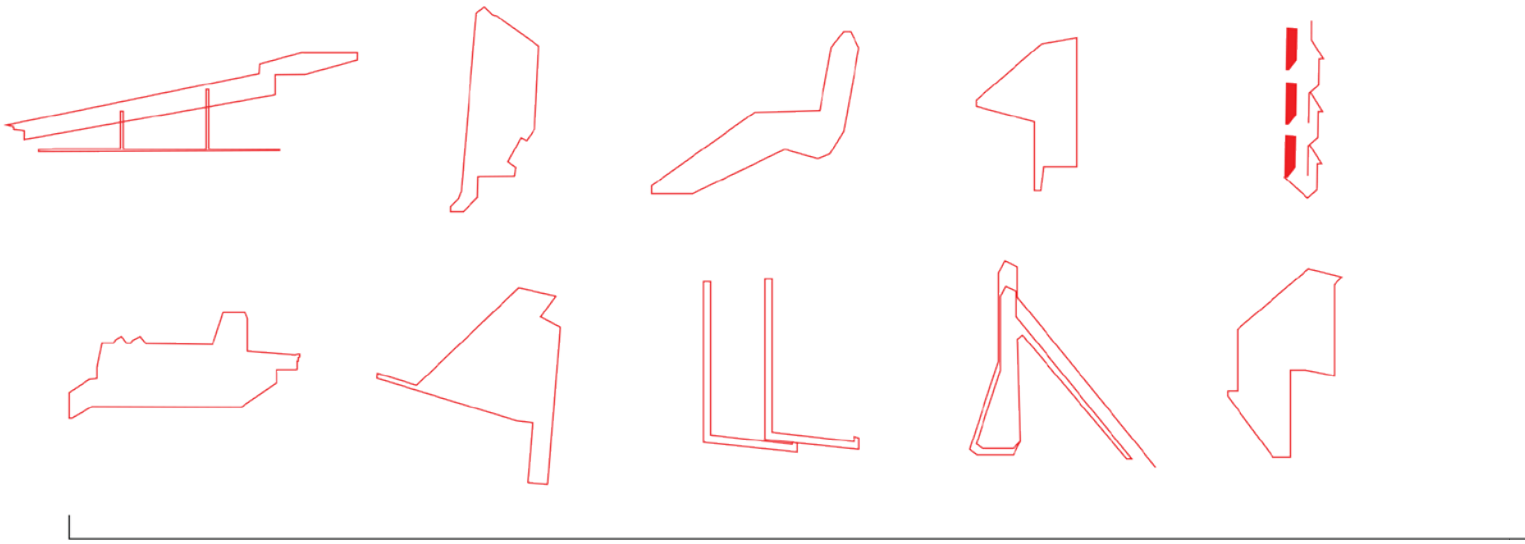





▲ Fig. 155. Palimpsest Six.

◄ Fig. 156. Montage Six.



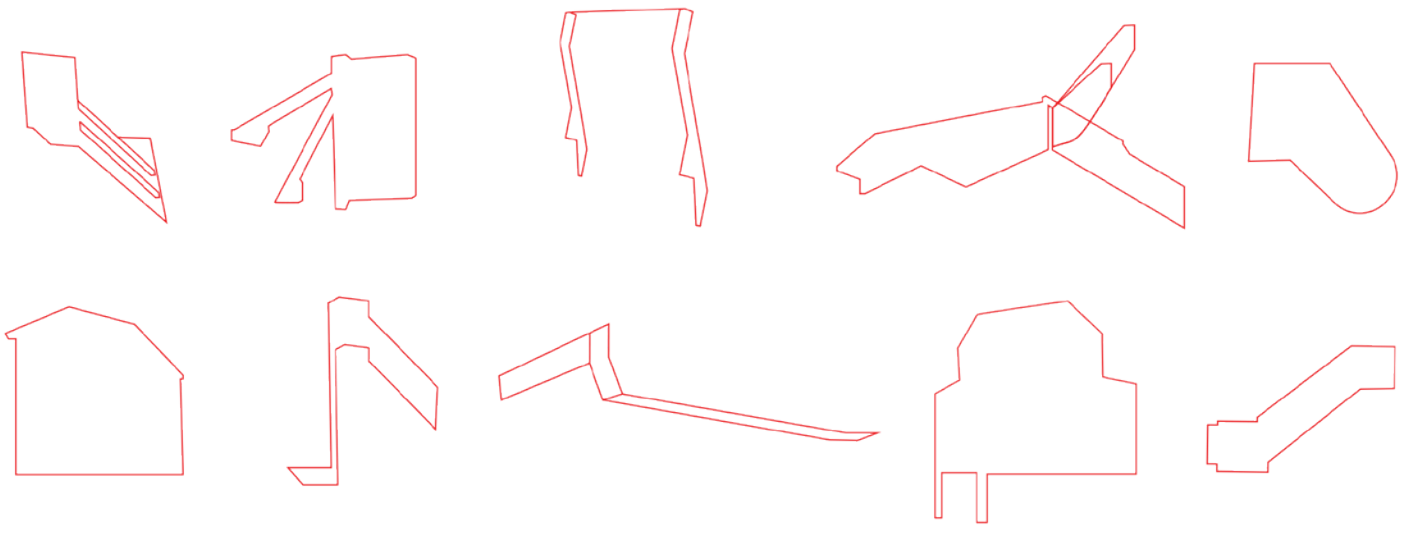


▲ Fig. 157. 2D Empirical Vocabulary.

▲▲Fig. 158. Montage One. Matrix of Palimpsests.

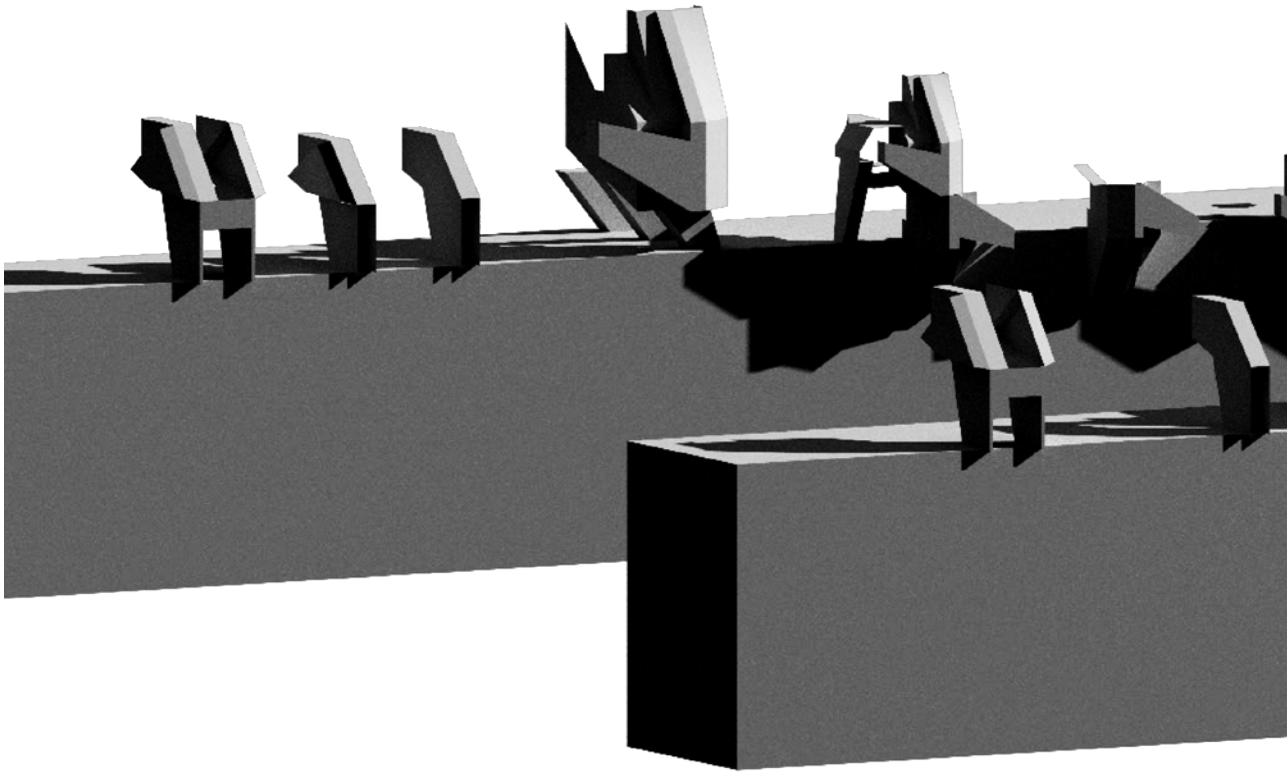
## Palimpsest and Tracings

The photomontage outcomes enhanced the formal identity connections between the extensions, through palimpsest drawings and experiential tracings with which these tests tied the photomontages together as a whole. Further extraction of architectural conditions allowed the exploration to smoothly translate the photomontages into geometries of purer form. This thus provided the foundation for development of architectural language, similar to Hejduk's use of primary geometries as a foundation for his project *Victims*. The geometries extracted then produced a new set of empirical vocabulary that addressed the aim of this thesis by deriving architectural language from the phenomenon that is self-similar but non-identical. The advanced set of empirical vocabulary is then utilised as components to create two-dimensional drawings that will dictate the three-dimensional section of this chapter.

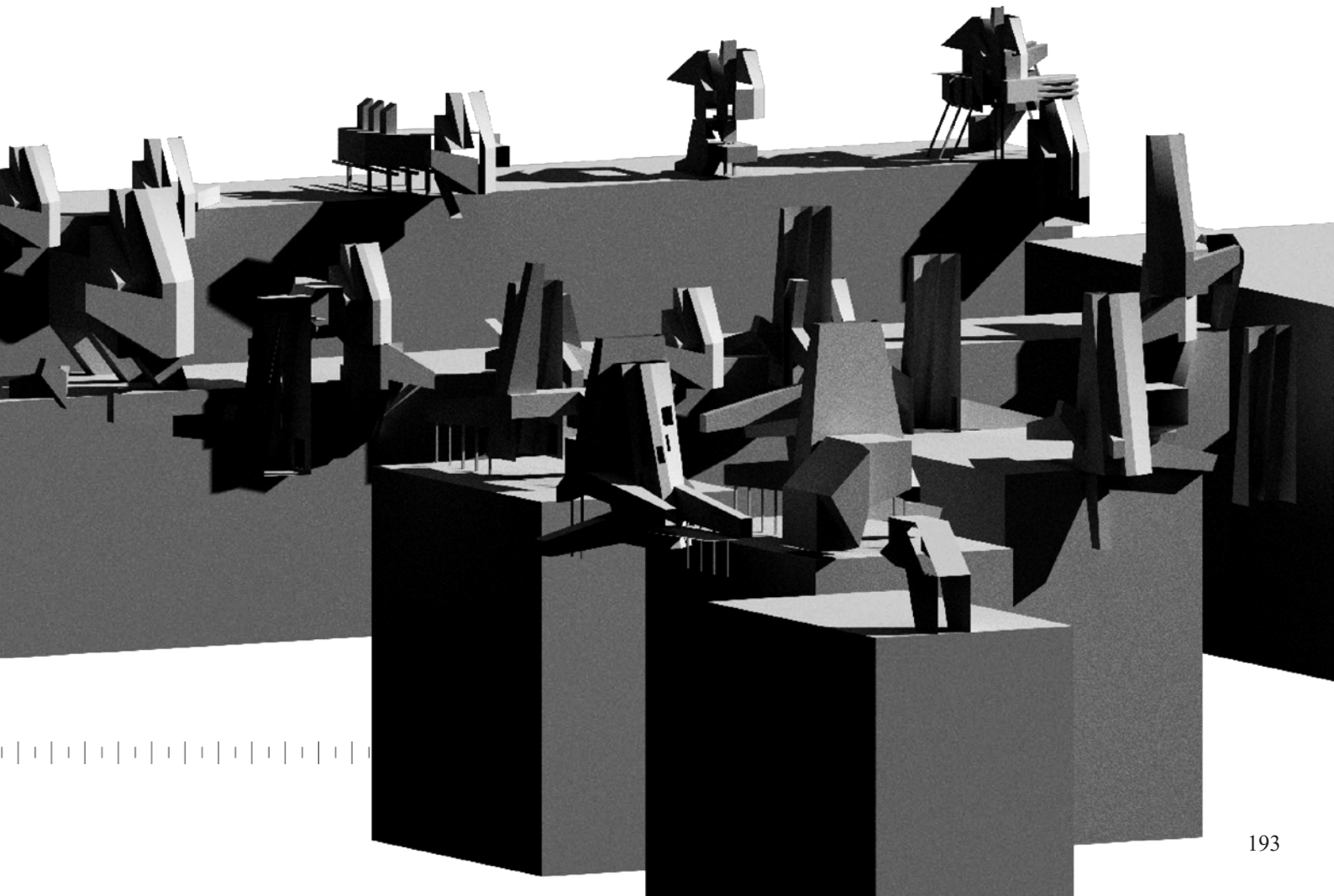


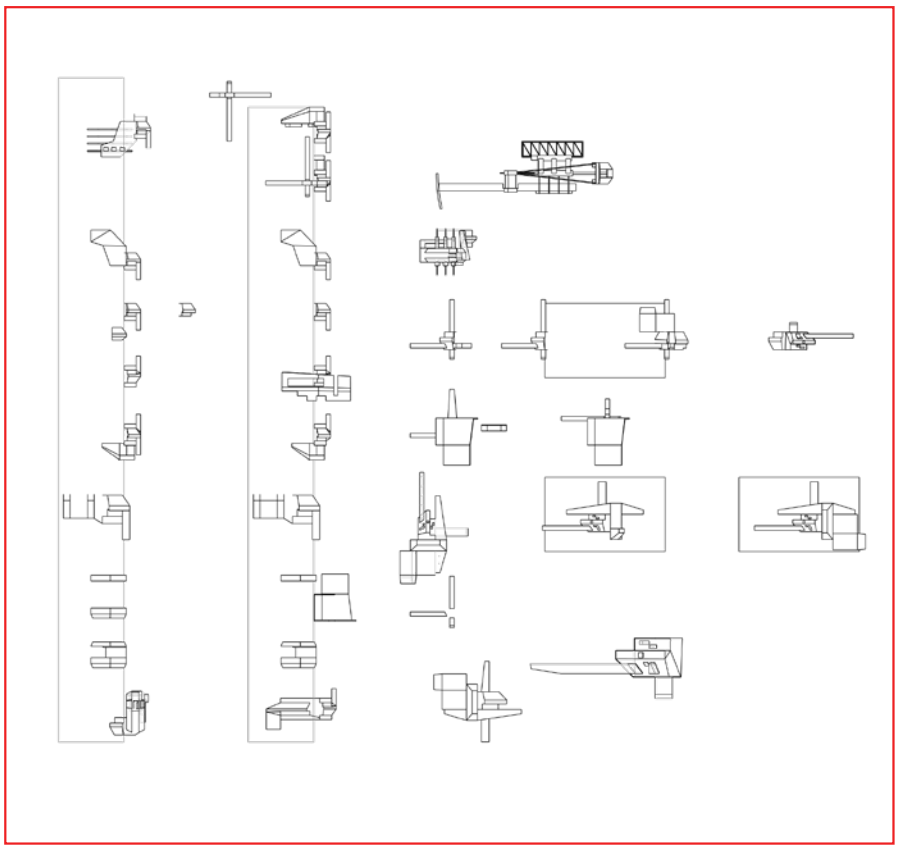
## Three-dimensional Iterations

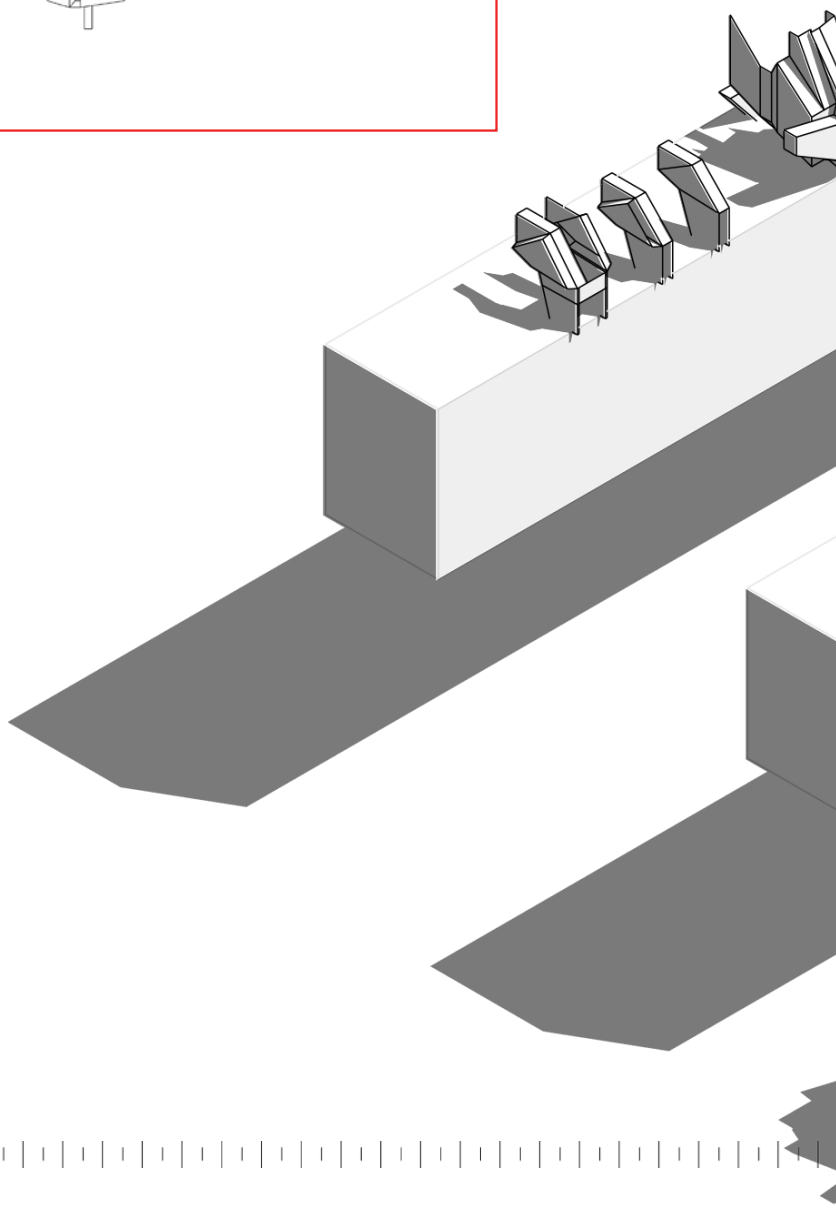
With the development of the foundation for the architectural language, the process moved towards expansion of the empirical vocabulary. The initial vocabulary is given volume and mass around a rectangular cube representing the modernist apartment blocks in Taiwan. Latching onto the existing block, the formal characteristics morphed and adjusted. The geometries are then advanced through a series of interrelated iterative studies, where the iterations do not move in a linear manner but cross-pollinate one another. This process illuminates the initial two-dimensional exploration into a three-dimensional realm and creates freespaces. The iterative study focuses on progressing formal capabilities of the two-dimensional empirical vocabulary rather than the functionality of the spaces. This process adopts Lebbeus Woods's concept of a freespace that has no predetermined function except for architectural expression.



► Fig. 159. Initial 3D Vocabulary.

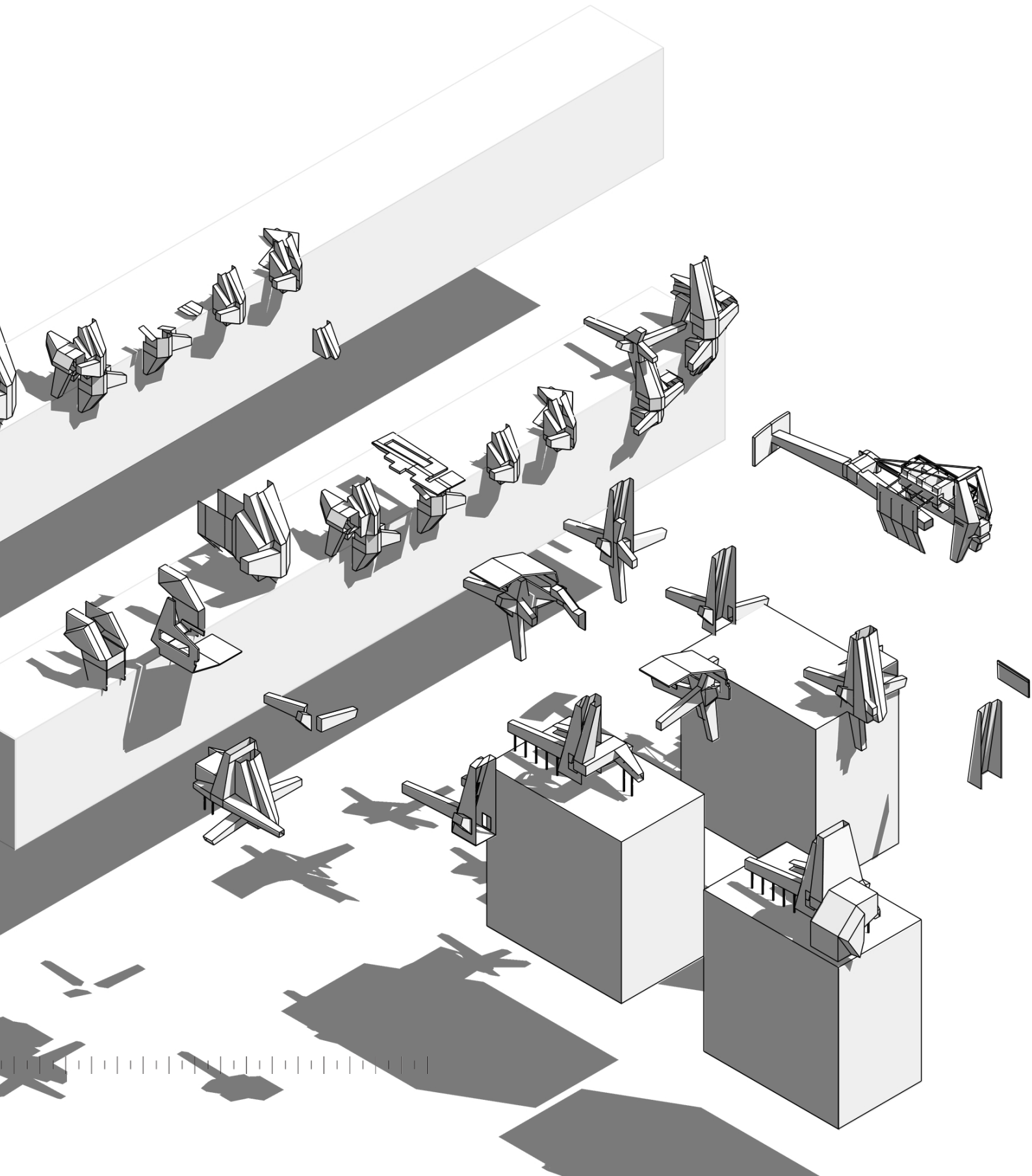






► Fig. 161. Initial 3D Vocabulary Iteration Plan.

► Fig. 160. Initial 3D Vocabulary Iterative Study.



## Exploding and Configuring

By exploding and configuring the three-dimensional freespaces, the investigation further understands the formal qualities of this generative process. Pushing the formal capabilities of the architectural language, this test extracts the components and advances the notion of configuring elements. Drawing the elements in different perspectives develops a parallax that evokes geometric complexity, which will assist in a further set of iterative studies.

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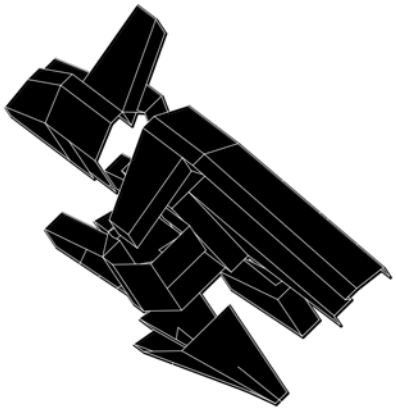
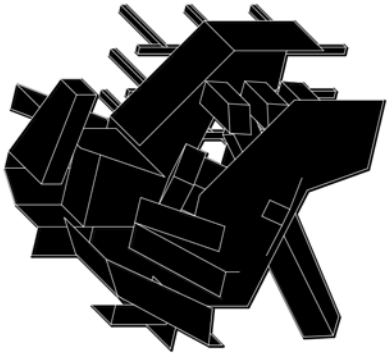
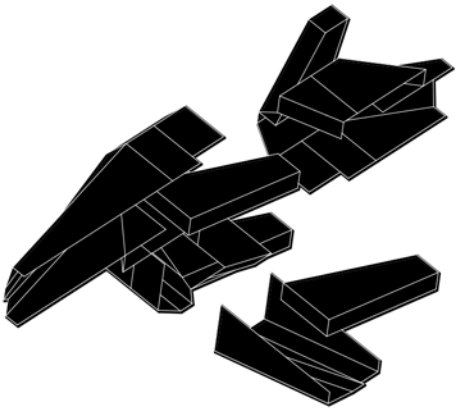
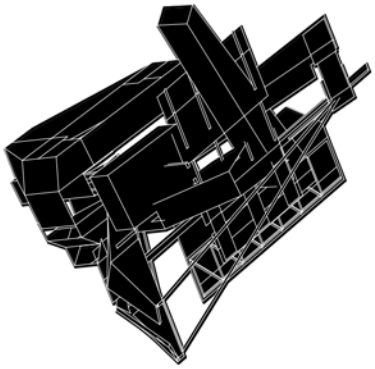
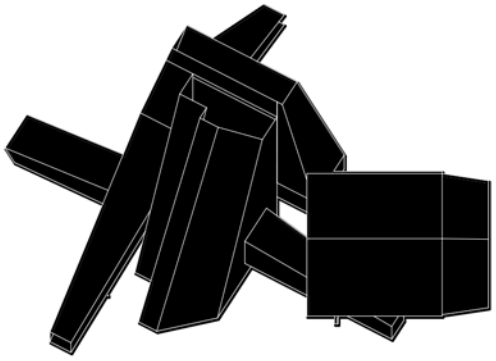
► Fig. 162. Matrix of Parallax.

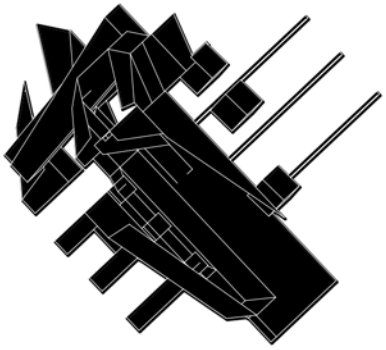


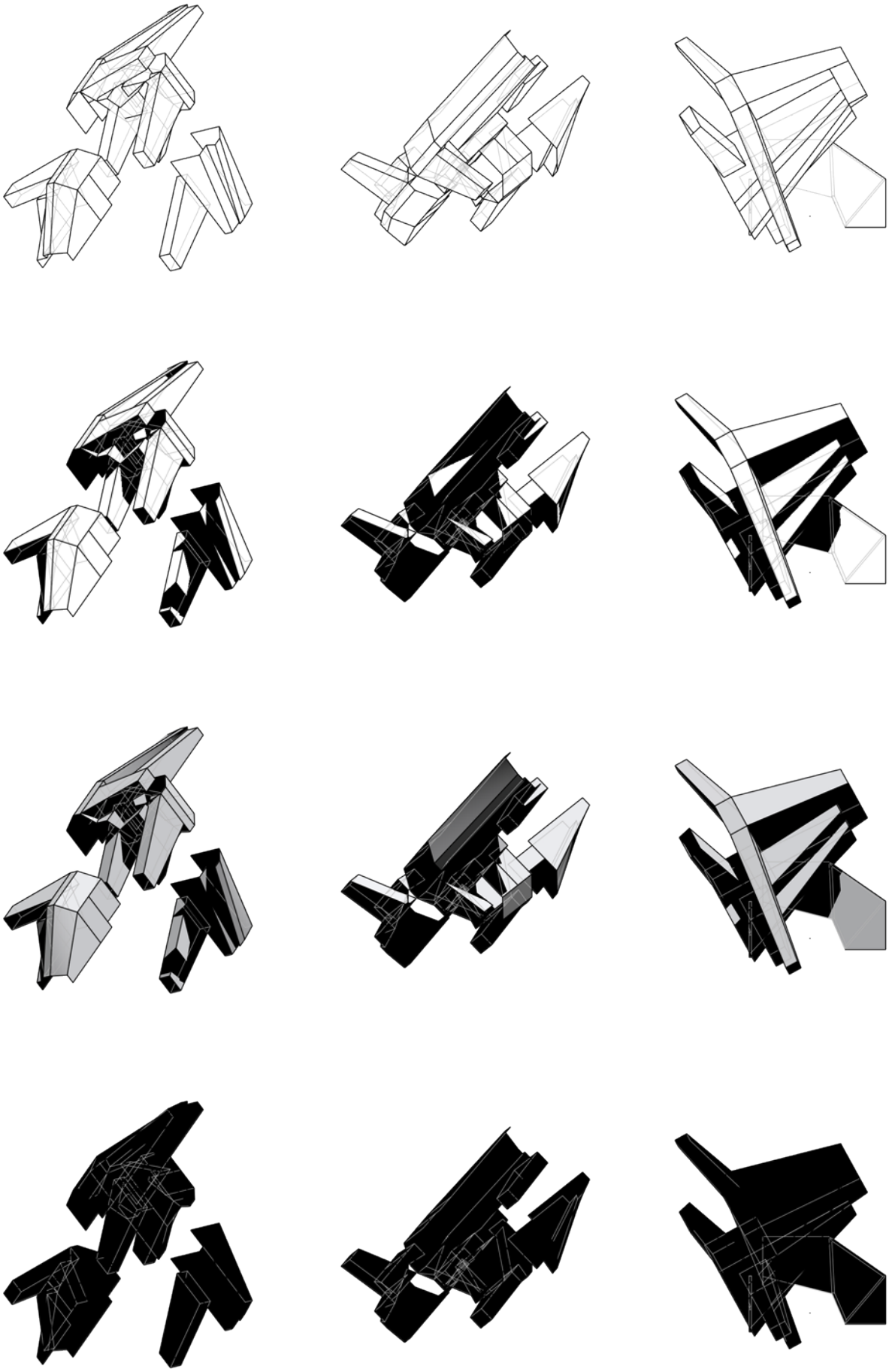




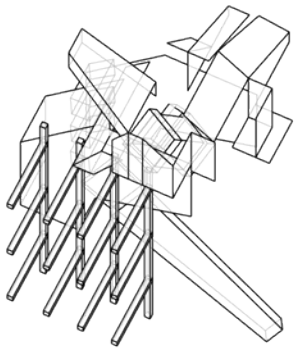
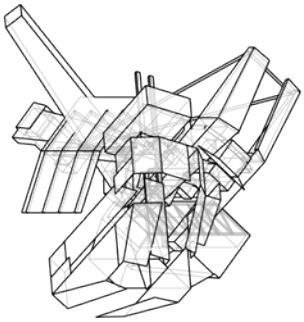
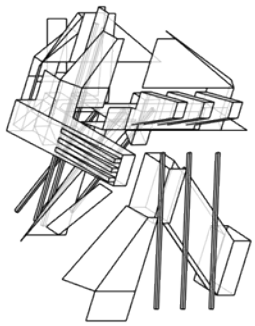
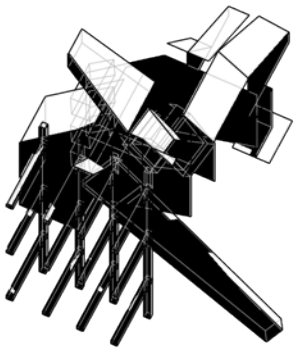
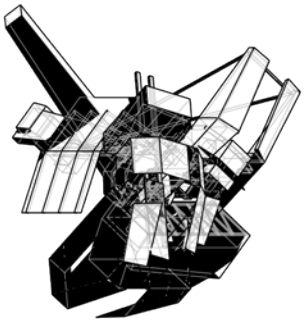


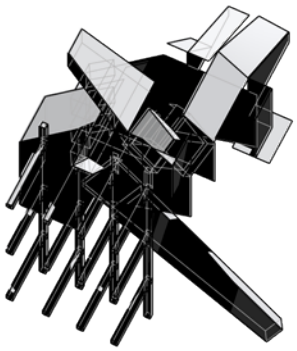
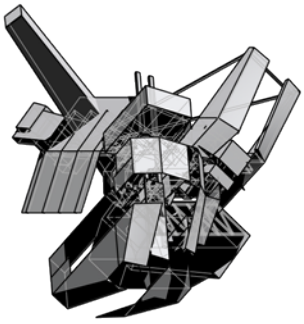
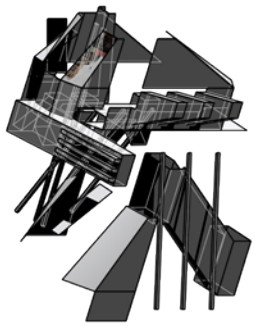
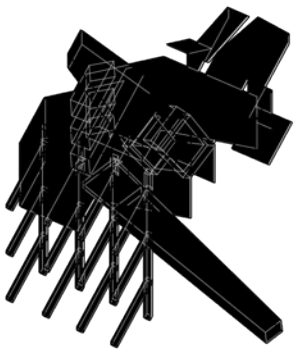
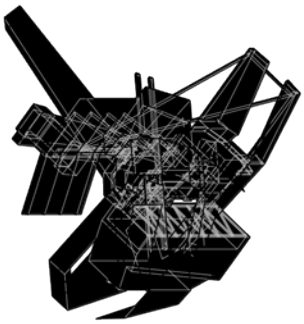


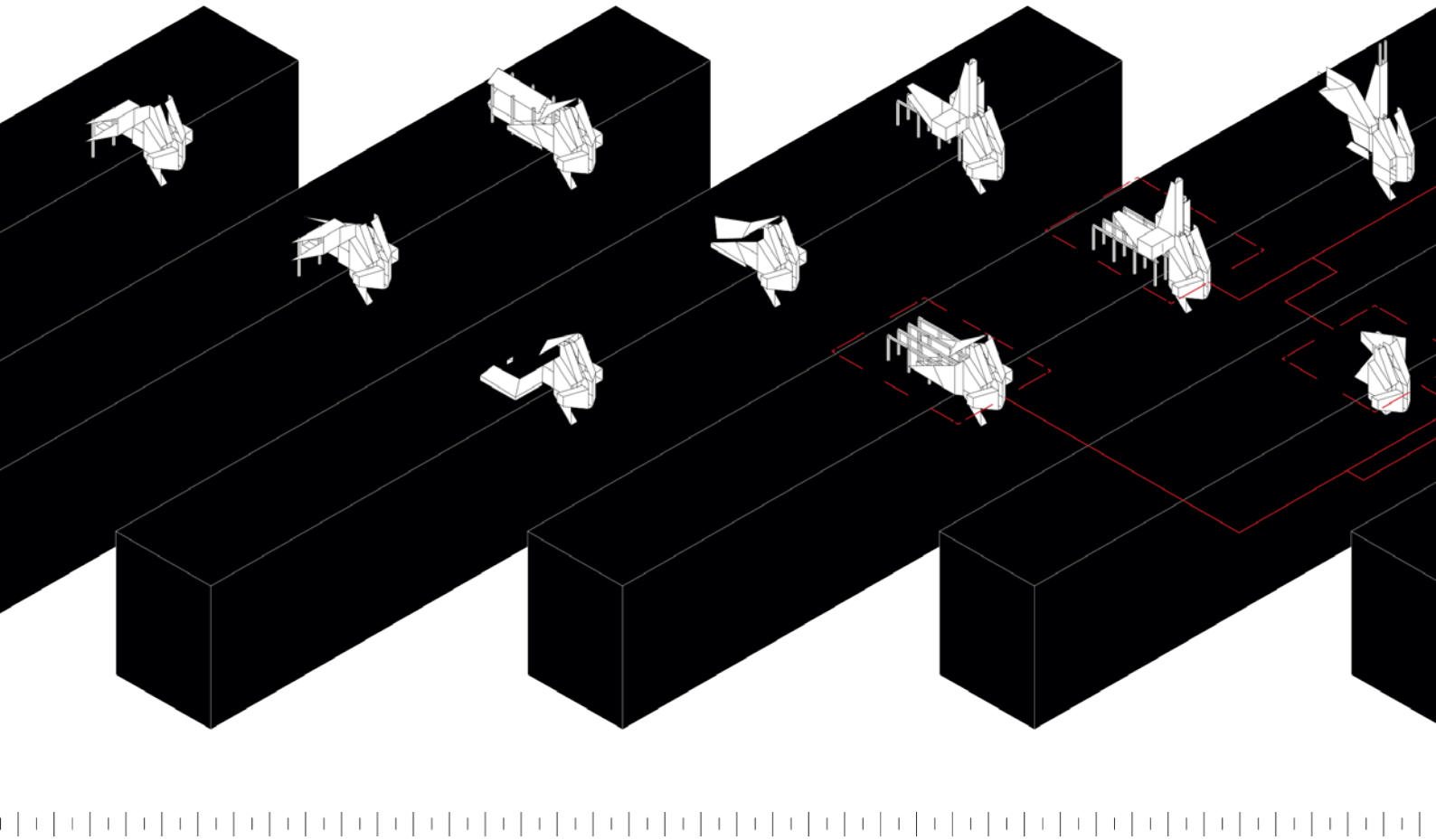




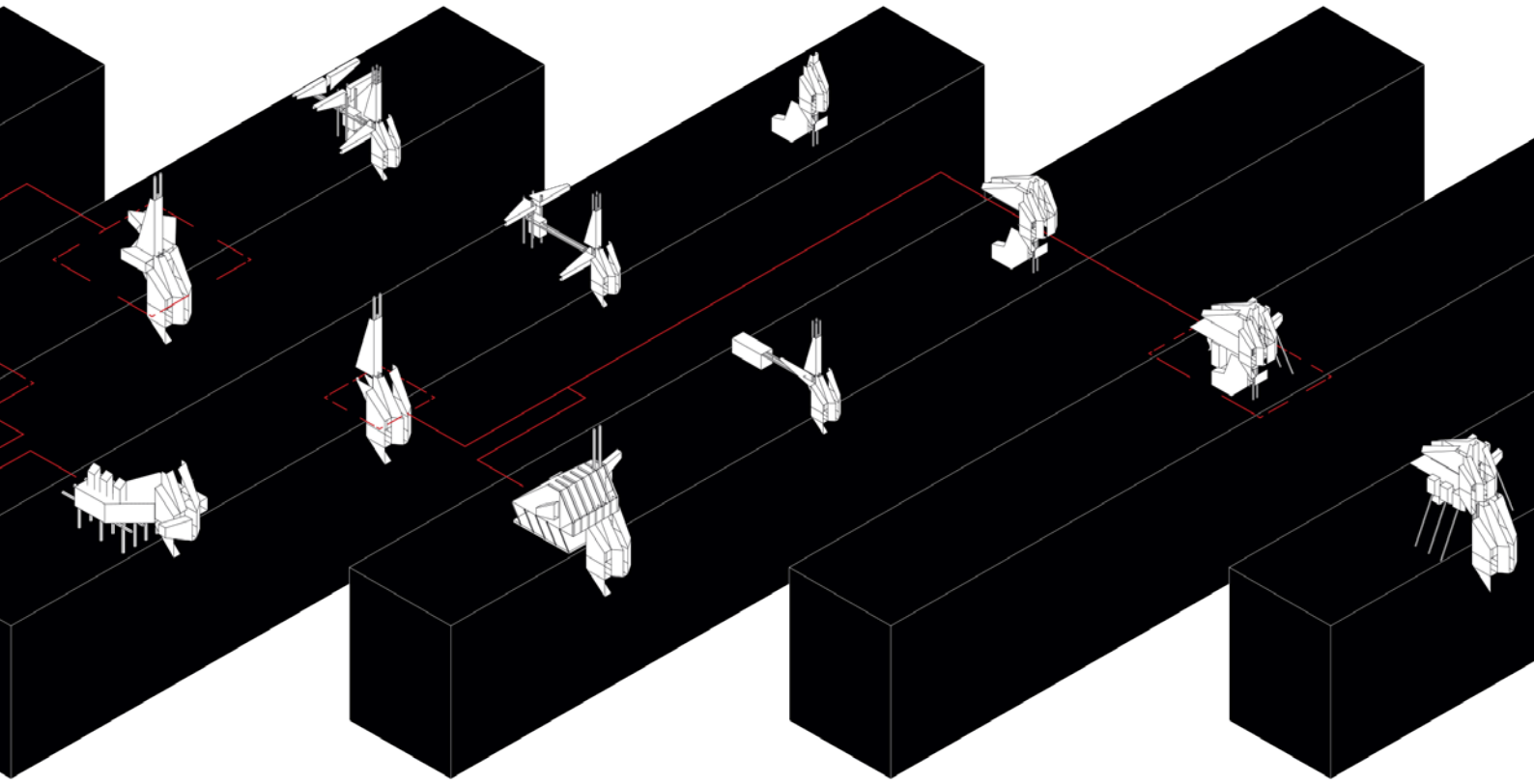
▲ Fig. 163. Matrix of Parallax.



▲ Fig. 164. Iterative Study of Developed Vocabulary.



## Interventions on Site

Two of the outcomes from the final iteration study are chosen to be tested on site. As this experiment was an exploration in a phenomenon-specific architectural language, the site was not predetermined. The two sites chosen were locations visited during the Flâneurie process; both sites had rooftop extensions existing and are replaced by the outcomes yielded from this experiment. This tested the architectural language developed and its contextual responsiveness.

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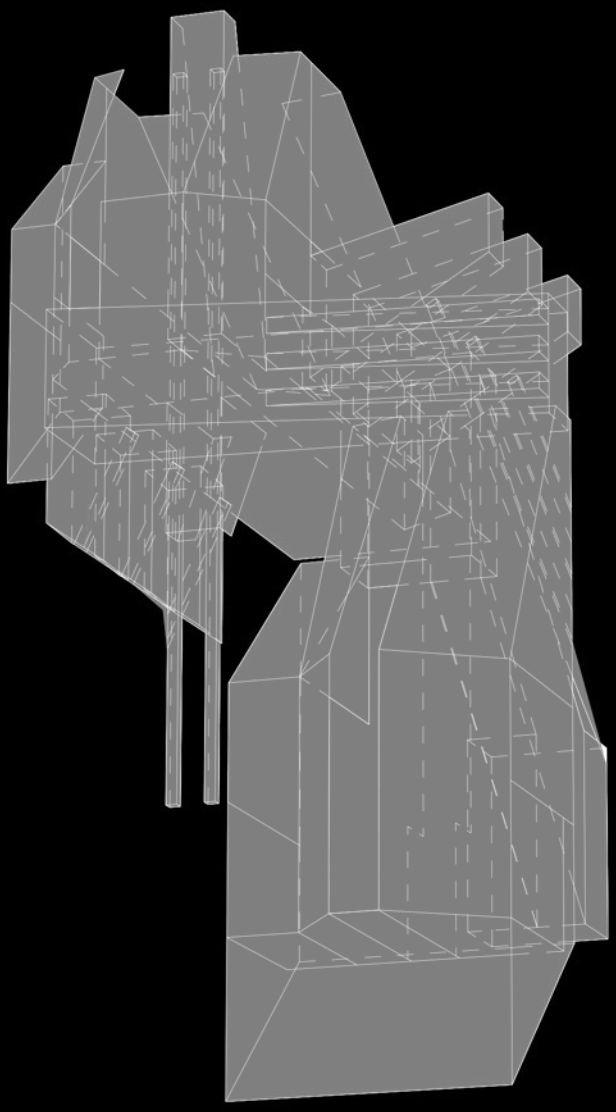
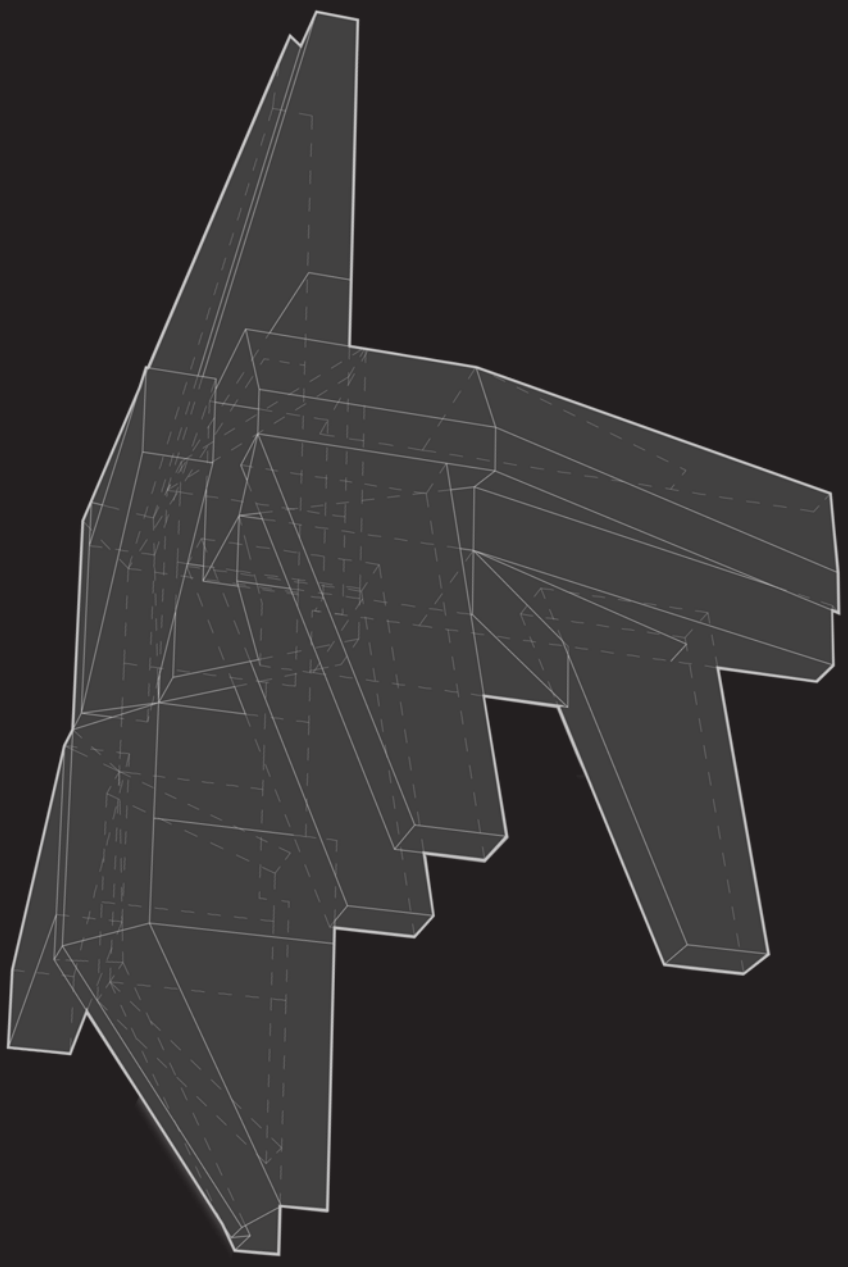
► Fig. 165. Collage of Intervention On Site.

GREATON
偉統K金
GREATON
台灣天然珊瑚

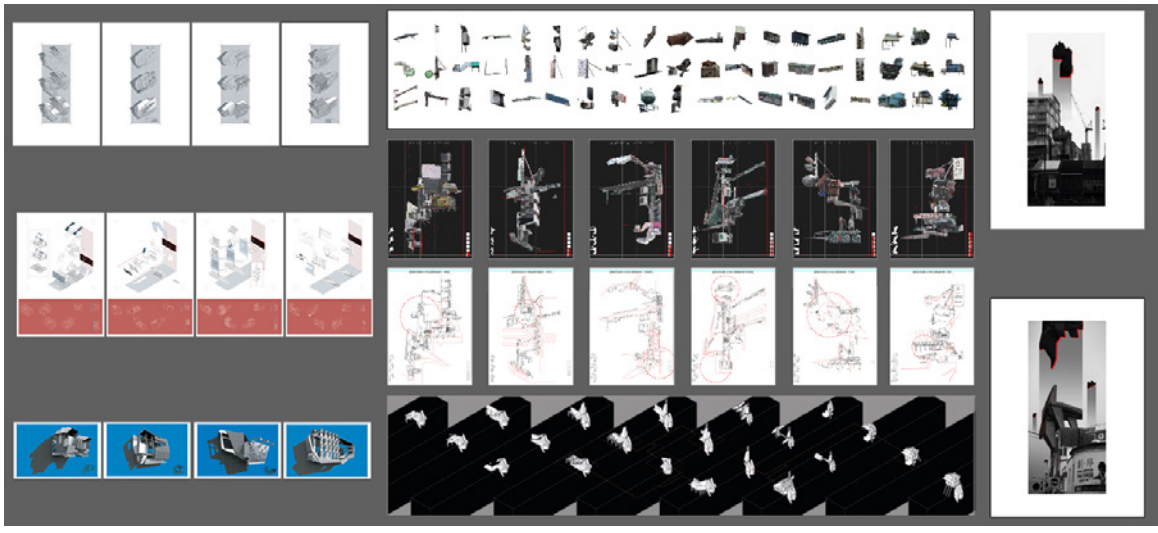
蘭亭·序
雙併電梯五樓/獨棟電梯別墅
0966-729408
(頭城鎮新忠路17號)
全新落成
最貼心の人本設計
順源牙醫診
SYM



► Fig. 166. First Intervention and Context Exploration.



► Fig. 167. Second Intervention and Context Exploration.



# Mid-review

The second review was a formal discussion surrounding the outcomes of Design Experiment Two. The tests and generative methods of this design experiment were introduced along with the Theoretical Approach and Taiwan Fieldwork chapters in addition to the works from Review One.

The process was interpreted as abstracted ethnographical nature, which was in line with the ethnographical methods of the Taiwan Fieldwork chapter. This presented an alternative view of the information established. The processes were successful in terms of extracting from the existing architectural condition of the extension culture.

The outcomes were perceived as objects rather than architecture. In response to this, one reviewer pointed out that the intent of this experiment was to create formal characteristics rather than buildings per se. The nature of the "object" is reflected upon as a manner of creating components, such as the empirical vocabularies created. This can act as early tests for spatial and formal juxtaposition for creating different functional elements within a restricted space.

The representation of the tests was favored, and the resulting formal interventions possessed identity expressive characteristics. Despite this, a critique upon the relationship between the tests and the aim was raised. Due to the various and diverse methods that led from the photographs documented to the outcome, do the results yielded still relate to the phenomenon at hand? An interpretation made was that in the next design phase, using the architectural language derived whilst designing with functional intention will enable an outcome that references the phenomenon more successfully.

It is understood that this design phase is strictly phenomenon-specific and not site-specific, but to further develop the investigation, a specific site is crucial. A chosen site will assist with orientation of elements and developing need-based functions.

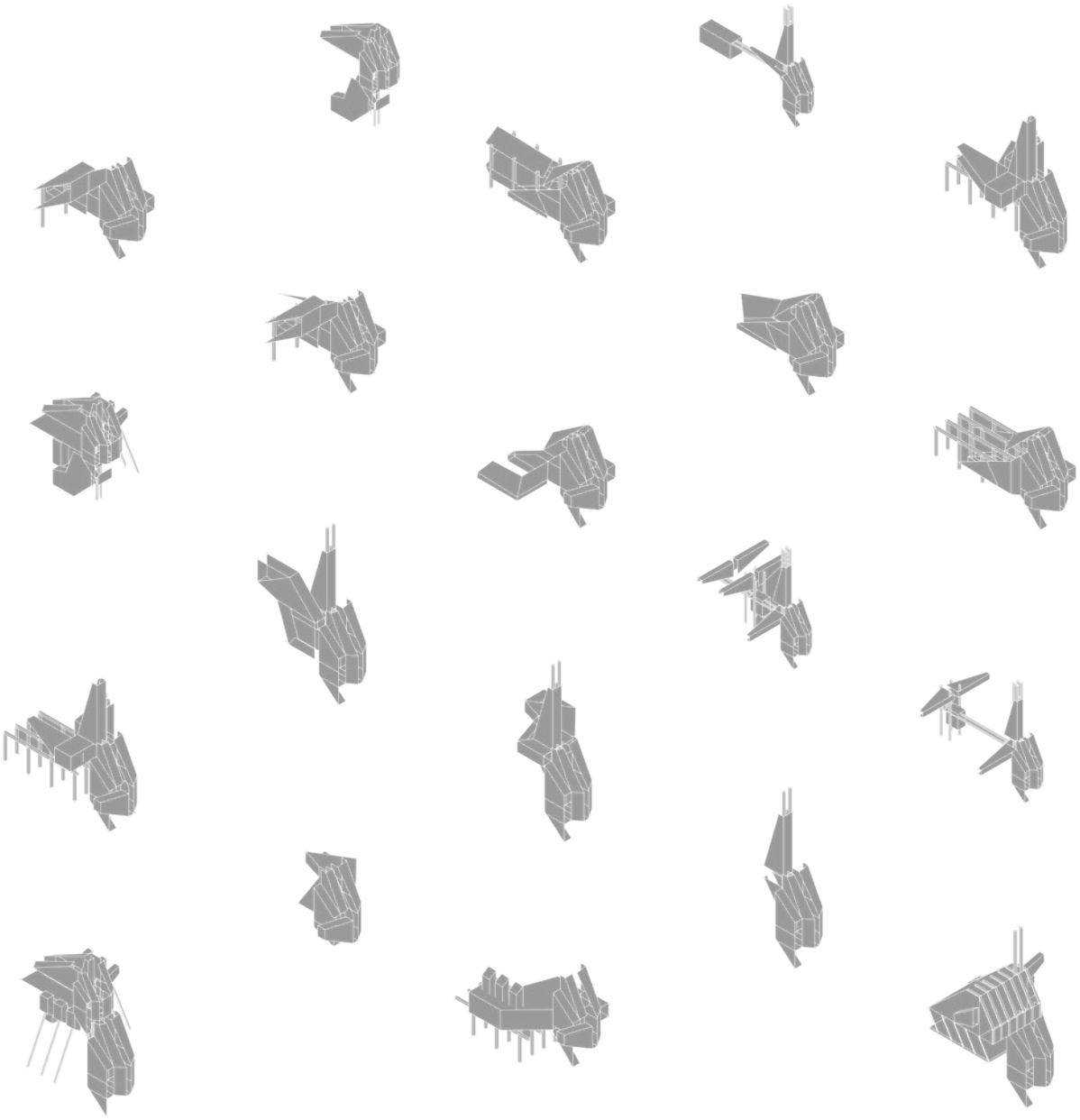
◄ Fig. 168. Mid-review Layout.

◄◄ Fig. 169. Mid-review Presentation.

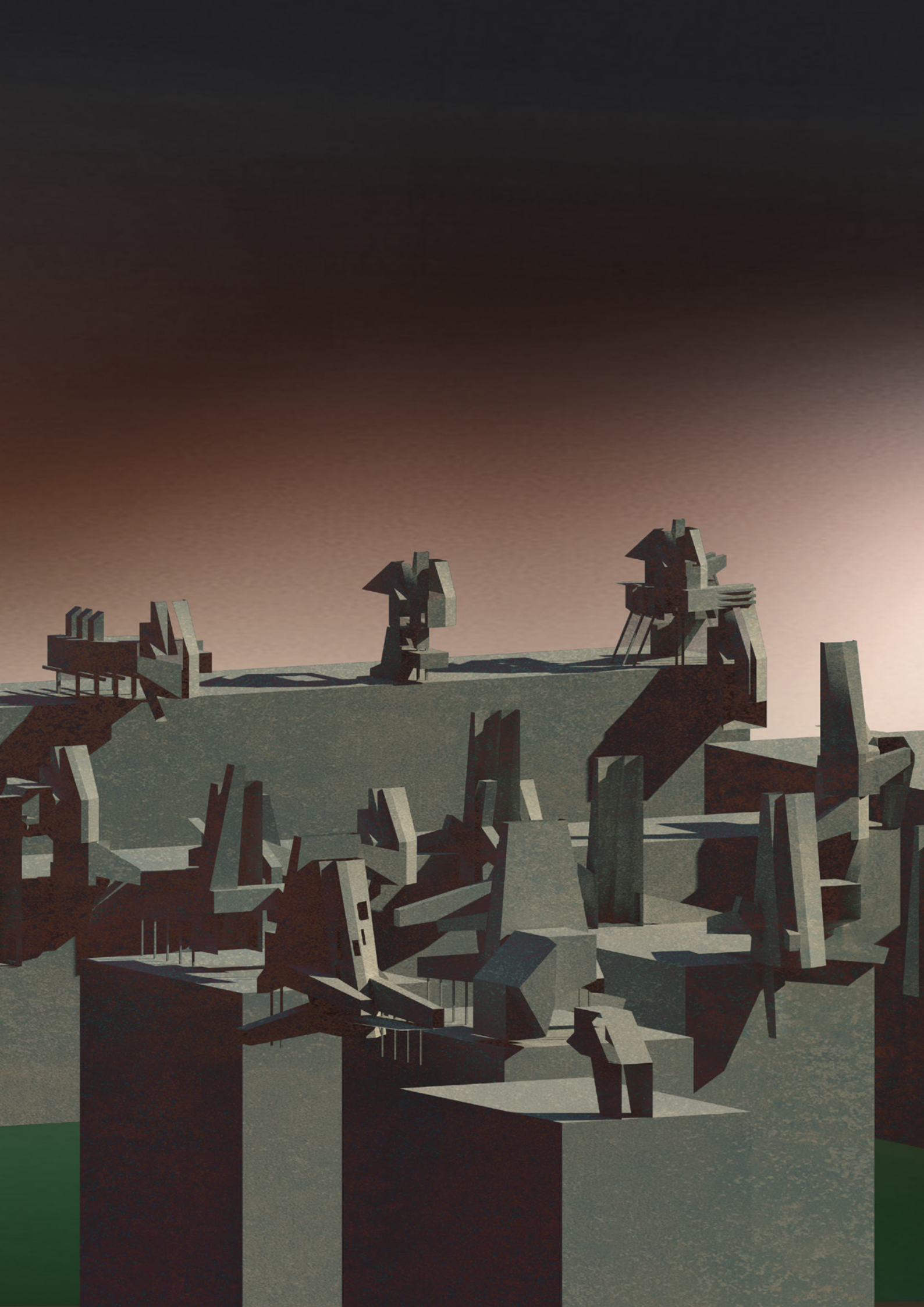
# Critical Reflection and Design Opportunities

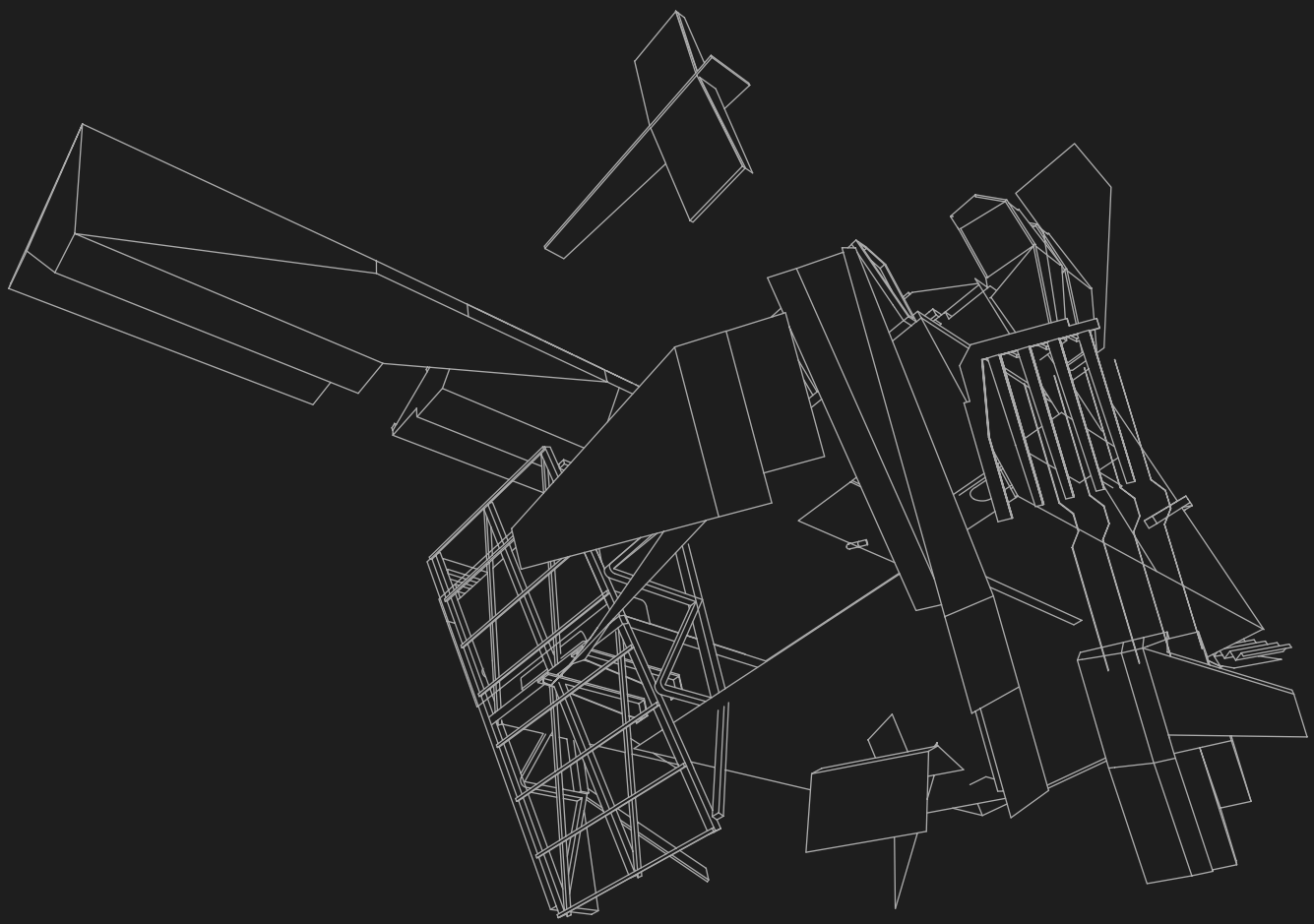
Based on the critiques and suggestions raised by the reviewers regarding Design Experiment Two, it is evident that further development is required to address the research question. The experiment was successful in creating a phenomenon-specific architectural language. The applied methods, although diverse, created identity expressive formal conditions. Viewing the interventions as objects also led to an effective interpretation of the experiment going forward to the next design phase. Instead of interpreting each formal outcome as a building, considering them as parts of an architecture will assist in developing multifunctional elements that retain the culture of the current Taiwanese extensions. It is also evident that in order to proceed to the next design phase effectively, a specific site is crucial in creating operable extensions. Functional and site-responsive interventions would also exhibit human interactions with the resulting extensions. Overall, utilising John Hejduk's sequential environment, Lebbeus Woods's architectural language approach and Robert Venturi's critique of modernism, this chapter translated the findings from the Flâneurie process into an architectural language that references but does not imitate the vernacular architectural extensions of Taiwan.

► Fig. 170. Axonometrics of Vocabulary.



► Fig. 171. Inital Vocabulary Gradiented.





▲ Fig. 172. Configuration.

# Design Experiment Three

# Aim

This design enquiry aims to apply the architectural language developed to three speculative, multifunctional rooftop extensions. Design Experiment Three seeks to integrate the findings from the investigations leading up to this point and devise an alternative architecture for the future of extensions in Taiwan. This chapter seeks to conceive an architecture that considers the people of Taiwan's current lifestyle and assists in their endeavor of establishing national identity, through generation of site and phenomenon-specific operable elements and spaces applying the identity expressive architectural language developed.

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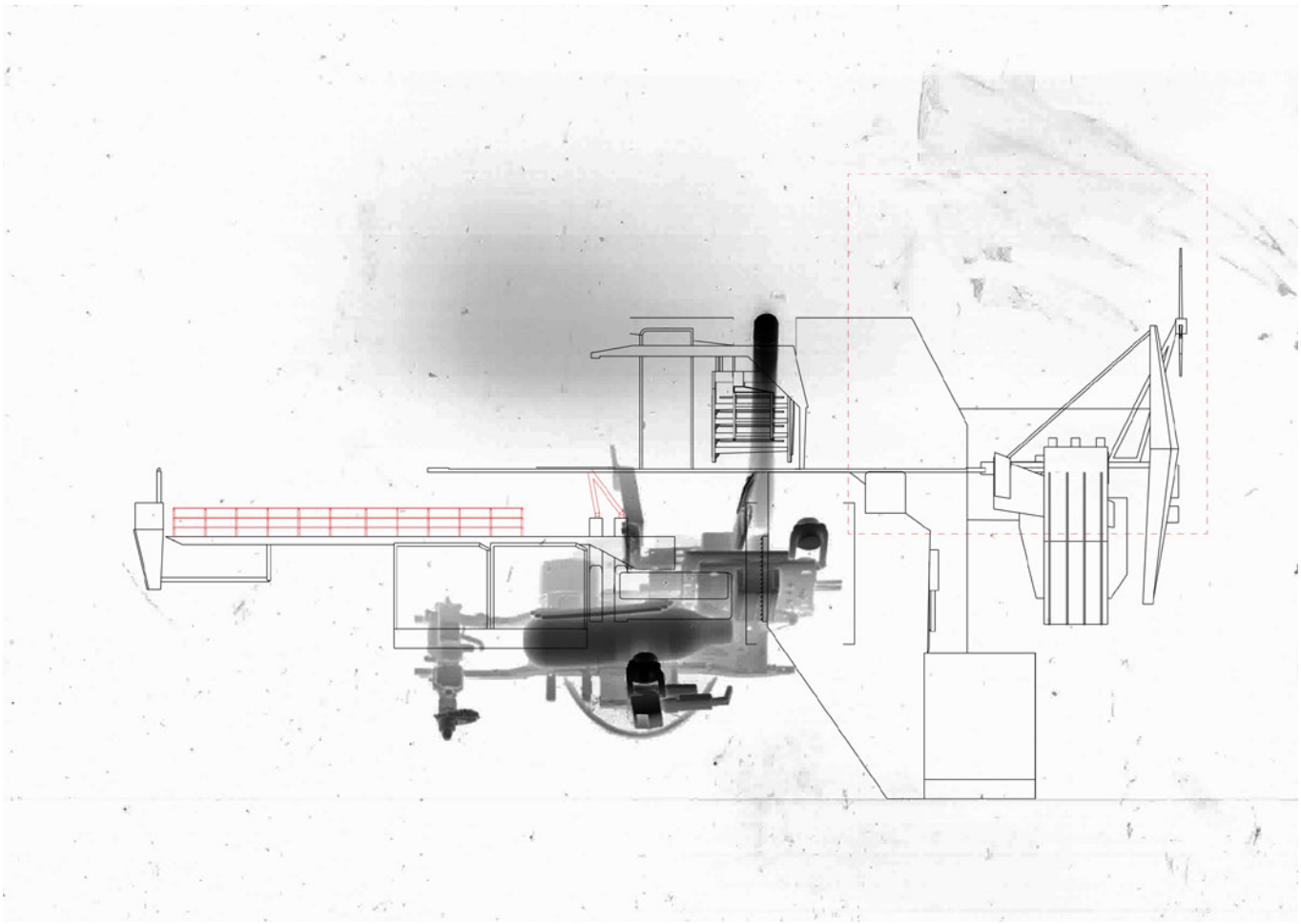
► Fig. 173. Parti Model Palimpsest.



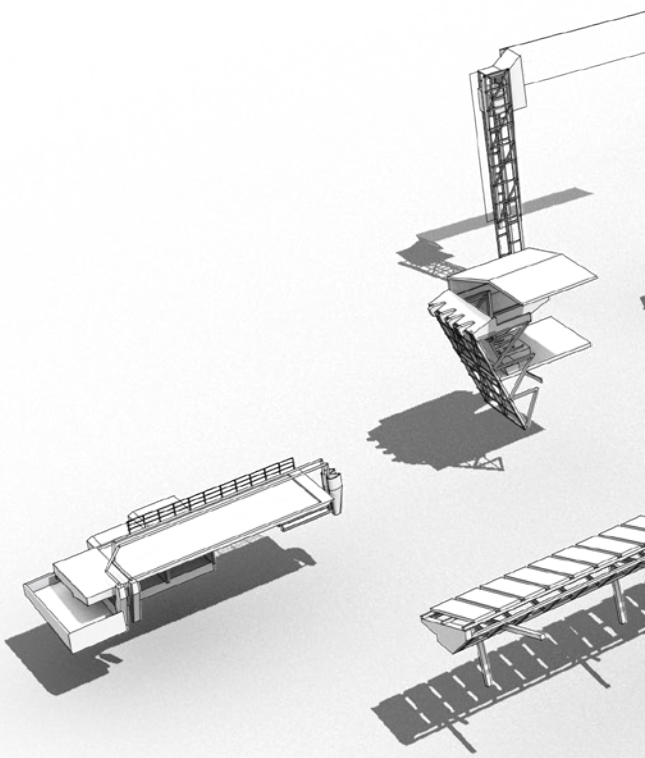
# Method

The freespaces and architectural vocabulary generated in DE2 developed an identity expressive nature, but they lacked the notion of human interaction and a clear relationship to the extension culture in Taiwan. It was evident that applying the architectural language to functional spaces and elements would enhance the investigation in addressing the research question.

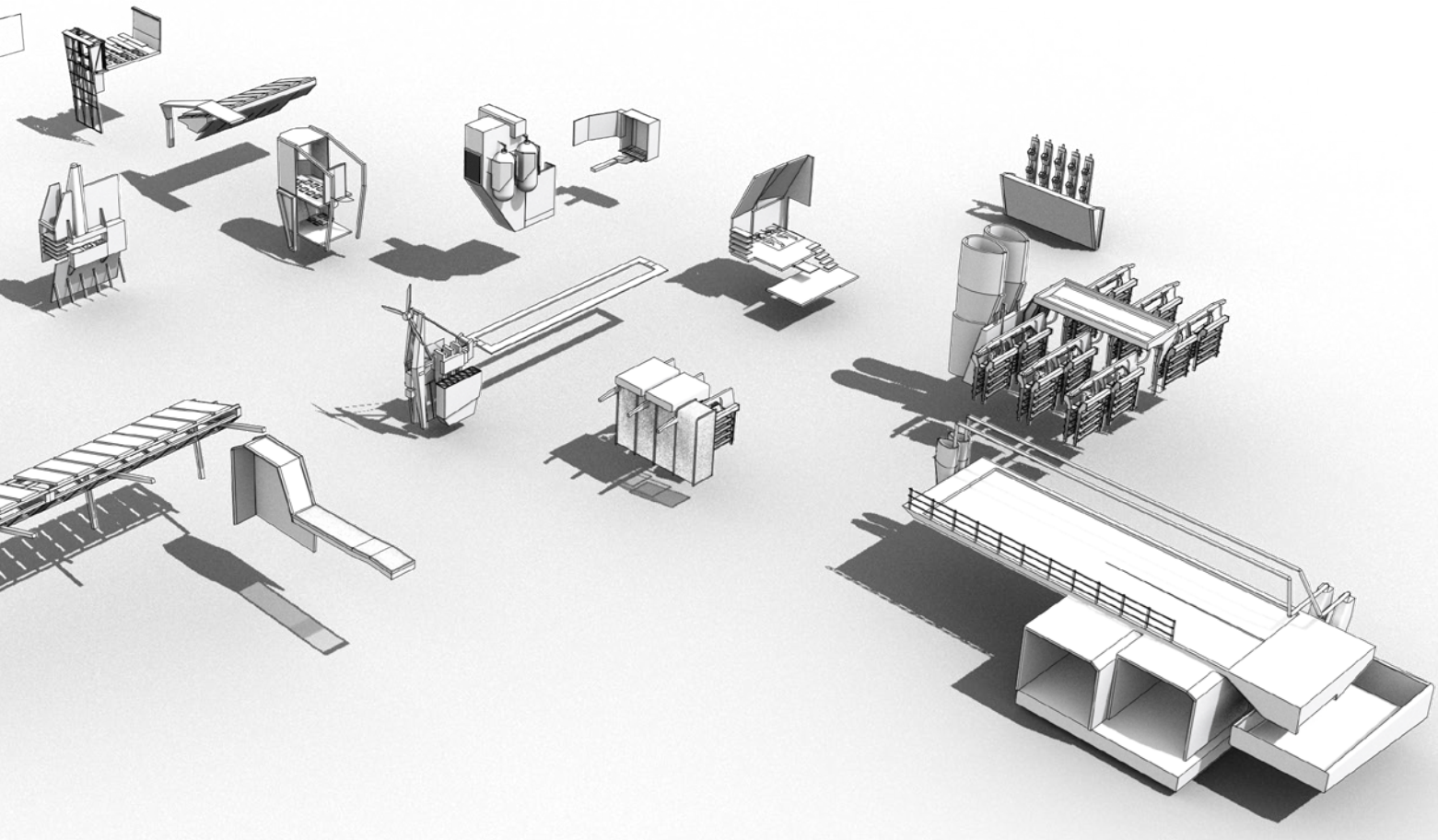
The design experiment was initiated by the application of a specific site. The site analysis's primary focuses were opportunities surrounding the site's existing extensions, the physical condition of the host building and potential functional elements that can be speculated. This provides this design inquiry with functional alternatives that will serve as the vehicle for the developed architectural language. The method then advances to the making of a series of parti models, similar to the intention from DE1; the parti models seek to act as precursors to the design tests. Once again, constructed with arbitrary objects found around homes, workshops and the studio, these parti models offered the notion of configuration that correlates with the multi-functional aspects of the phenomenon.

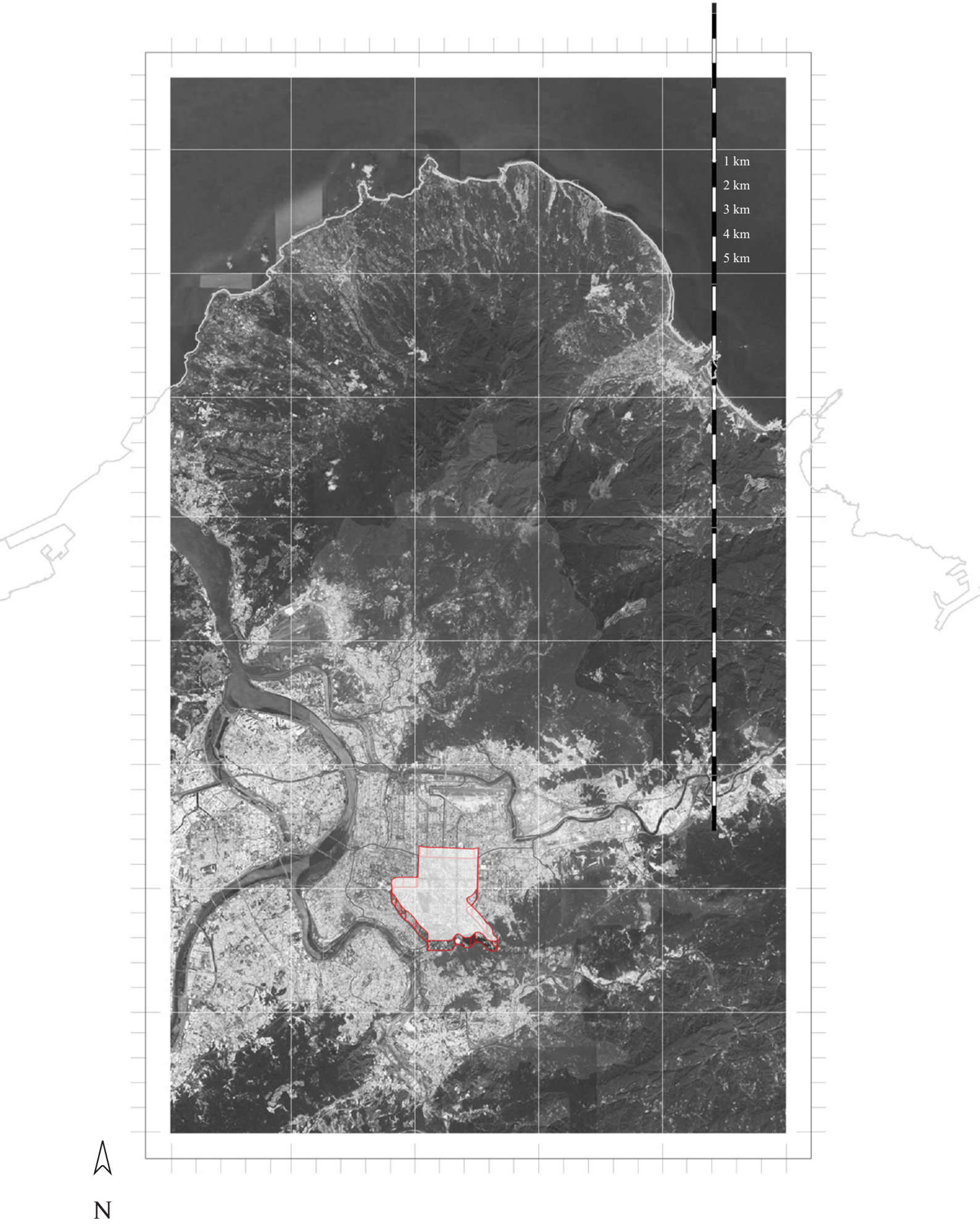
The investigation established three programs applicable to the selected sites and speculates potential operable elements each will possess. Through iterative study, the exploration simultaneously develops the architectural interventions and elements each program will acquire with the design principles the architectural vocabulary offers.

The design phase considers the occupant's wellbeing, economic and spatial issues by devising operable elements and spatial organisation that enhance instead of altering the existing lifestyle—whilst developing a series of interventions that express and assist in constructing a national identity.



► Fig. 174. Operable Elements Displayed.






▲ Fig. 175. Wider Site Map.

# Site

Design Experiment Three is initiated with a straightforward site analysis; the sites chosen are three rooftops on an intersection located in the heart of Taipei's Da'an district. As explored in the Context Analysis chapter, Da'an has the highest population density in Taiwan with a population of 312,956, and a footprint of only 11.36 kilometer squared; the population density is 27,541 per kilometer squared (Taipei City Government, 2017). This is due to the central location and the numerous schools and prestigious universities being located in Da'an, such as National Taiwan University, National Taiwan University of Science and Technology and National Taipei University of Education. Therefore, many Taiwanese university students reside in the district, mostly in small studio apartments with balcony extensions and rooftop extension studio apartments.

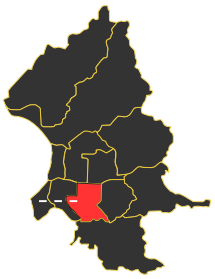
Due to the population density, the spatial issues in Taiwan are at its worst in this district. The urban grid and modernist apartment blocks introduced by the Japanese during their rule are also extremely present in Da'an, as it was the starting point of the Japanese's intention of creating an exemplar city (Taipei City Government, 2017).

The primary objective of this site analysis is to examine existing typologies of extensions on the site and furthermore, unravel potential functional opportunities of the chosen sites. The potential functions will develop from the speculated typologies established in Design Experiment One: Self-sustaining Office, Billboard Dwelling and Micro Garden. Findings from the Taiwan Fieldwork and Context Analysis chapter will also stimulate further speculatons.

# Da'an District

1 km 2 km 3 km 4 km 5 km

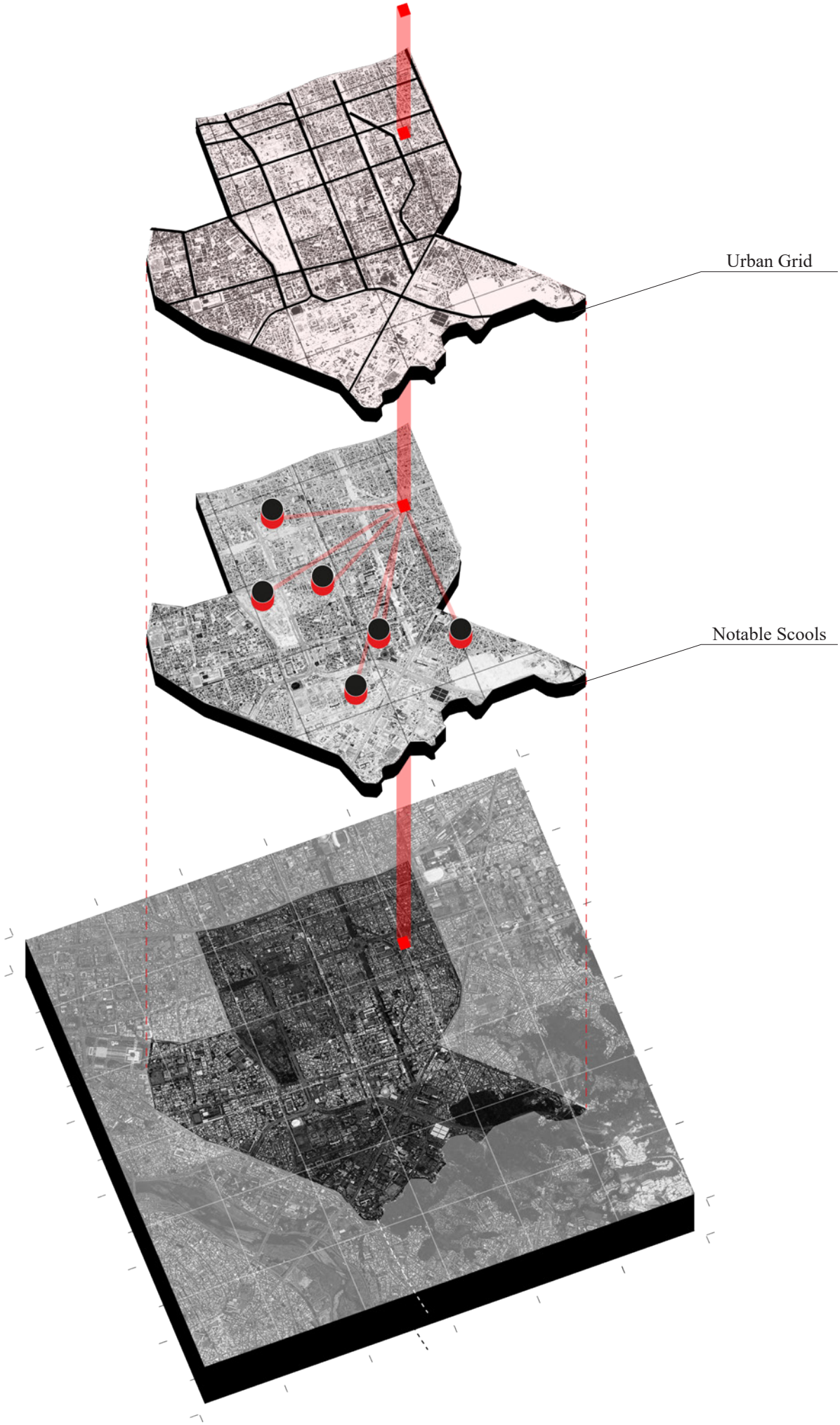
25.0262° N, 121.5427° E

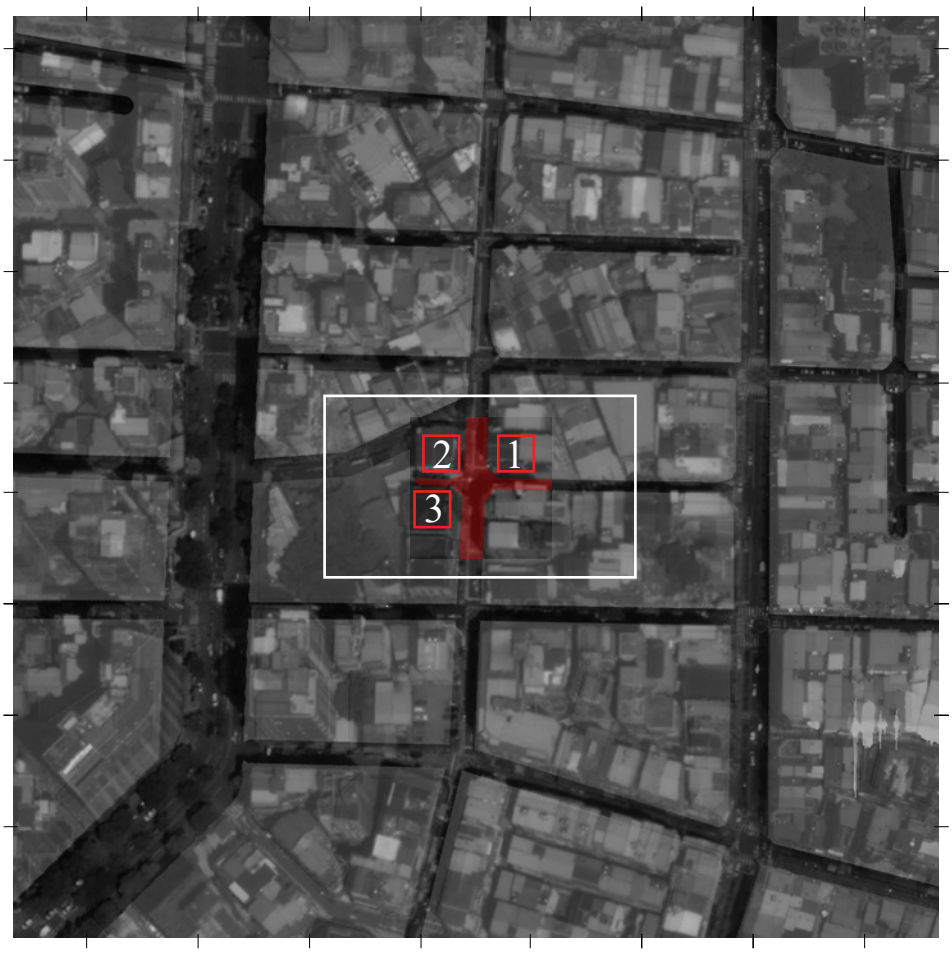


N

▲ Fig. 176. District Mapped.

► Fig. 177. Site Context Diagrammed.


Urban Grid
Notable Scools

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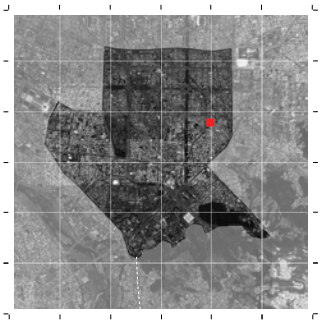


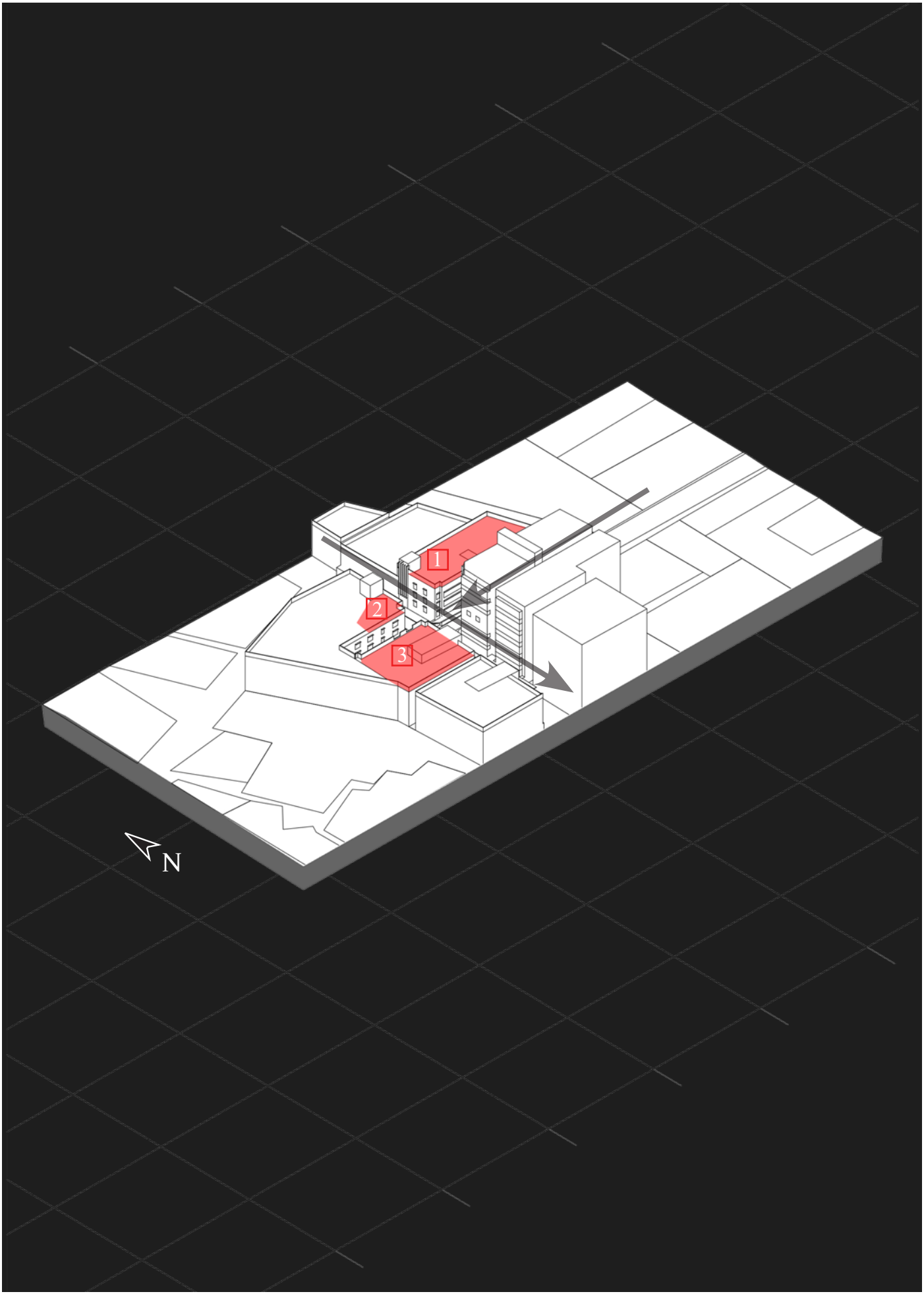
## The Intersection

The intersection chosen possesses various characteristics; it is a one-way main road intersecting with a side street and a private lane. The chosen rooftops are the three four-storey apartment blocks located on the northeastern, northwestern and southwestern corners. The southeast corner is unsuitable as it is an eight-storey apartment block that is substantially larger than the midrise modernist apartment building this investigation is addressing.

25°01'53.02"N 121°33'11.89"E

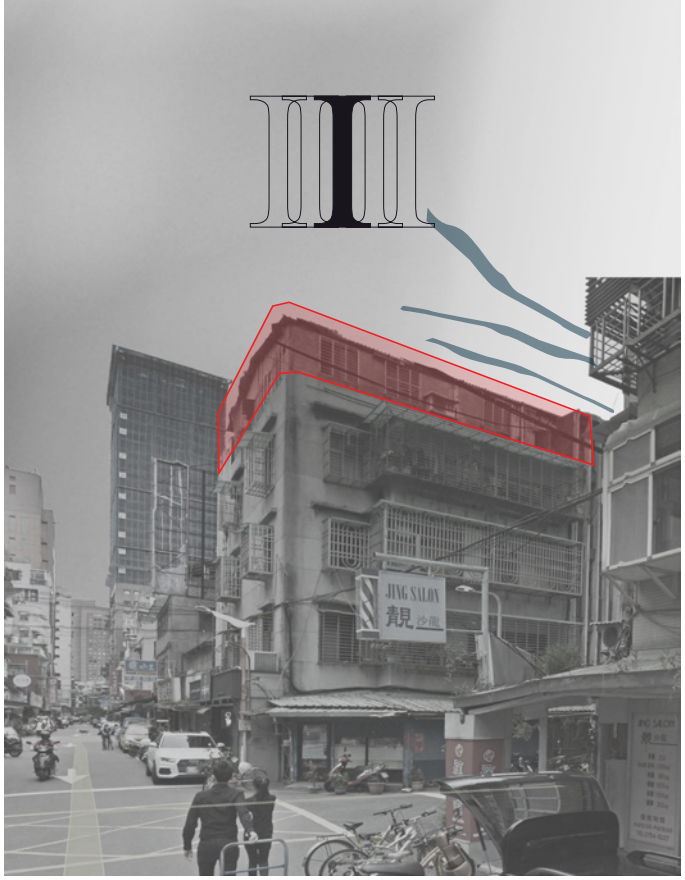
▲ Fig. 178. Site Chosen Mapped.

► Fig. 179. Site Chosen Axonometric Diagram.


1
2
3
N

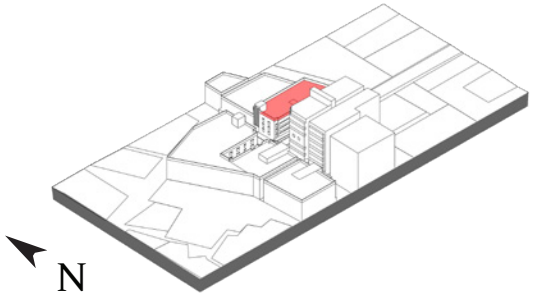
▲ Fig. 180. Northeastern Corner.

► Fig. 181. Northeastern Corner Diagram.




## Northeastern Corner

The first site of interest is the northeastern corner. Currently, there is a whole storey extension consisting of a series of studio apartments crammed into the rooftop. The building upon which the extensions are built is an apartment building with retail on the ground floor. The building is shielded by the eight storey apartment block across the side street, and the surrounding urban environment creates a wind tunnel in a western direction. The physical characteristics of this location provide various opportunities for the intervention. The location's physical conditions relate to several themes this investigation has discussed—the most immediate being Hsaio Yu-Chi's micro house showcased in the City Experiment in Two Actions installations. The typology of the studio apartment was directly addressed by Hsaio through creating a multifunctional living space.




## Potential Typologies:

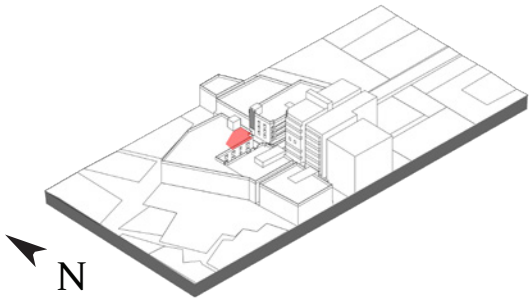
- Multifunction spaces
- Studio Apartment Complex
- Hydroponic Vegetation System
- Wind Energy Harvesting System

▲ Fig. 182. Northwestern Corner.

► Fig. 183. Northwestern Corner Diagram.

## Northwestern Corner

The second site of interest is the rooftop of the northwestern corner; a single-family home current sits on the site. The orientation of the site allows several opportunities, such as the uninterrupted northern border allowing maximum solar direction. The site essentially faces the public dead end of the approaching street, which meant the front facade of the host building offers ideal billboard and signage opportunities. The setting back of the corner also offers the potential signage to avoid blockage of other structures and signage. The physical characteristics of this site present several connections and opportunities to build upon the functional elements speculated and explored in DE1. The typology also relates to themes discussed in this investigation, such as Clone House and Sky Box. This also provides opportunity to employ semi-self-sufficient strategies that directly assist in economic circumstances.




## Potential Typologies:

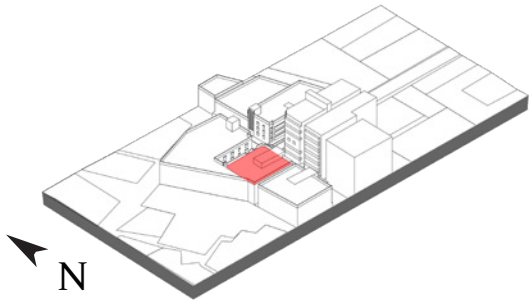
- Single family dwelling
- Multifunctional billboard
- Solar energy system
- Micro Garden
- Home Office
- Services

▲ Fig. 184. Southwestern Corner.

► Fig. 185. Southwestern Corner Diagram.

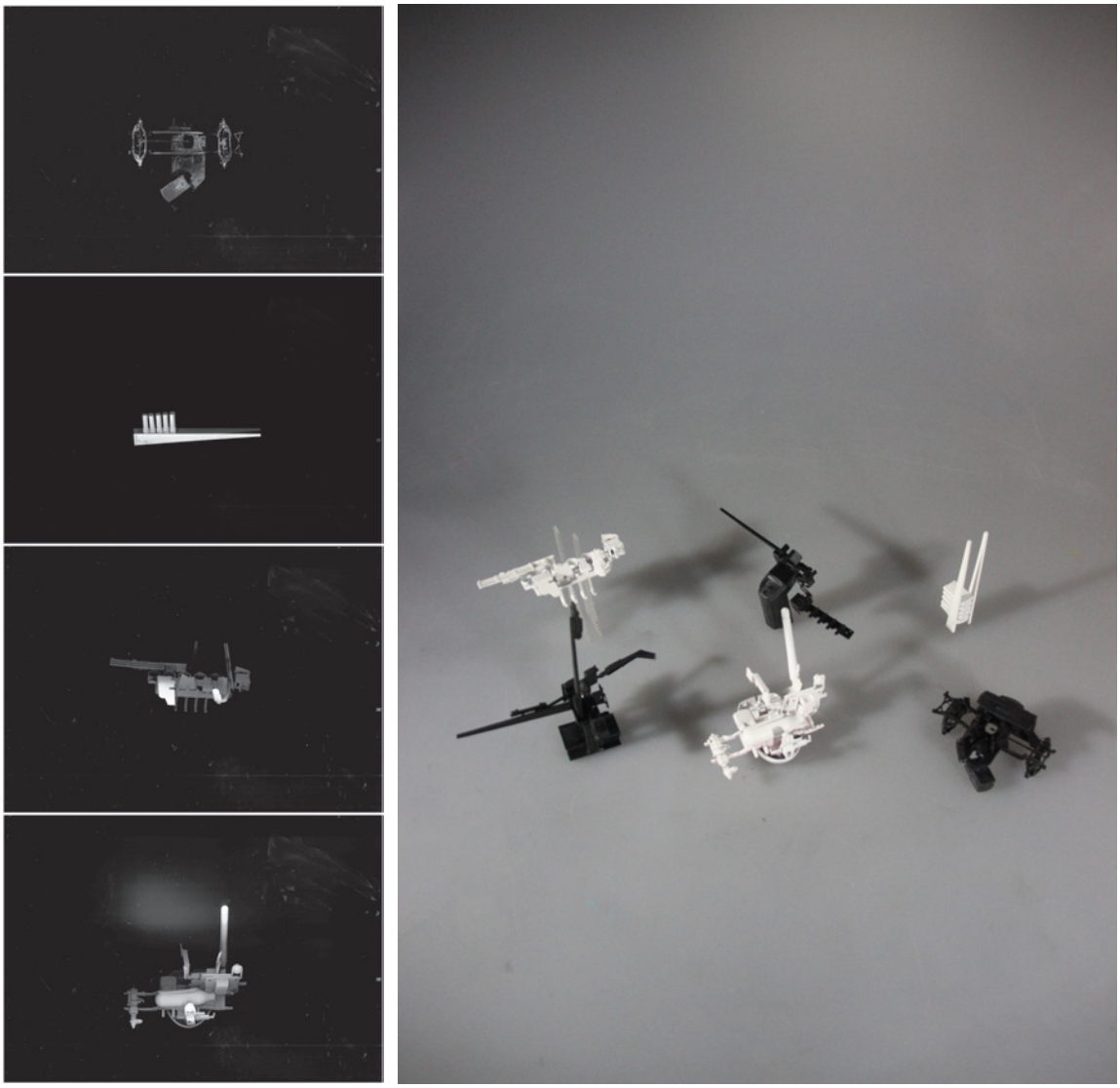
## Southwestern Corner

The third site of interest is on the southwestern corner of the intersection. The rooftop is the only one of the three sites chosen that does not have an existing extension, which provided a chance for new interpretation. The host building is an apartment block with a restaurant on the ground floor; to explore the limitations of the extensions culture, this investigation chooses to speculate the ownership of the rooftop to reside with the restaurant. Therefore, the typological and physical characteristics of this site provide opportunities to explore scale and commercial functional elements that can be incorporated. This relates to various cases this investigation has explored, such as the existing extensions that possess a garden and community gardens considered in Treasure Island and City Experiment in Two Actions. The implications of relating the ground floor of a building and its rooftop extension also consider the external elevator observed during the Flâneurie process. Being opposite the northwestern site, the site also possesses the same solar direction and signage opportunities on the eastern core that extrudes out. The host building also has a similar setting back of the corner as the northwestern site.




## Potential Typologies:

- Urban Farmhouse Restaurant
- Multifunctional signage
- Solar energy system
- Vegetation
- External Lift



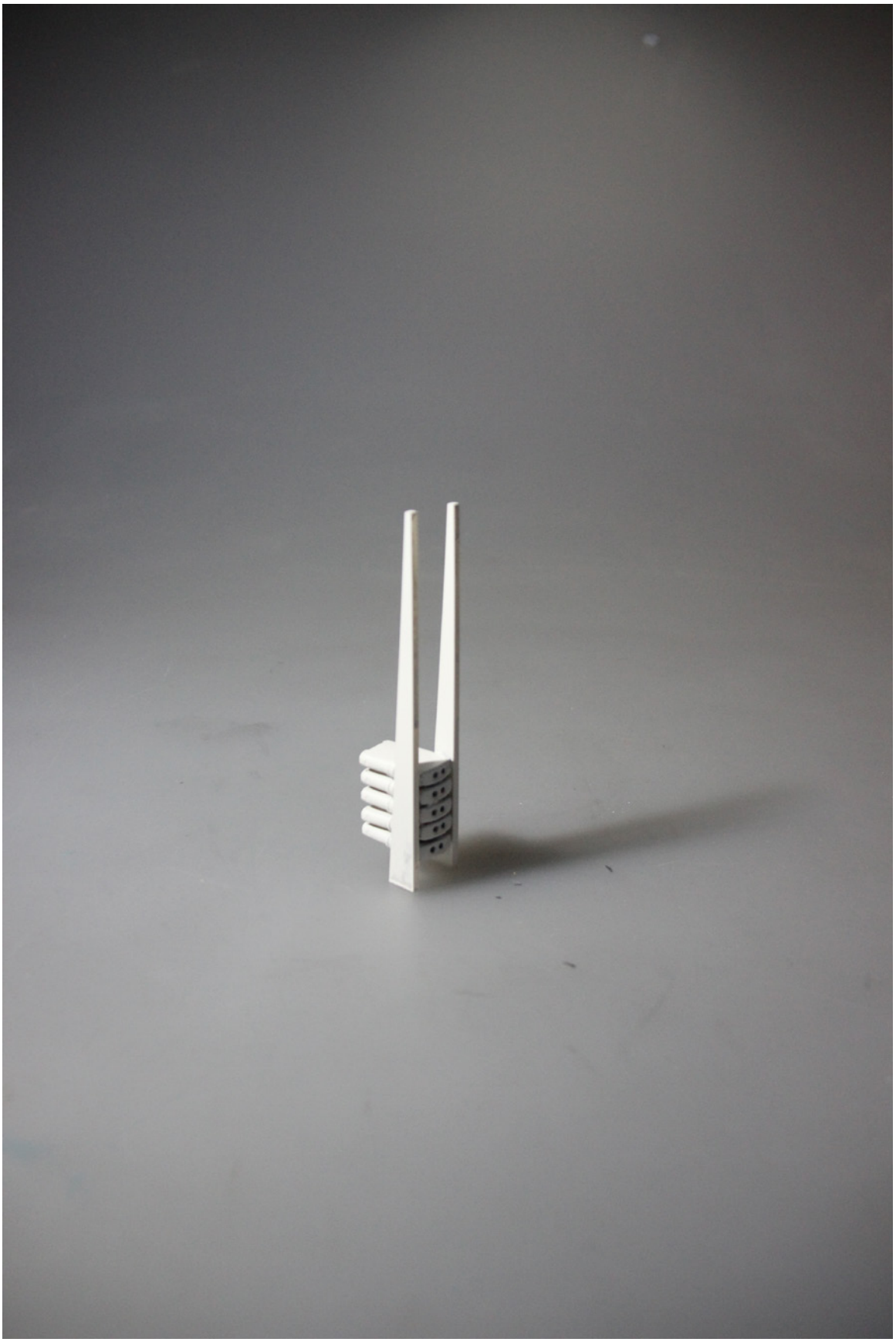
▲ Fig. 186. Matrix of Parti Models.

## Parti Models

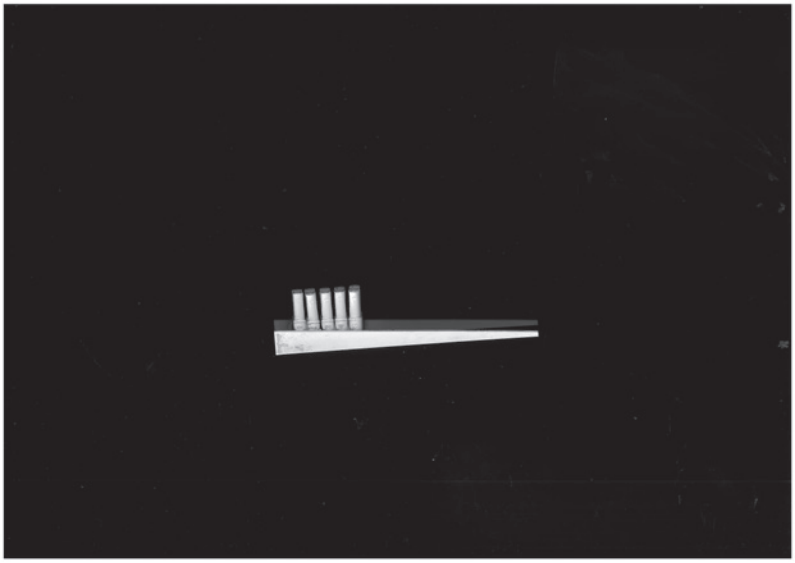
This series of parti models followed the same strategy as the models from DE1, and act as a development to the first series. The folded paper elements of the first series provided the individual models' volume and overall formal expression, which in turn dictated and influenced the architectural language of the outcome. As this design experiment has an intended architectural language, the paper elements were eliminated in the process of this series of parti models to produce a more honest notion of the configurations.

This series of parti models presented a dialogue between each of the elements within. The configuration of these once operable parts initiated compositional thinking that is considered in the iterative exploration of this design experiment. By reconfiguring these once operable elements, the models enabled speculations for newly adopted functions.

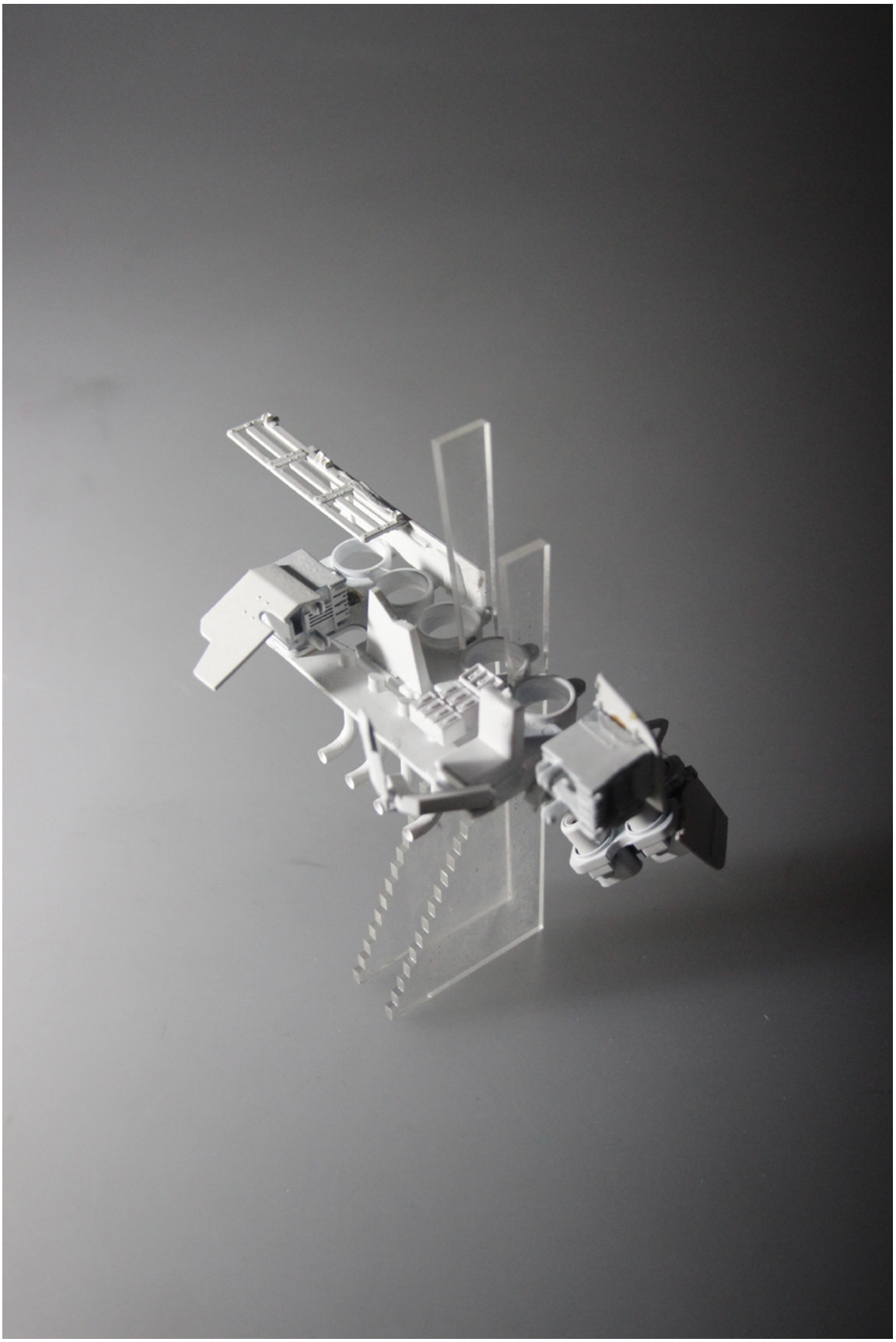
▲ Fig. 187. Collage of Parti Models.



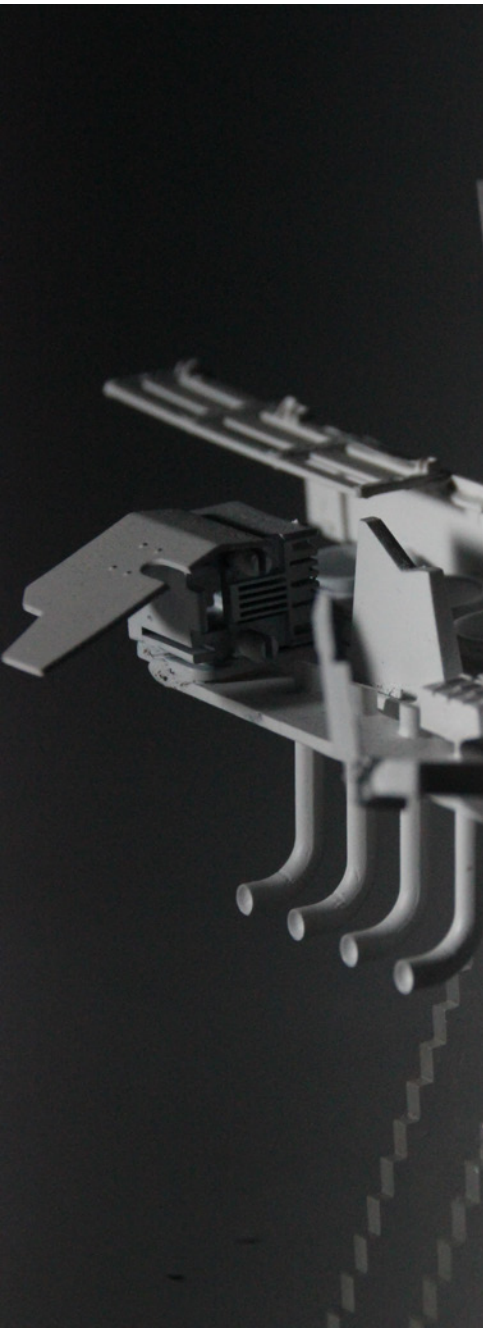
▲ Fig. 188. Collage of Parti Models.



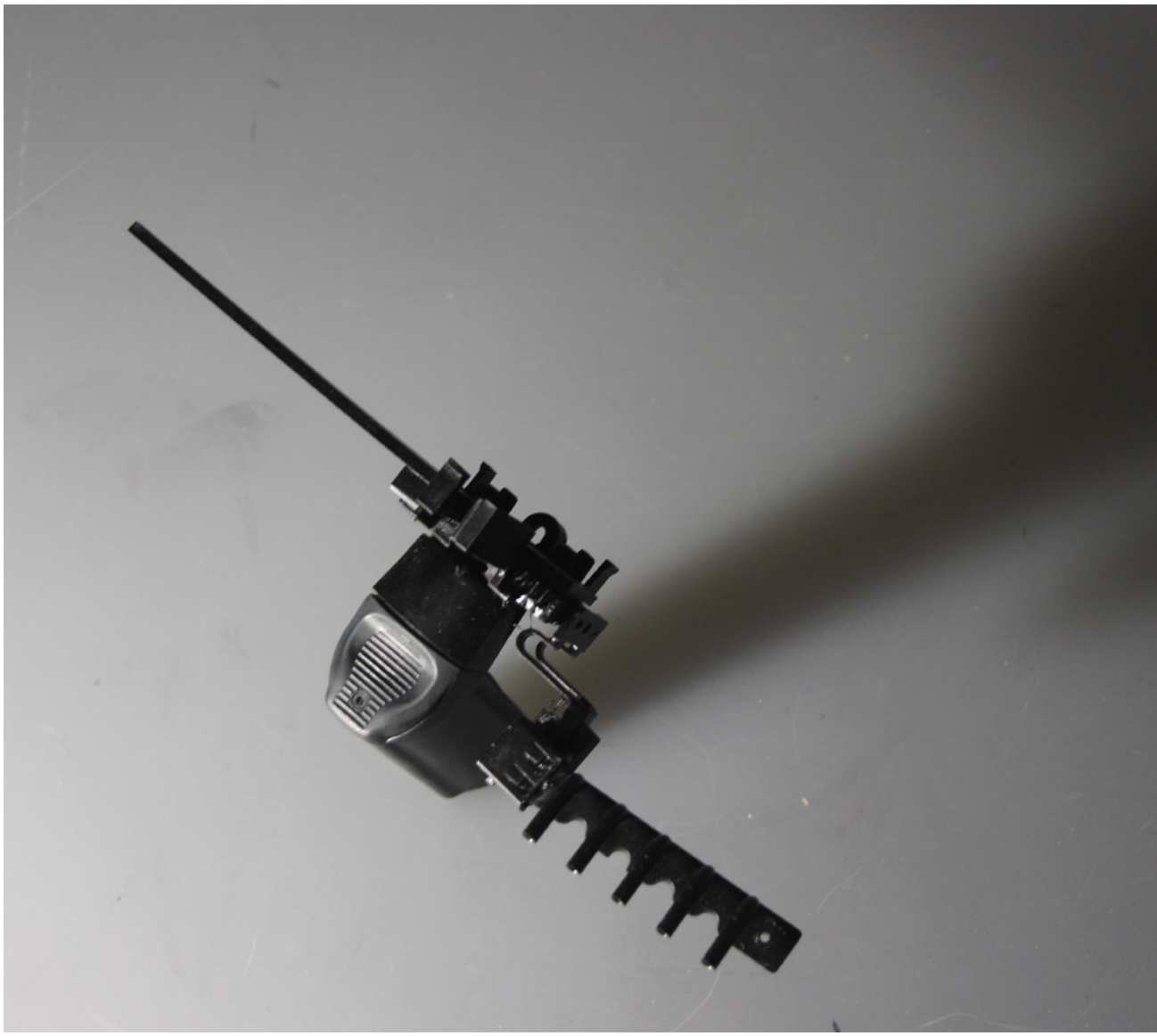
▲ Fig. 189. Collage of Parti Models.



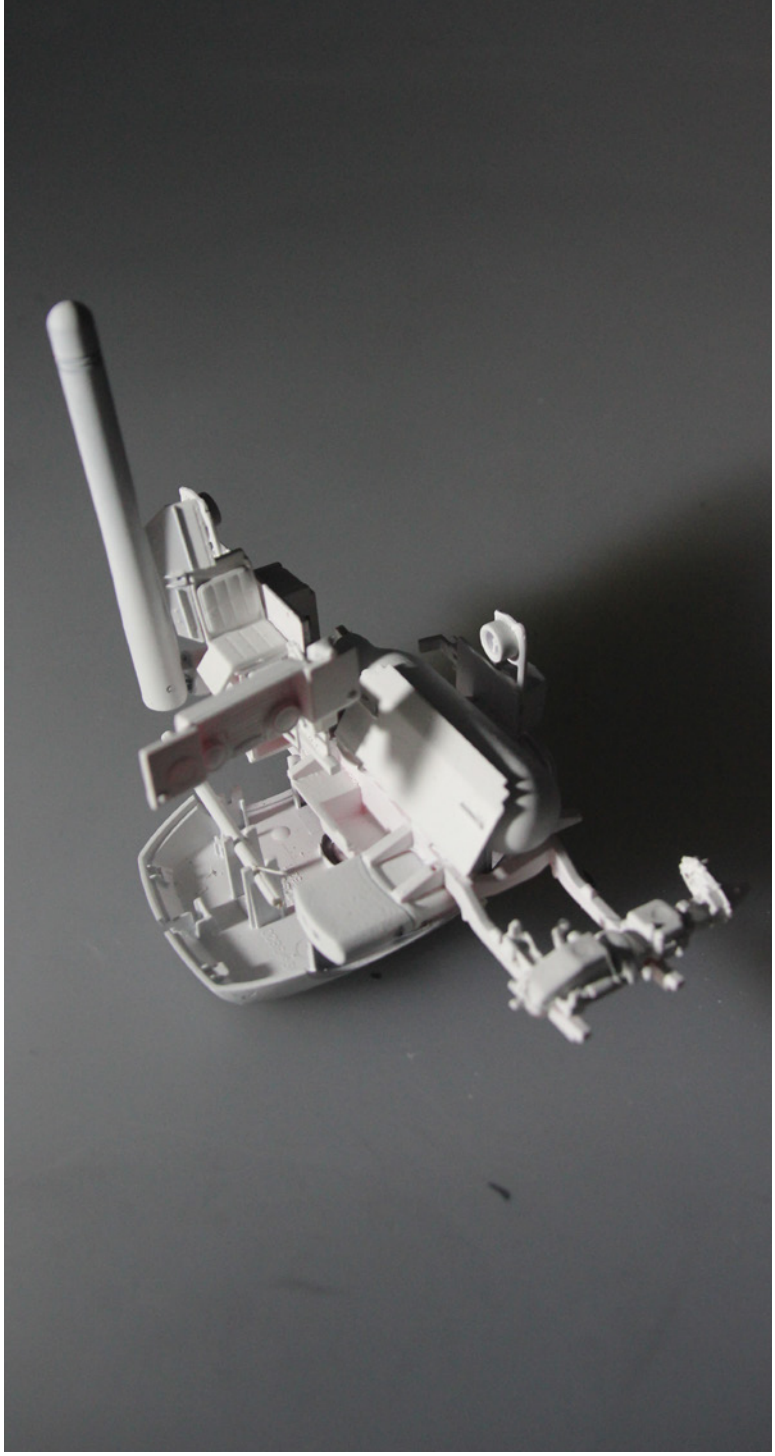
▲ Fig. 190. Collage of Parti Models.

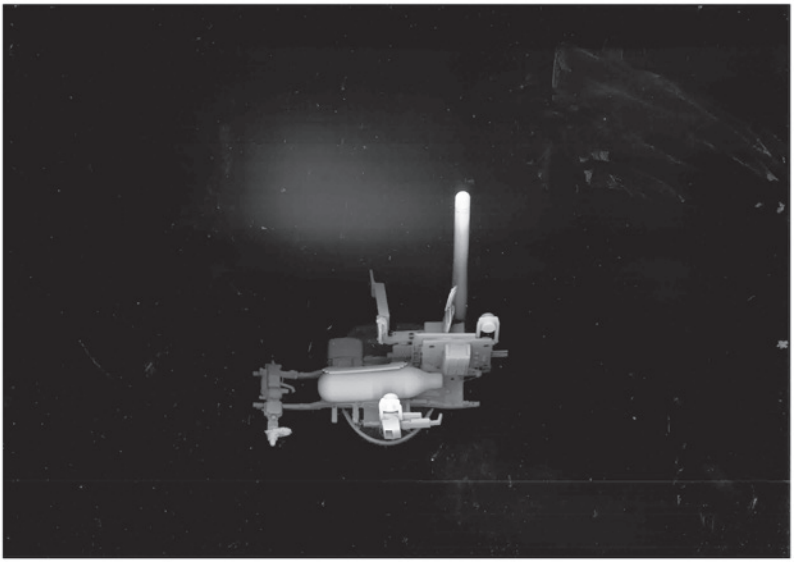


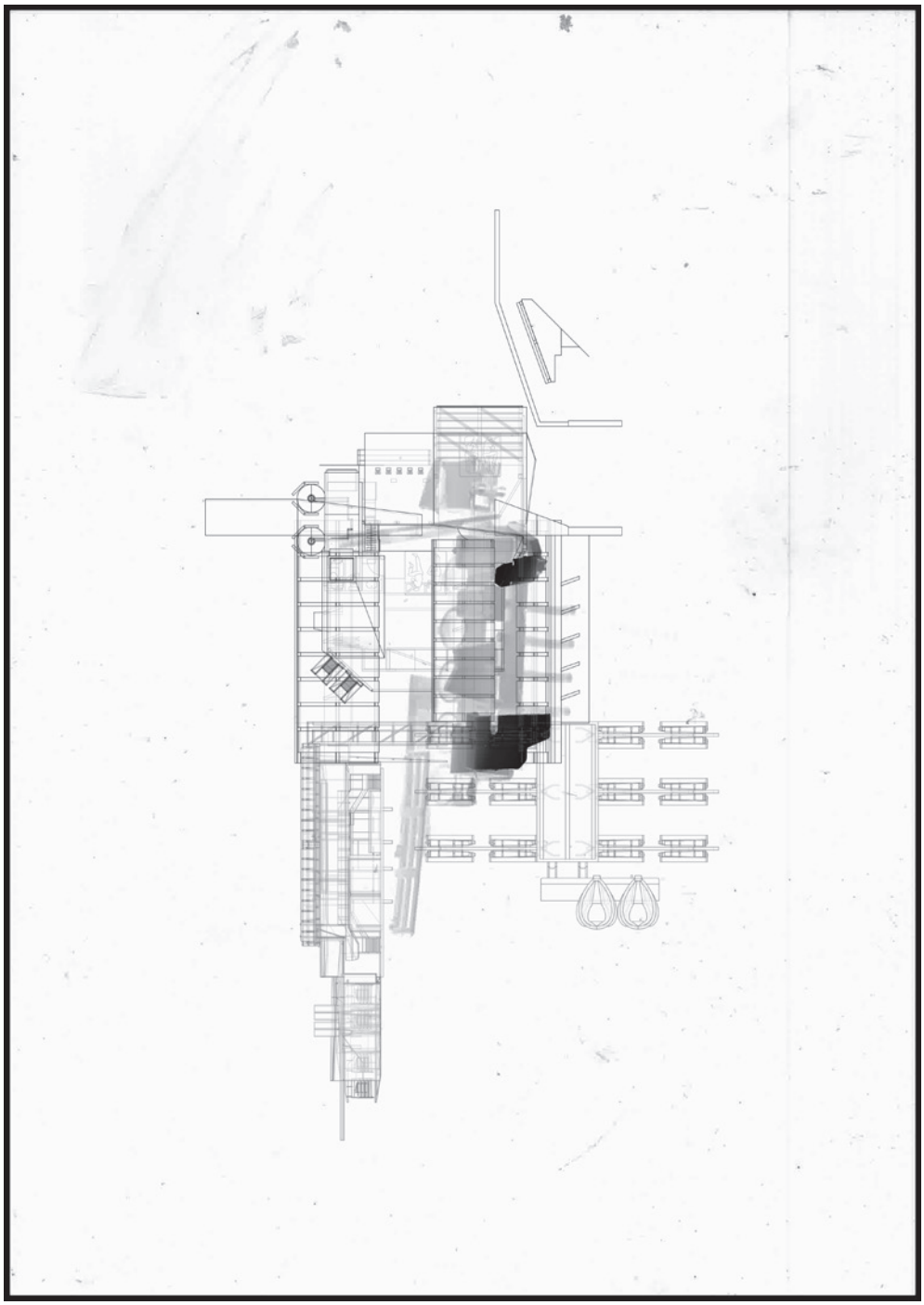
▲ Fig. 191. Collage of Parti Models.



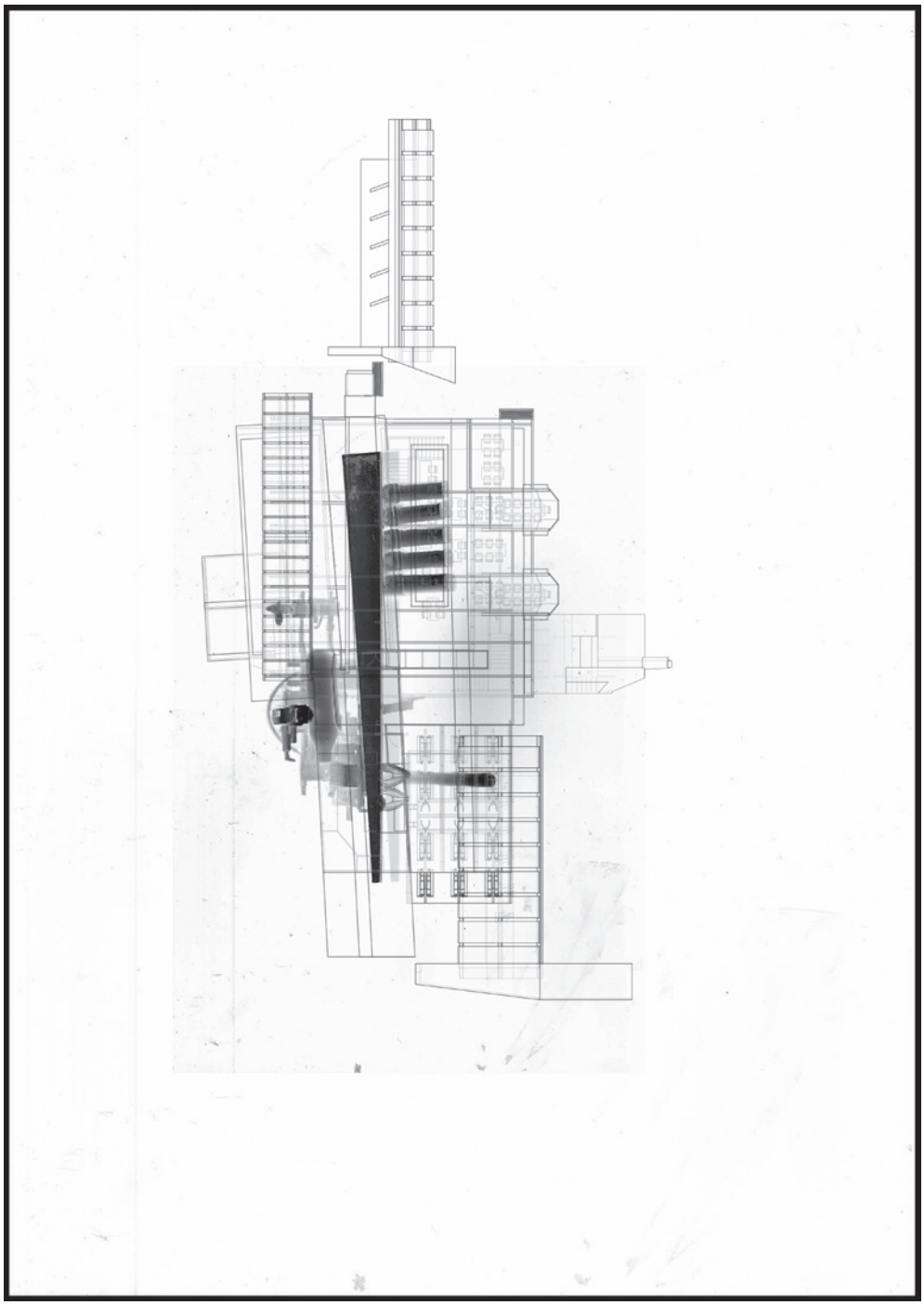
▲ Fig. 192. Collage of Parti Models.





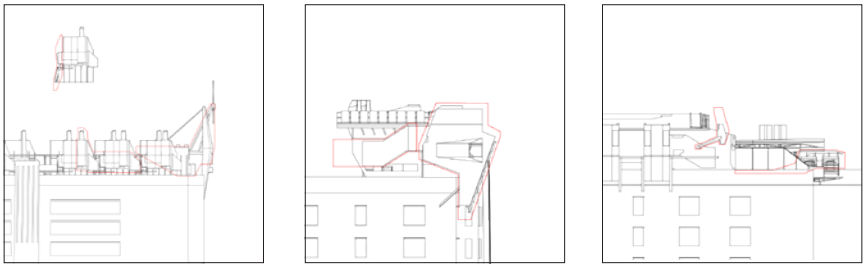


▲ Fig. 193. Palimpsests of Parti Models.



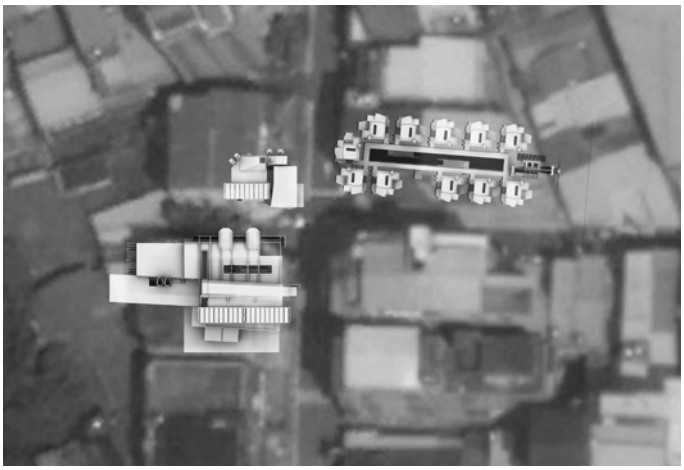
▲ Fig. 194. Palimpsests of Parti Models.

# Design Experiment Three

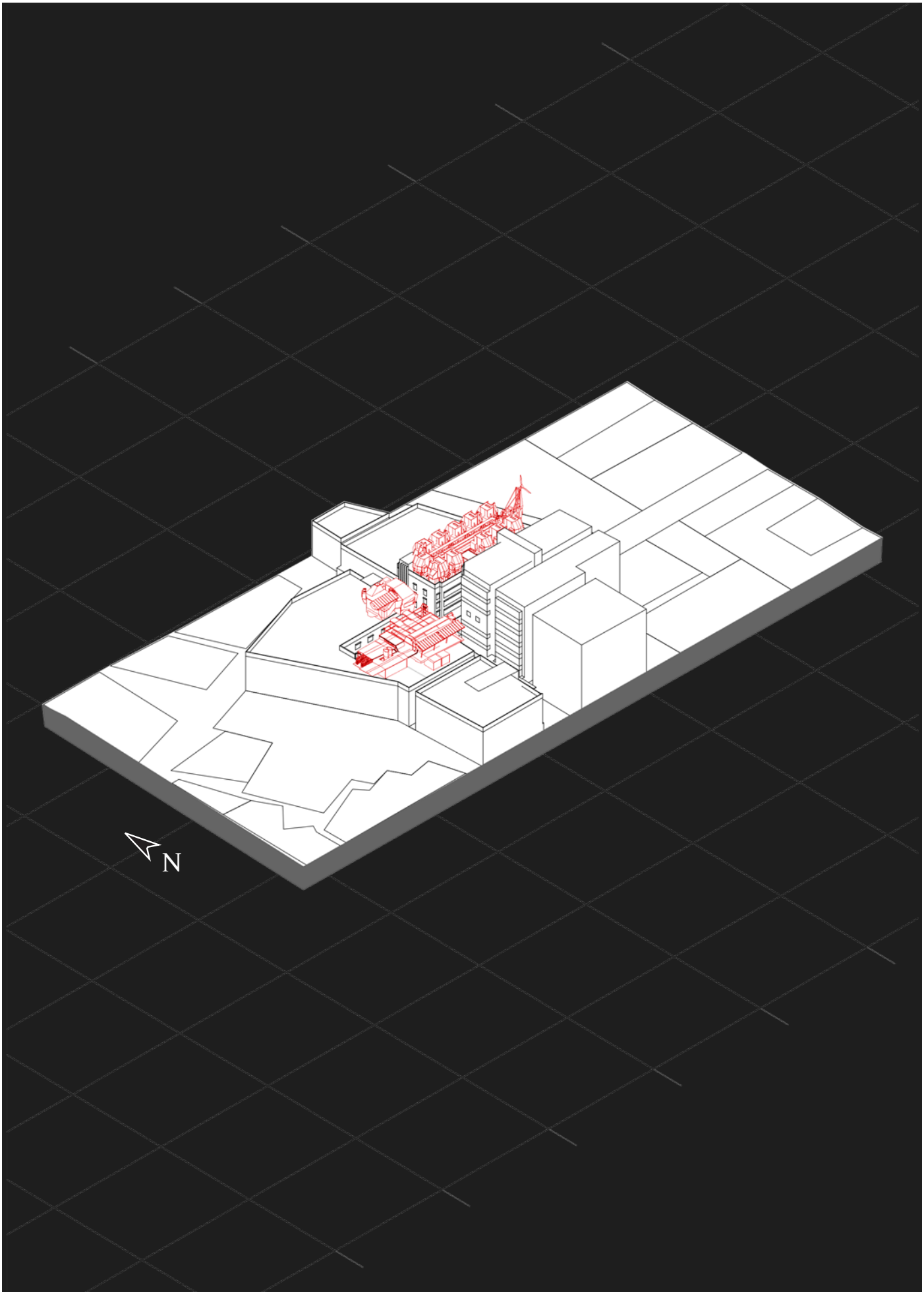


1 2 3

The typology of the three sites was determined by the site analysis, whether providing an alternative to the existing extension or speculating on a new typology. The investigation proposes the intervention on the southeastern corner to be a Studio Apartment Complex extension, the northwestern corner to be a two-bedroom Dwelling extension and finally the southwestern corner an Urban Farmhouse Restaurant extension. To push the application of the architectural language, the natures of the three interventions range from the intimate to the public. The site and chosen typology enable different advantages and suitable applications of functionality. Following the interpretation of John Hejduk and Plug-in City's interpretation of architecture as components, operable spaces within the architecture were considered as interrelated elements.



▲▲ Fig. 197. DE3 Thumbnails.
▲ Fig. 195. Site Plan.
► Fig. 196. Site Plan Diagram.


N

# Studio Apartment Complex

The Studio Apartment Complex explores the possibilities of restricted spaces and attempts to derive a semi-self-sustaining complex, which keeps the cost of running low. This is proposed as an alternative to the rooftop studio apartment trend within the extensions culture of Taiwan. The formal language is directly derived from the undulating nature of the architectural vocabulary developed.

The final design of the Studio Apartment Complex consists of eleven two-storey micro-apartment units connected by a looping passage with the roof serving as a rainwater collector. Entrance to the living quarters is elevated with the lower level housing a micro-hydroponic system providing vertical gardens for vegetation. The entire complex possesses a communal wind turbine energy generator directed towards the wind tunnel. The interior of the unit is an open multi-functional space, with an elevated sleeping area that provides a pullout dining table by the kitchen. The kitchen is imbedded within the wall with an extractor chimney above. The ensuite is a volume protruding out of the side of the unit. The wardrobe utilises a dehumidifying grey water system collecting water for the hydroponic system below.

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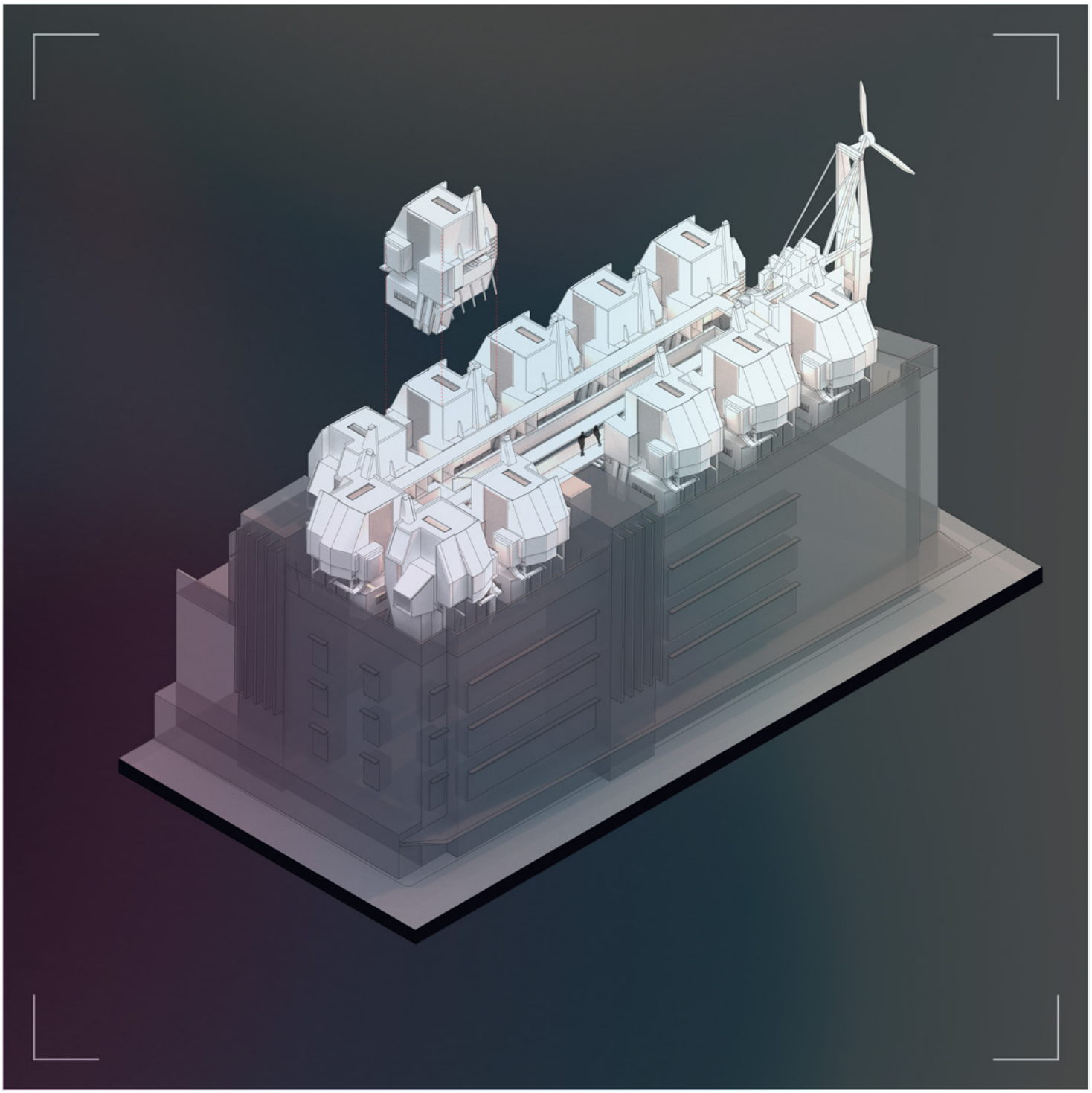
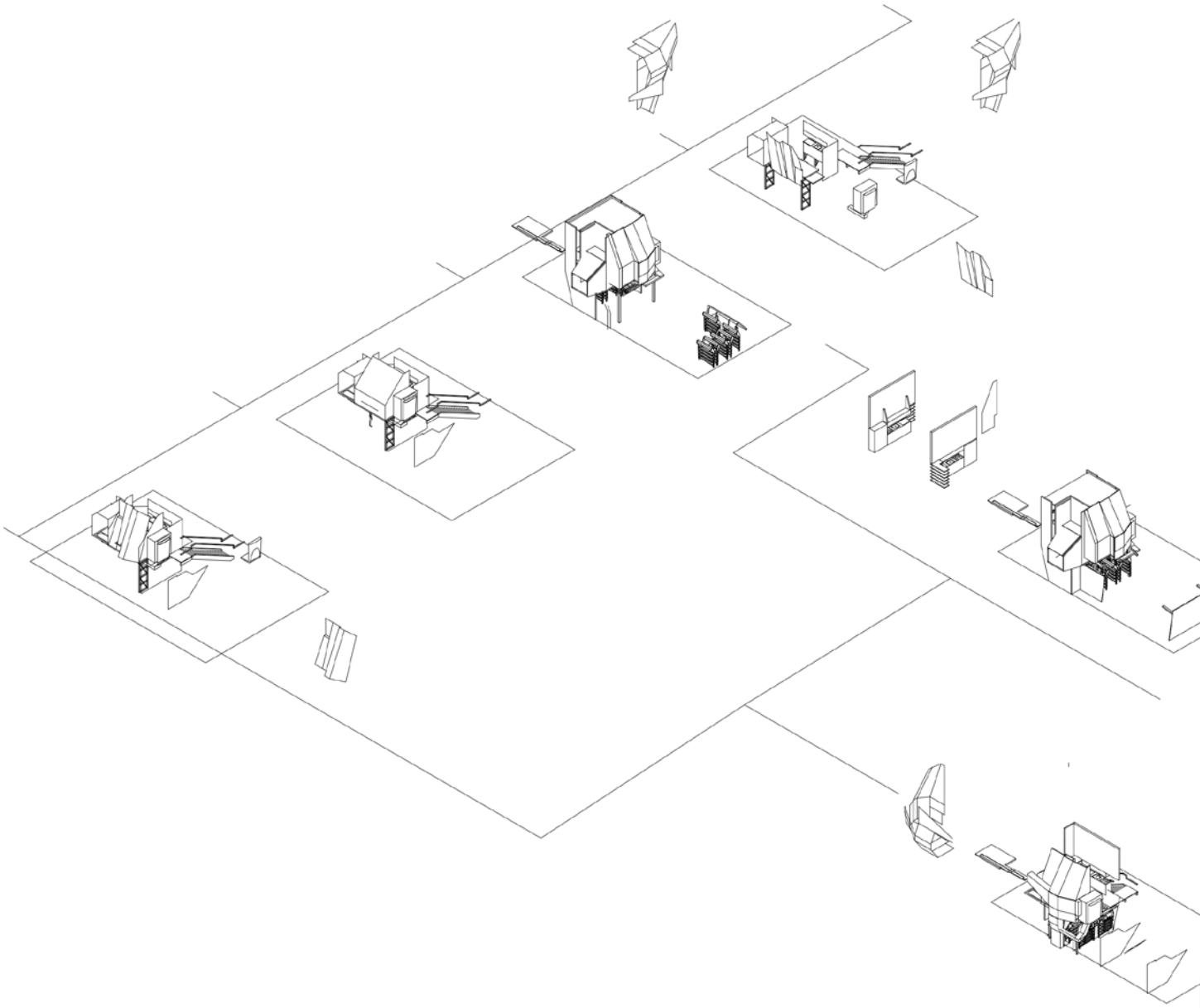
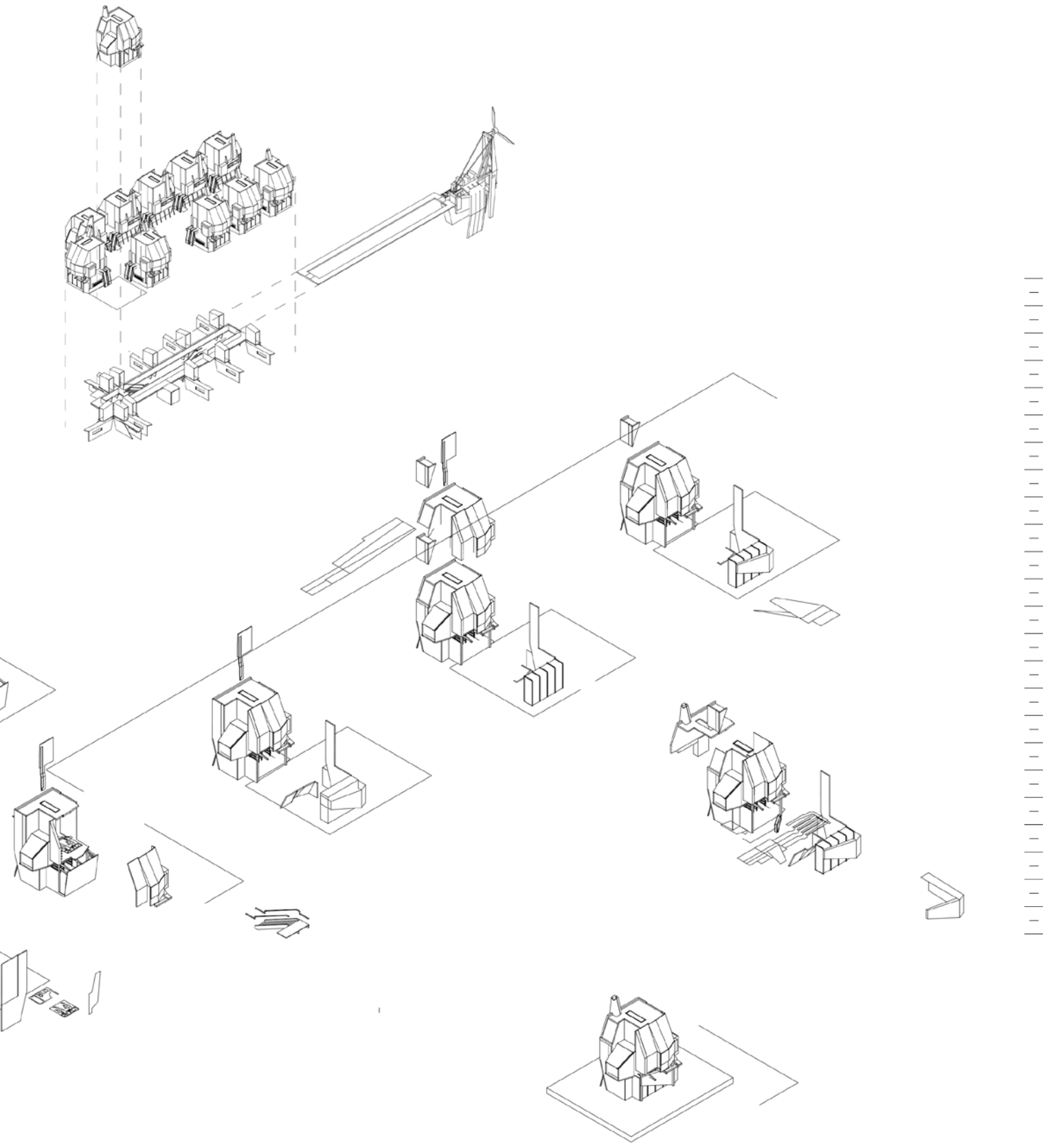
► Fig. 198. Studio Apartment Complex Axonometric Drawing.

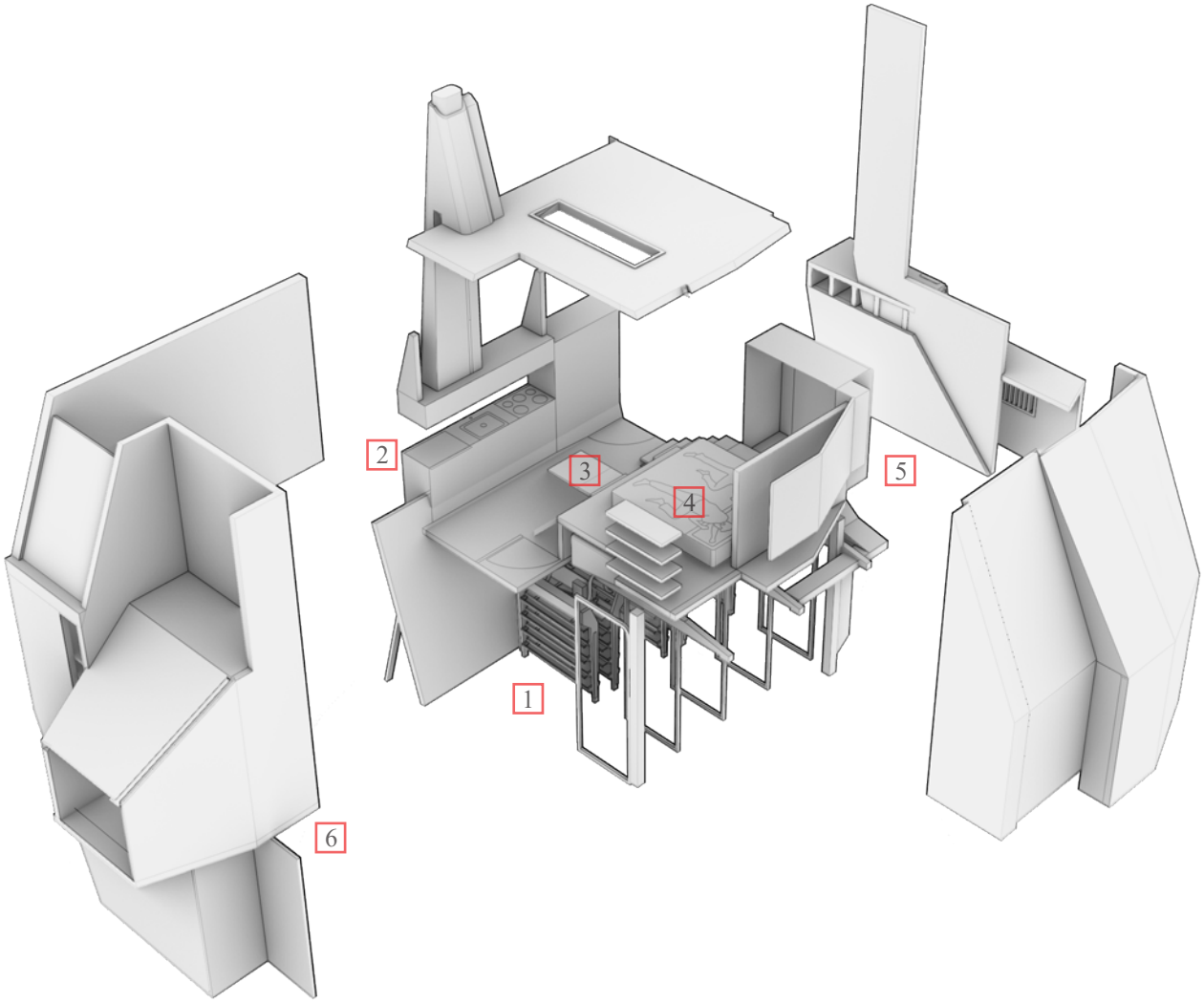




Studio Apartment Complex Iteration Study

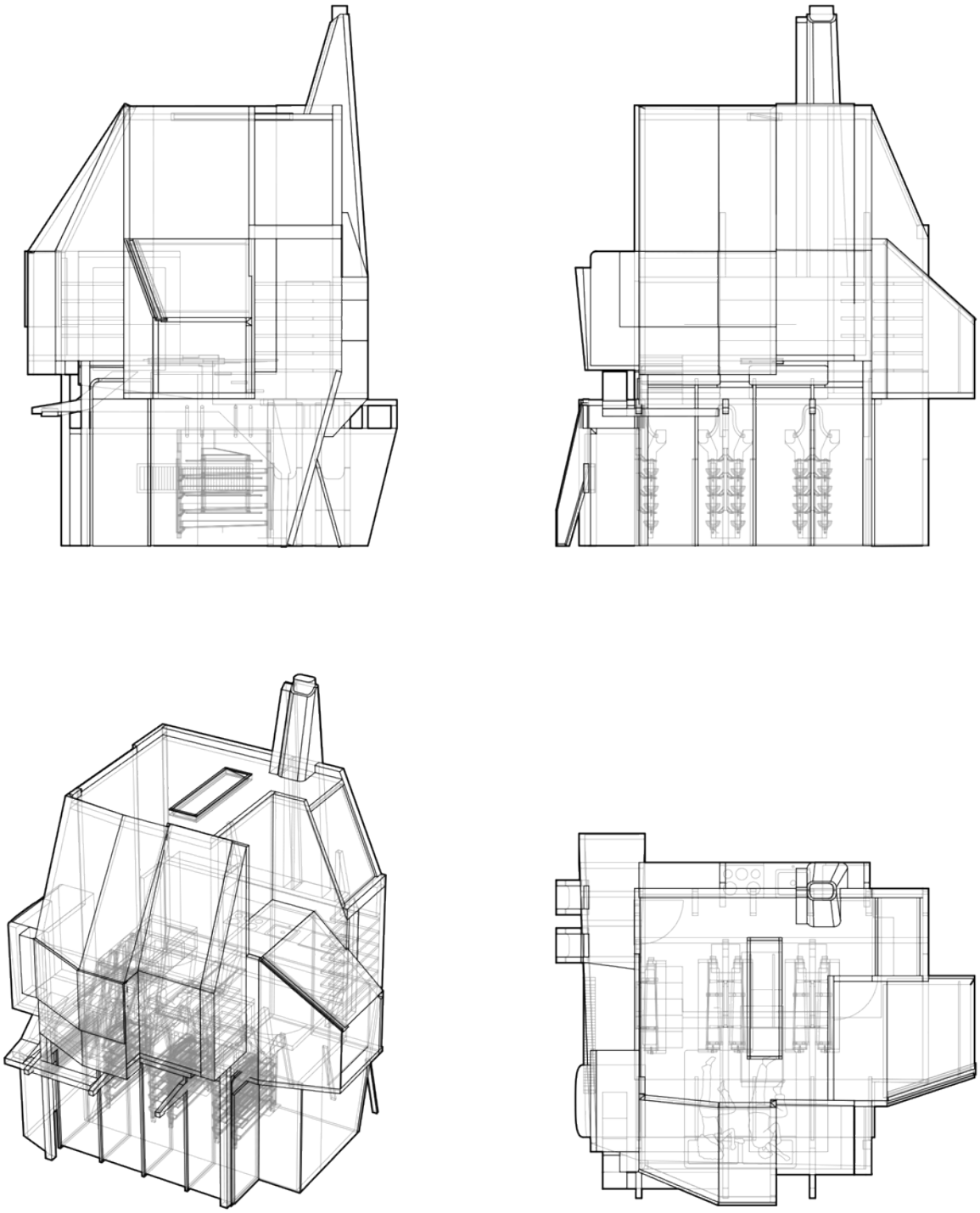


▲ Fig. 199. Studio Apartment Complex Iterative Study.

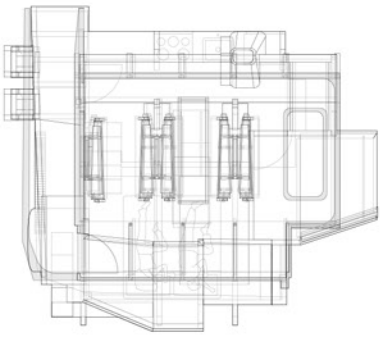


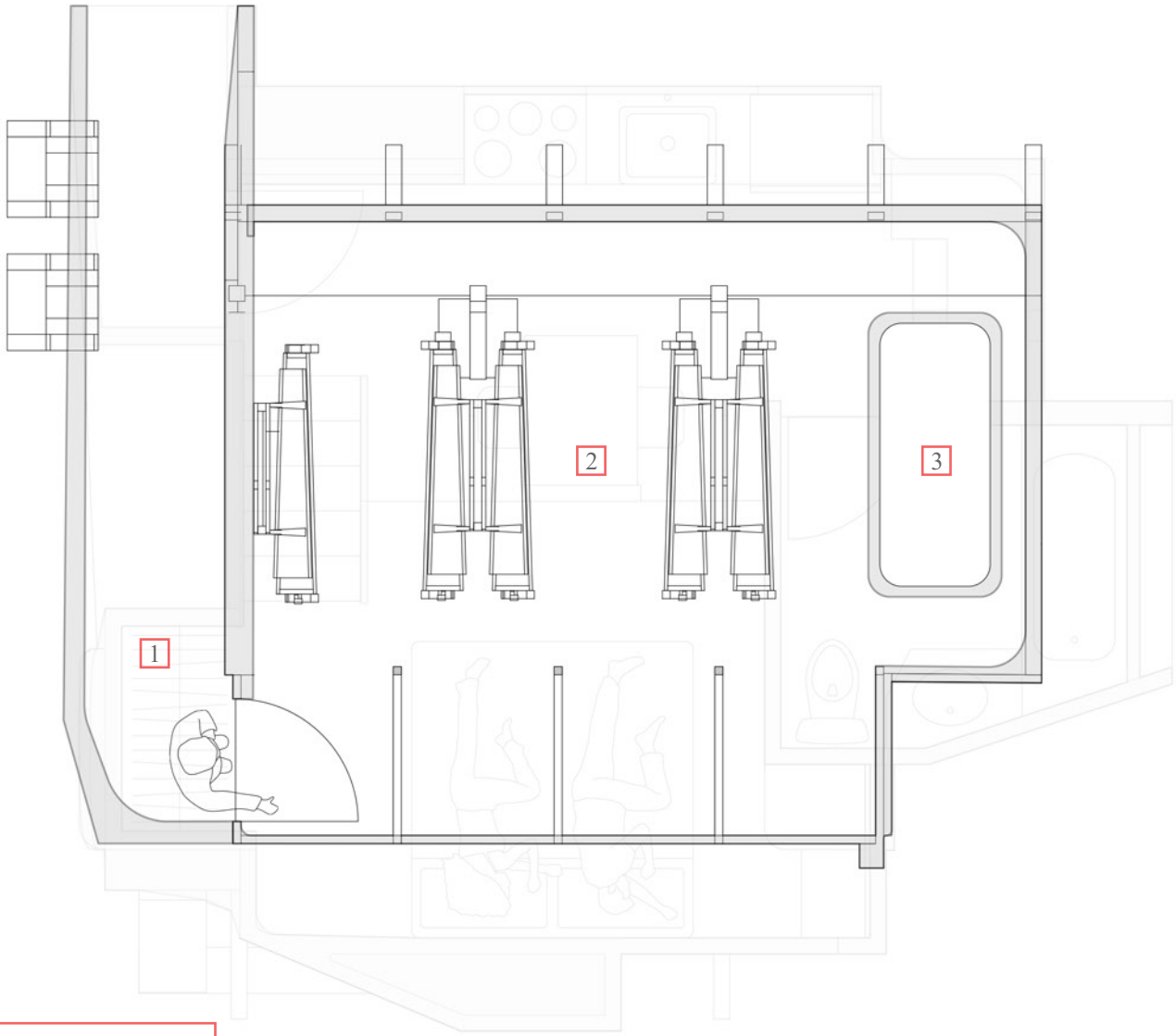

| | |
|---|---|
| 1 | Micro-hydroponic System |
| 2 | Kitchen Attachment |
| 3 | Extendable Dining Table |
| 4 | Sleeping Area |
| 5 | Dehumidifying Closet |
| 6 | Ensuite |

▲ Fig. 200. Studio Apartment Exploded.

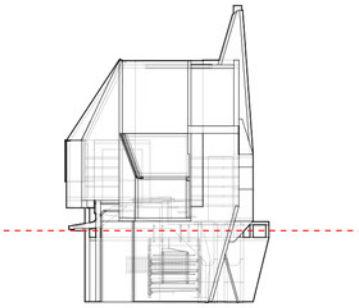


▲ Fig. 201. Studio Apartment Drawing Set

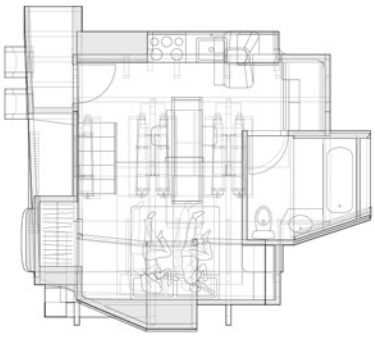


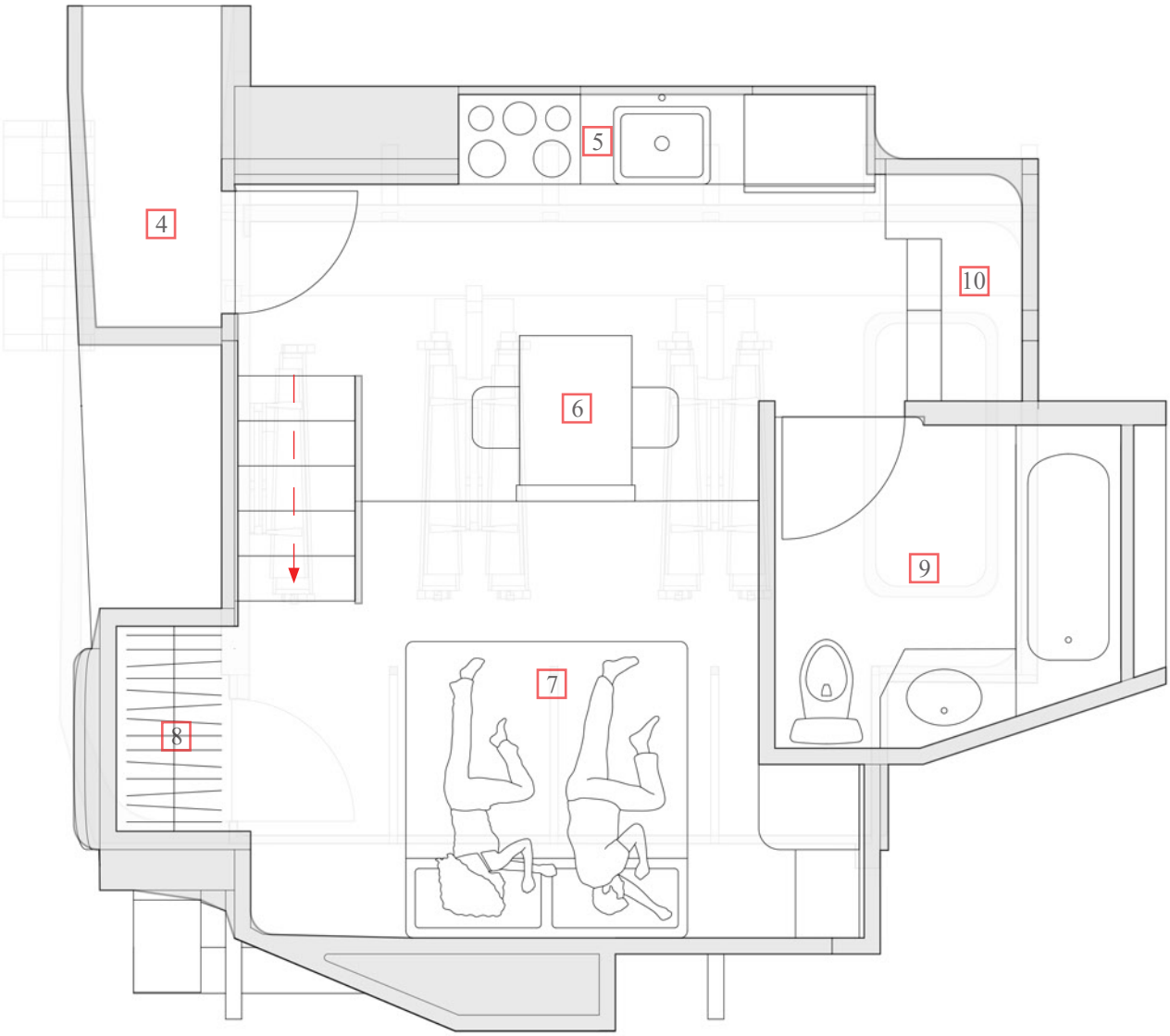



| | |
|---|---|
| 1 | Entrace to Hydroponics Level |
| 2 | Micro-hydroponic System |
| 3 | Water Storage |
| 4 | Entrance to Apartment Level |
| 5 | Kitchen Attachment |
| 6 | Extendable Dining Table |
| 7 | Sleeping Area |
| 8 | Dehumidifying Closet |
| 9 | Ensuite |
| 10 | Storage |



▲ Fig. 202. Studio Apartment Lower Level Plan.





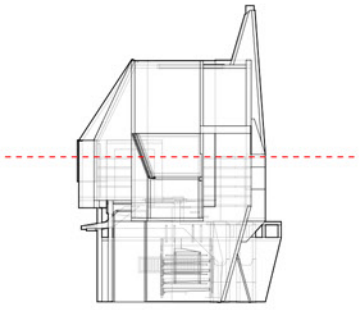
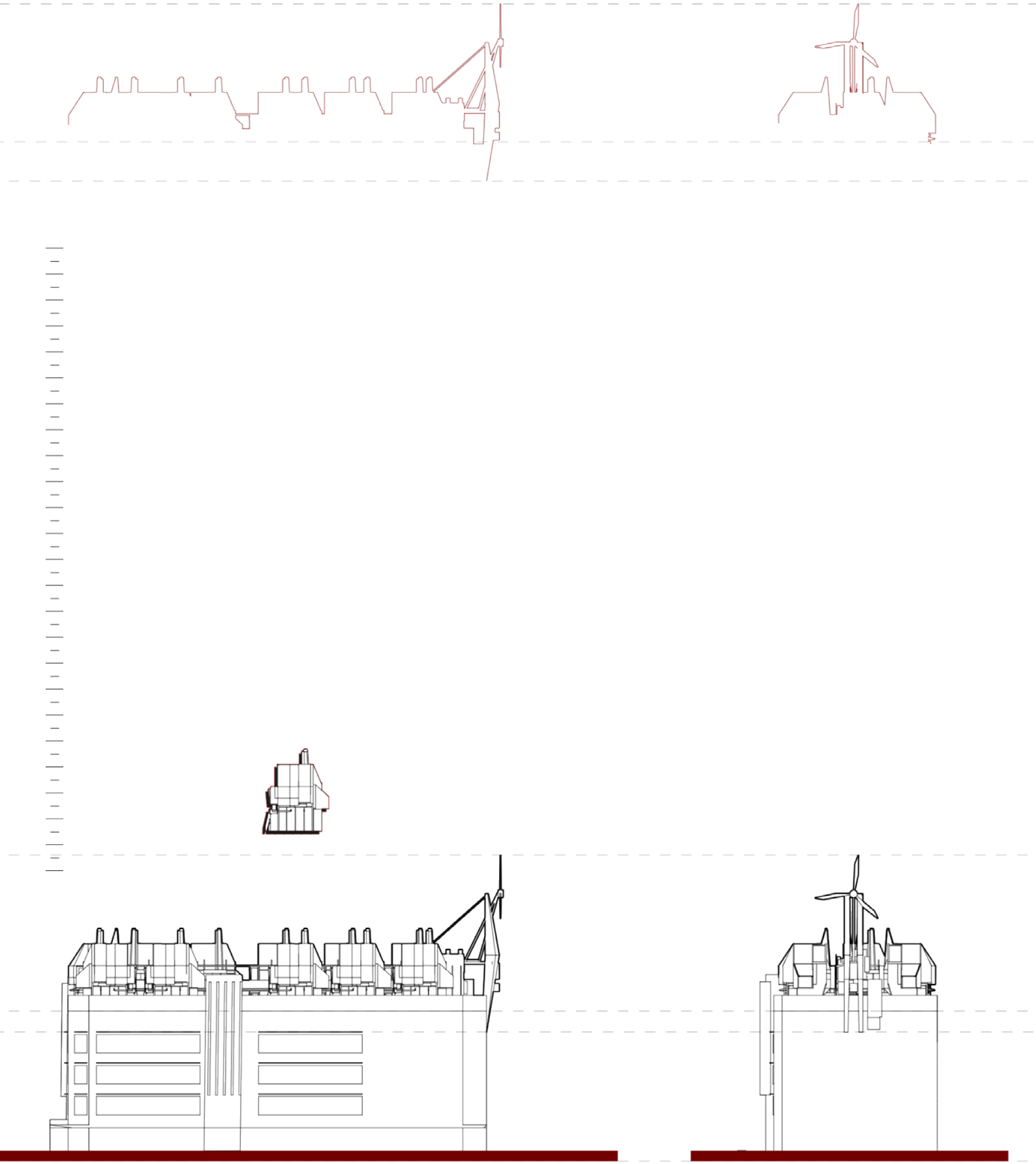



Fig. 203. Studio Apartment Upper Level Plan.



▲ Fig. 204. Studio Apartment Complex Elevataions

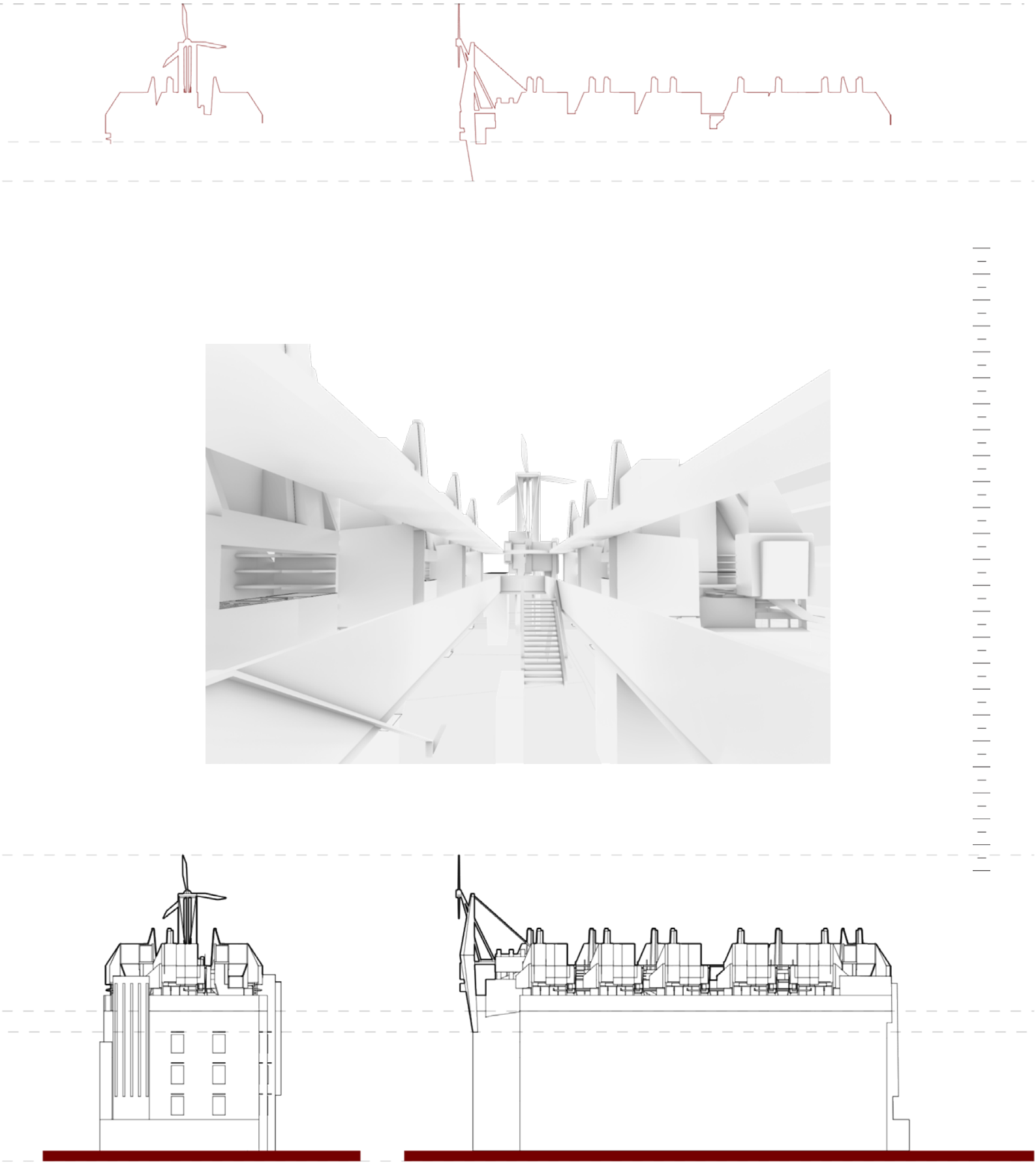
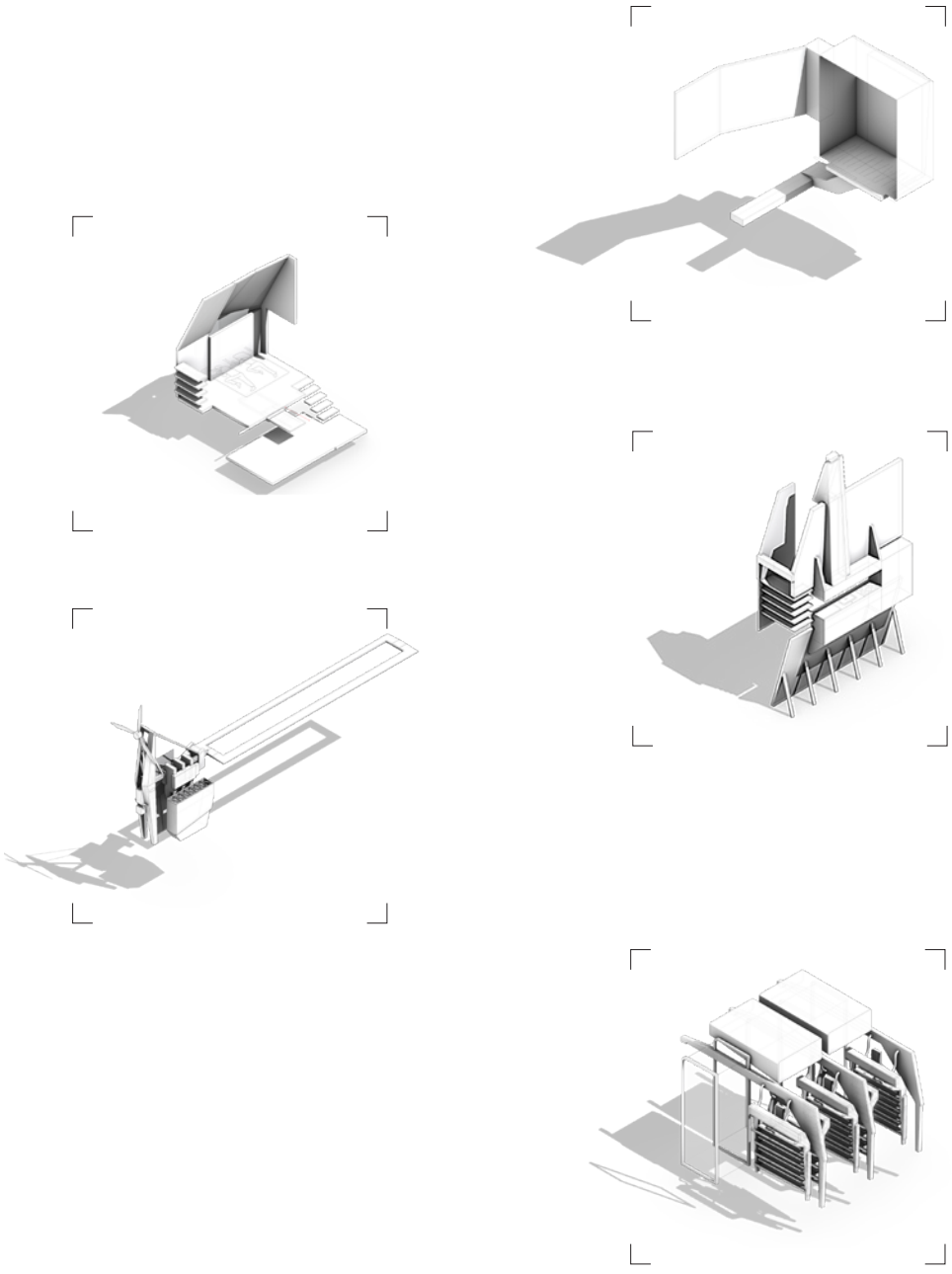


Fig. 205. Studio Apartment Drawing Perspective.

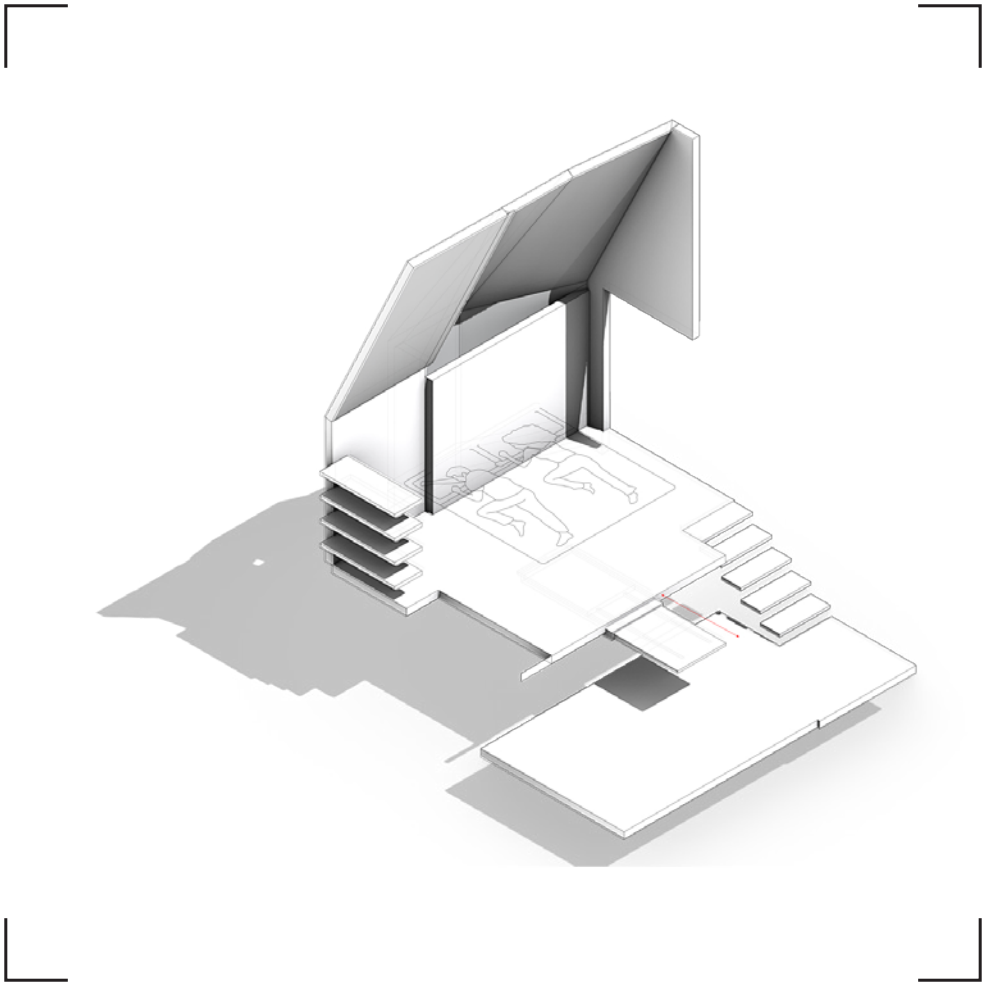
# Operable Elements

The operable elements derived through this design test are:

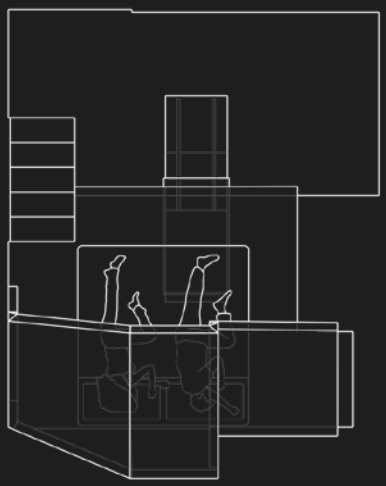
1. Bedroom with Extendable Dining Table
2. Grey Water Dehumidifier Closet
3. Micro Kitchen Attachment
4. Wind Turbine Generator
5. Micro-hydroponic System

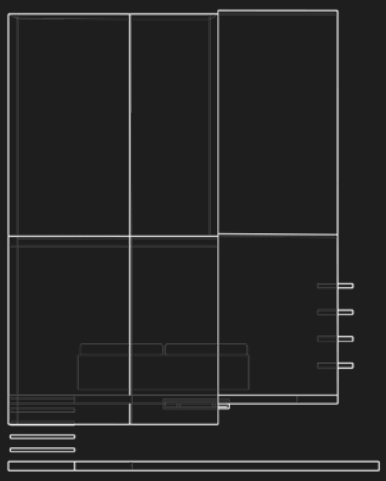


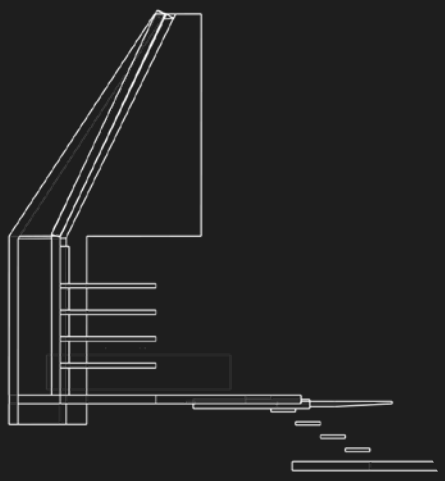
▲ Fig. 206. Studio Apartment Operable Elements.

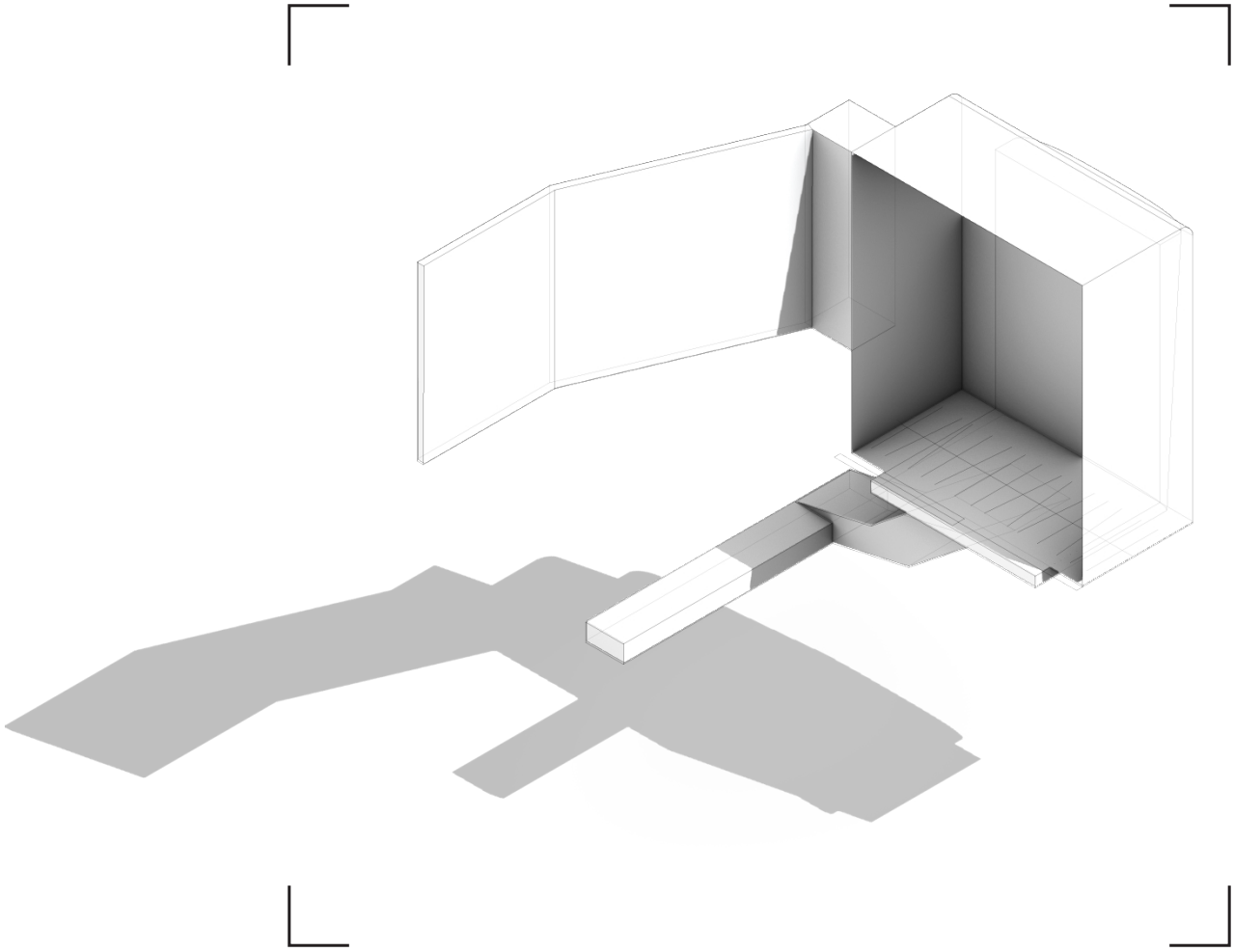


▲ Fig. 207. Bedroom with Extendable Dining Table
► Fig. 208. Bedroom with Extendable Dining Table Drawing Set.

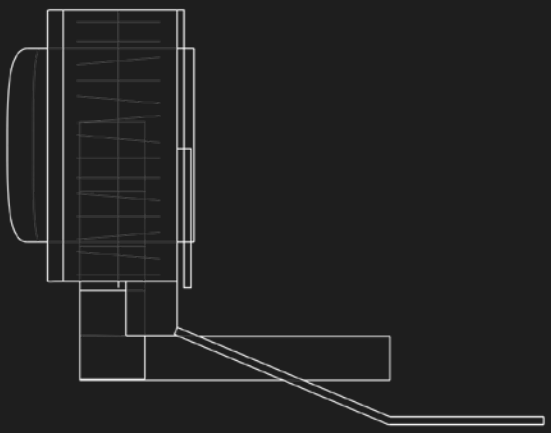


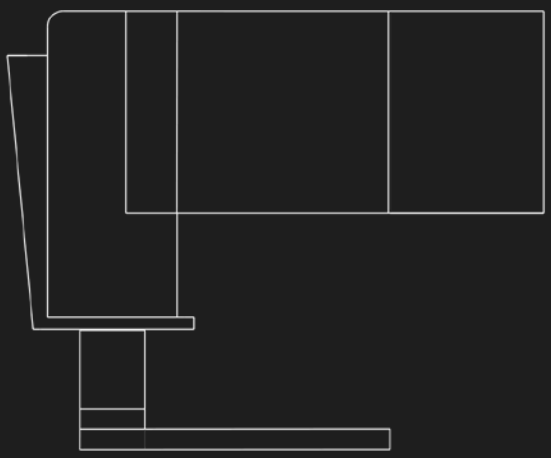


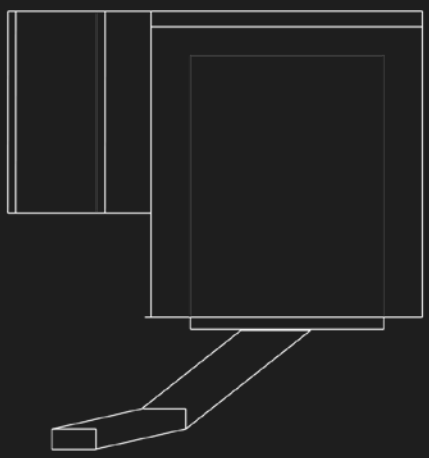


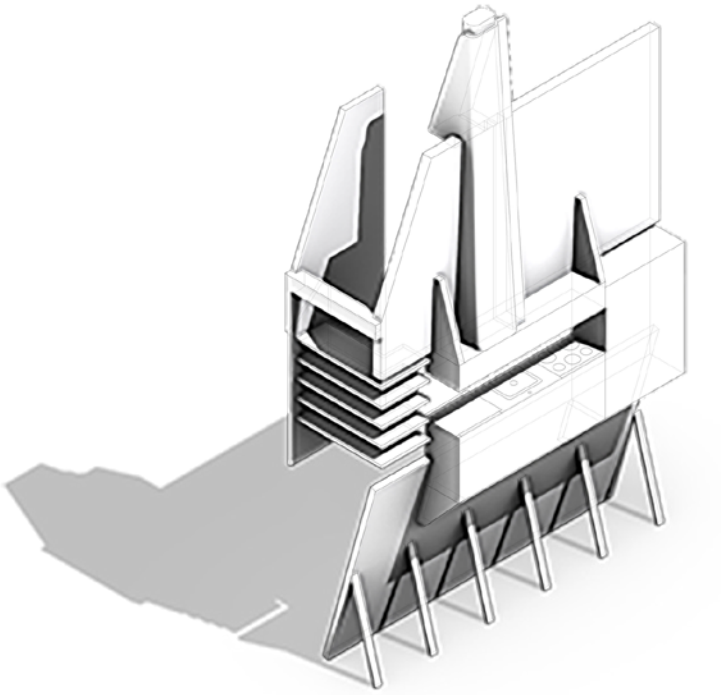


▲ Fig. 209. Grey Water Dehumidifier Closet.
► Fig. 210. Grey Water Dehumidifier Closet.Drawing Set.

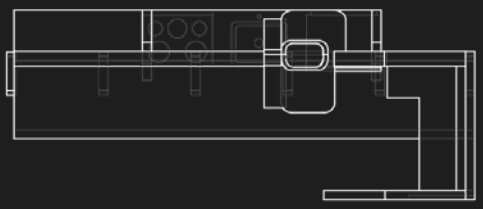


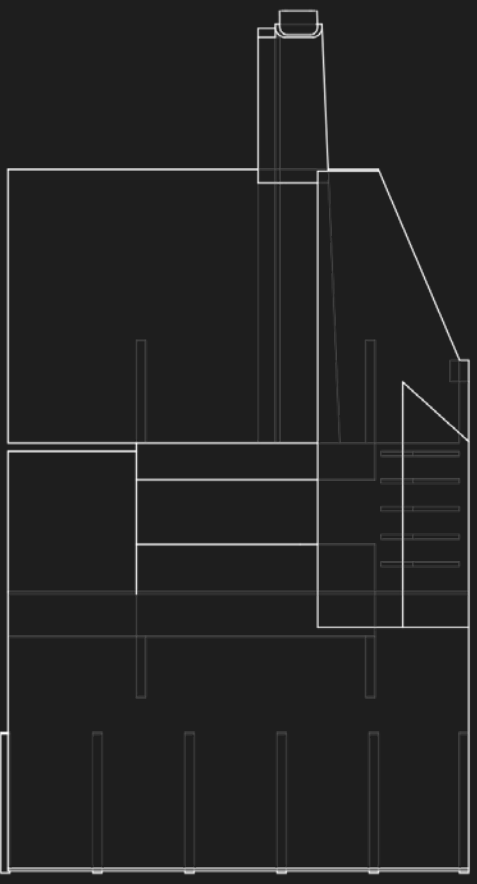


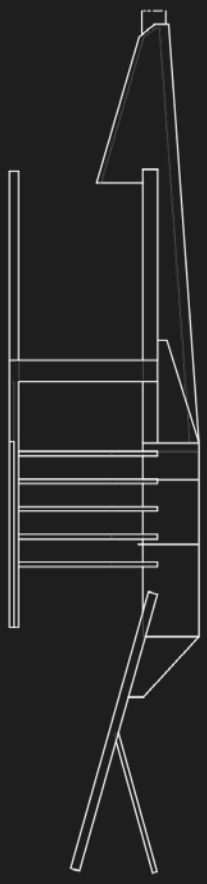


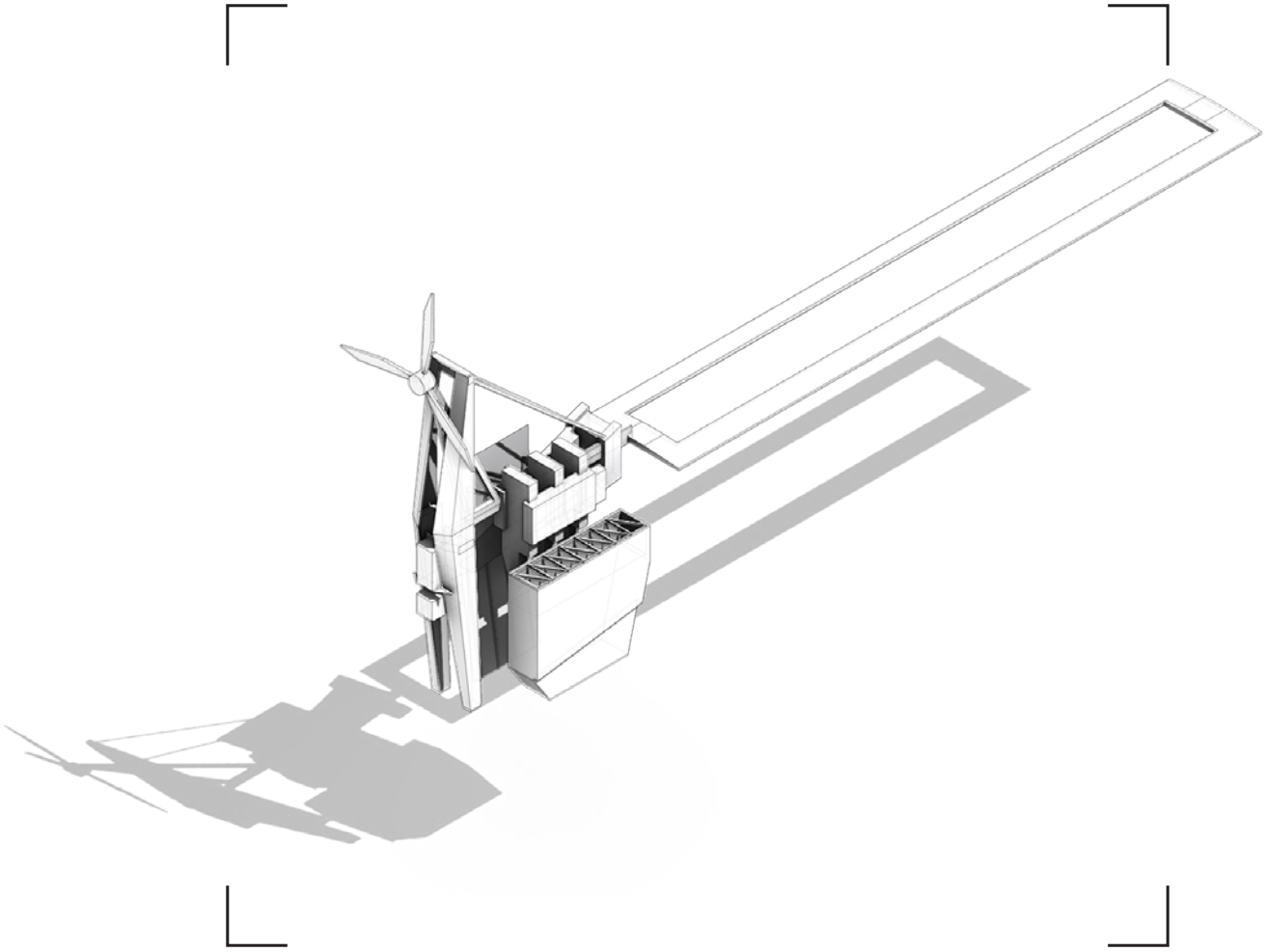


▲ Fig. 211. Mirco Kitchen Attachment.
► Fig. 212. Mirco Kitchen Attachment Drawing Set.

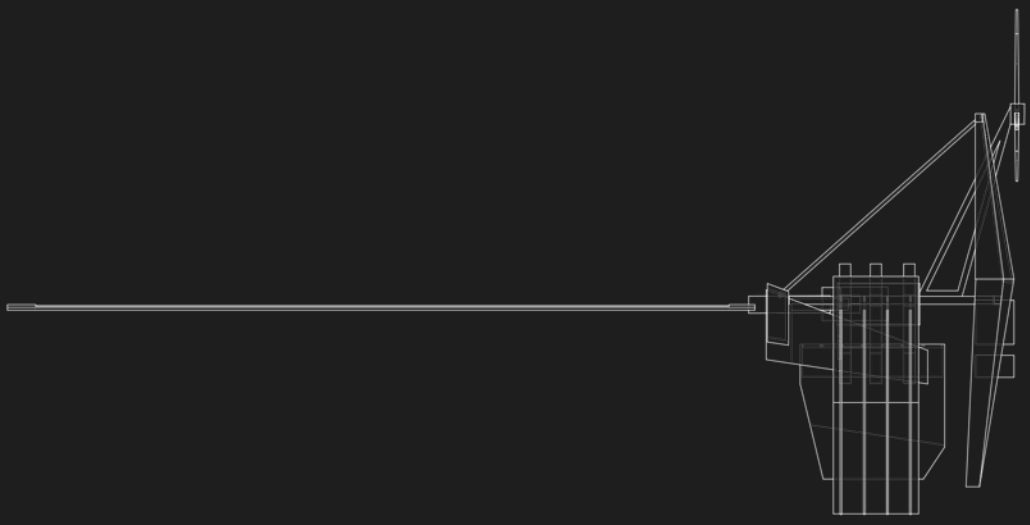


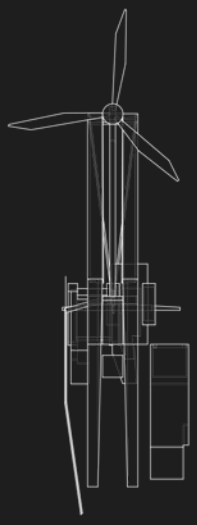


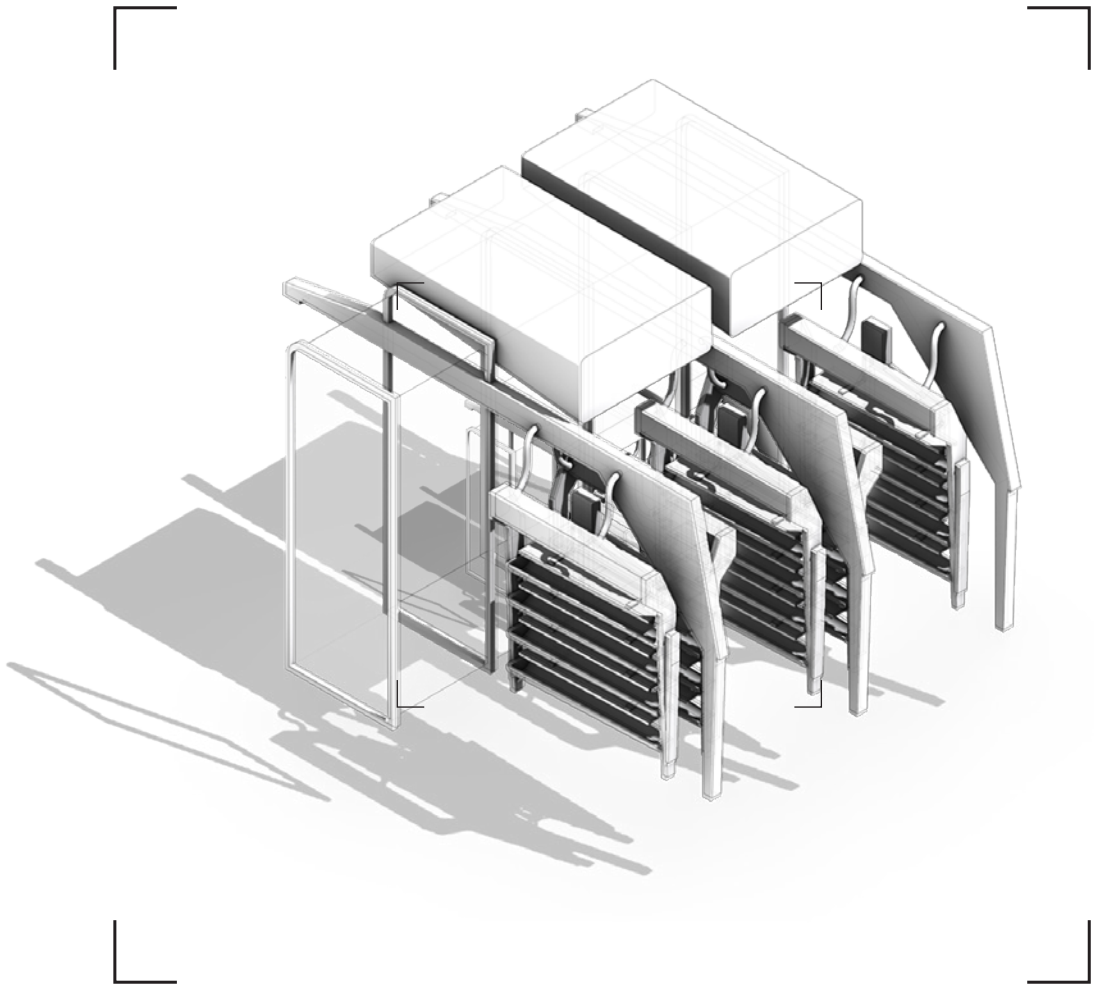




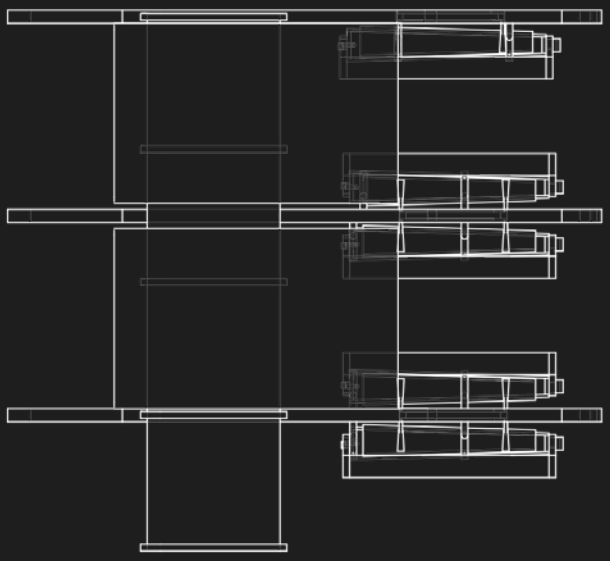
▲ Fig. 213. Wind Turbine Generator.
► Fig. 214. Wind Turbine Generator. Drawing Set.

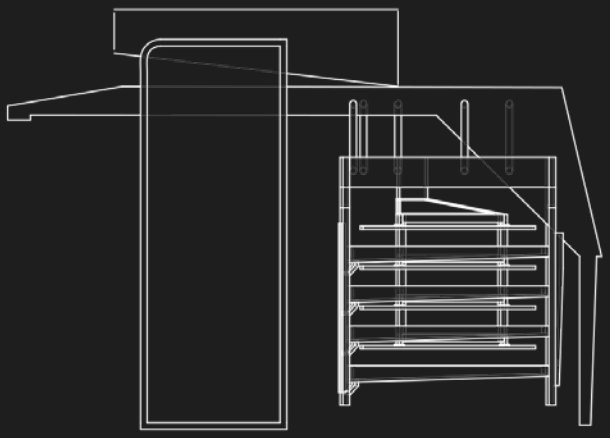


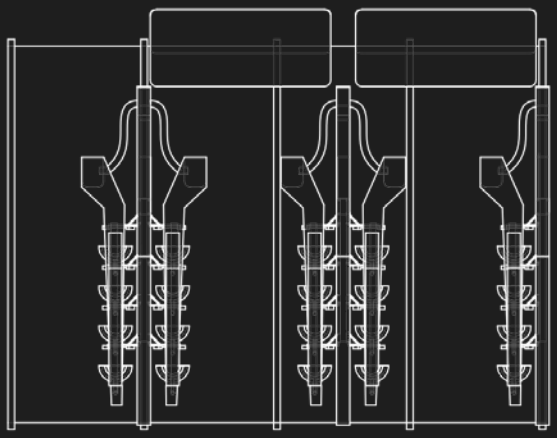




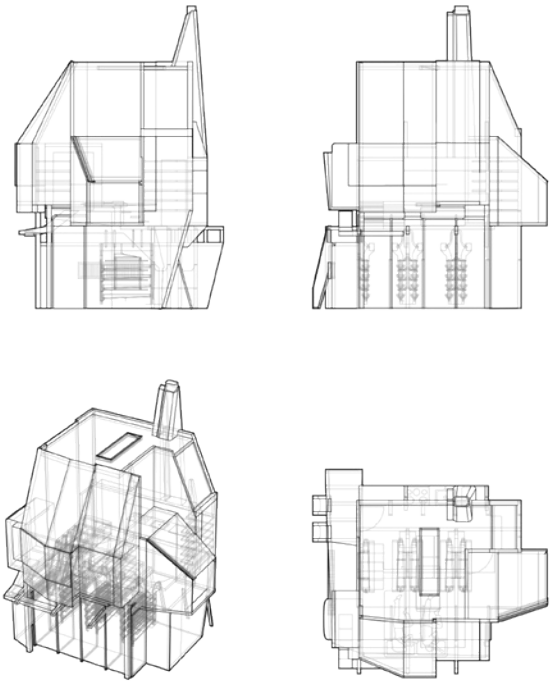
▲ Fig. 215. Micro-hydroponic System
► Fig. 216. Micro-hydroponic System Drawing Set.







JING SALON
靚 沙龍
JING SALON
靚 沙龍



◄ Fig. 217. Studio Apartment in Context.
▲ Fig. 218. Studio Apartment Drawing Set.

# Dwelling

The two-bedroom Dwelling proposed is to be an alternative of the family home extensions within the extension culture in Taiwan. Due to the rise of housing markets, many families opt to build extensions on their rooftops to provide housing for extended family in need, or even for themselves. As discovered in the Participatory Observation section within the Taiwan Fieldwork chapter, some people move home and build an informal extension in order to assist their family with bills and mortgages.

This proposed dwelling provides a multi-functional billboard providing passive income, to address the economic issue in a direct manner. The development of a photovoltaic system takes advantage of the fortunate orientation of the site to lower running cost of the dwelling. The two bathrooms and kitchen are attached to the service component. The lower level houses the billboard bedroom and double height living area, while the upper level contains the master bedroom, office and a balcony where a nano-hydroponic system is located. The placement of the nano-hydroponic system is utilised to create privacy and a garden, similar to the intention of existing garden facade extensions. The circulation wraps around the overall form of the dwelling taking inspiration from the Pigeon Lofts examined in the Flâneur section.

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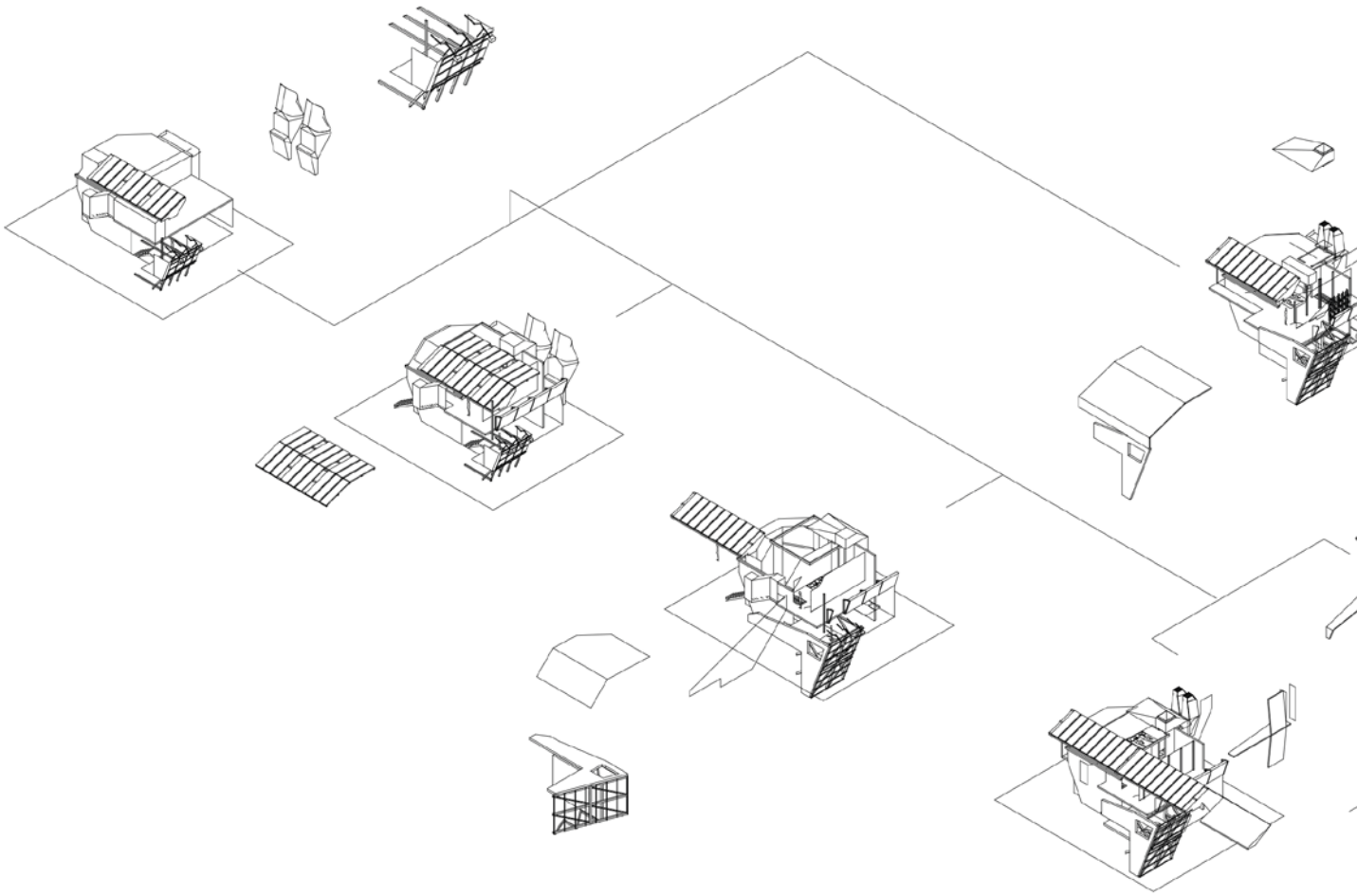
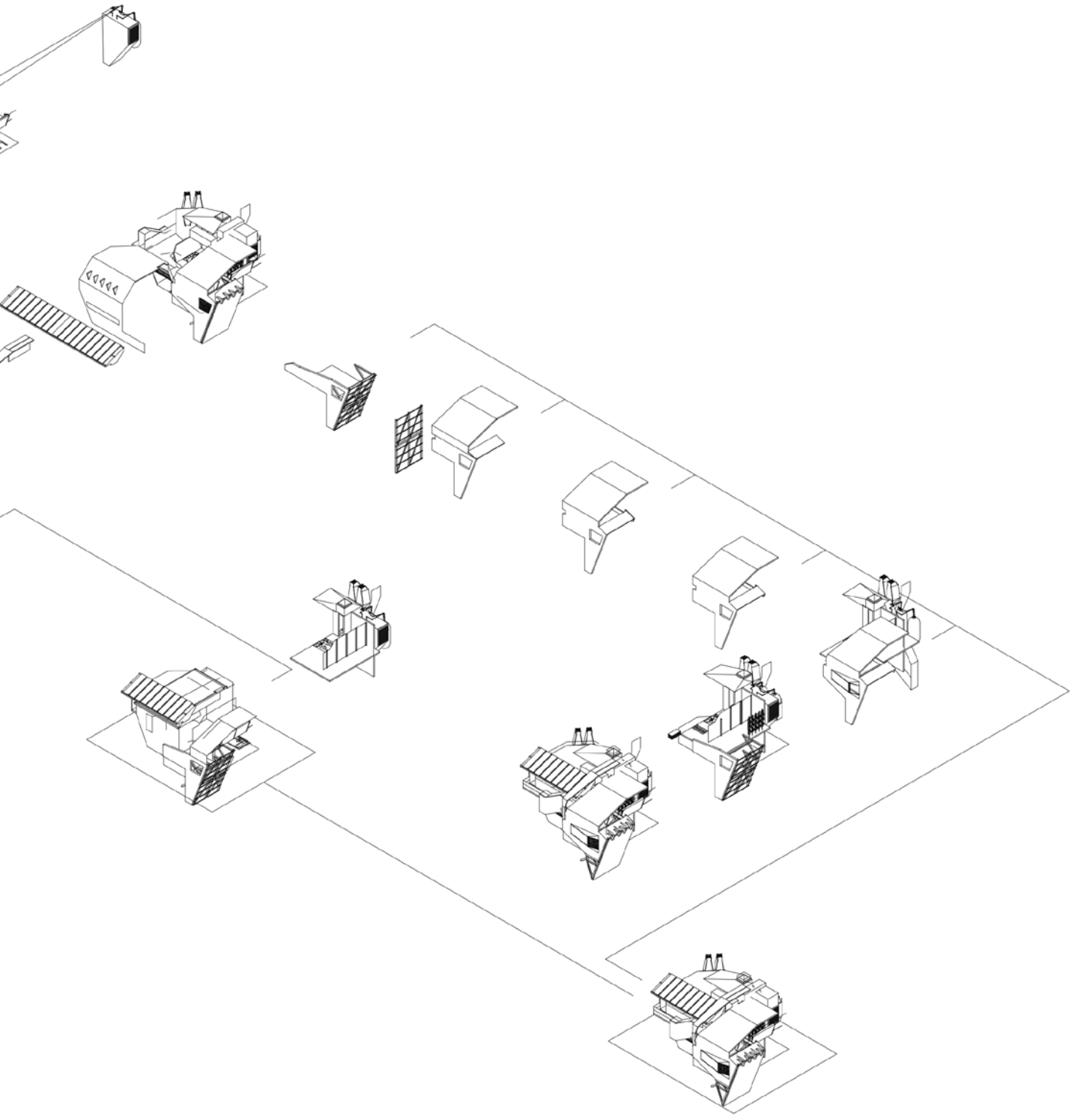
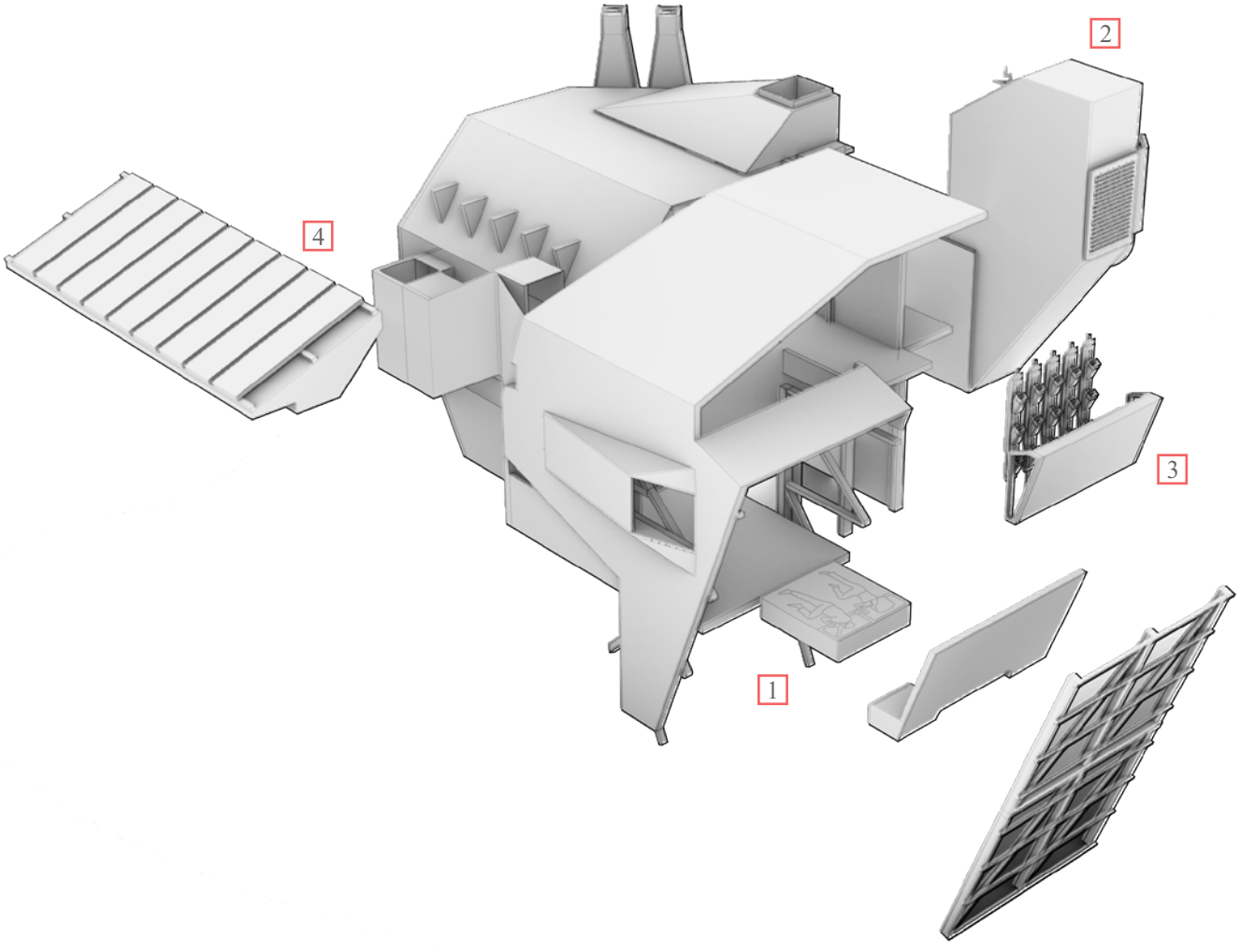
► Fig. 219. Dwelling Axonometric Drawing.



Dwelling Iteration Study

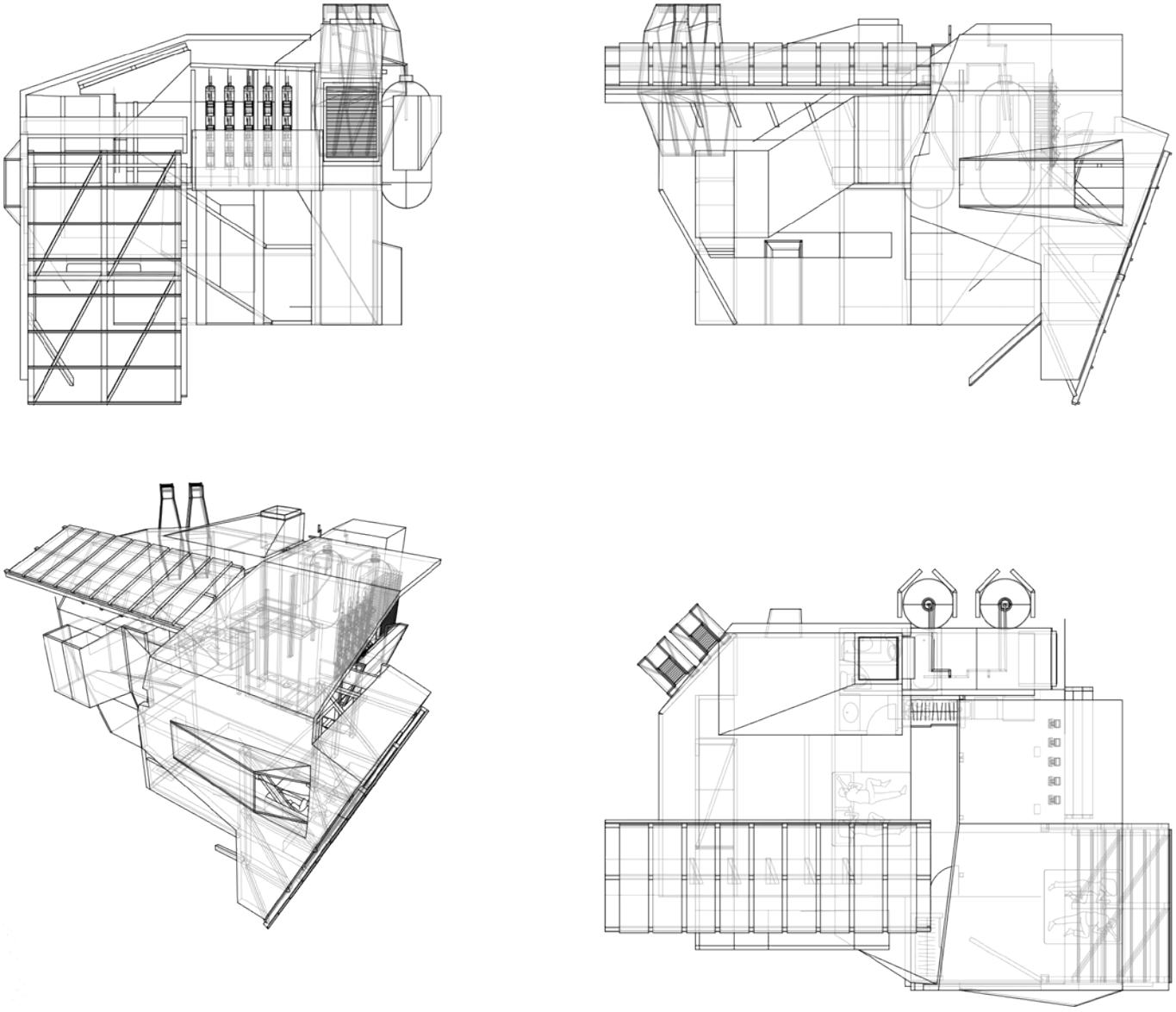


▲ Fig. 220. Dwelling Iterative Study.

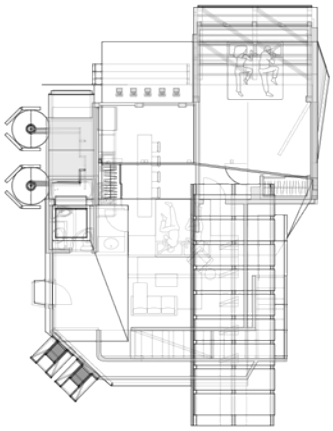


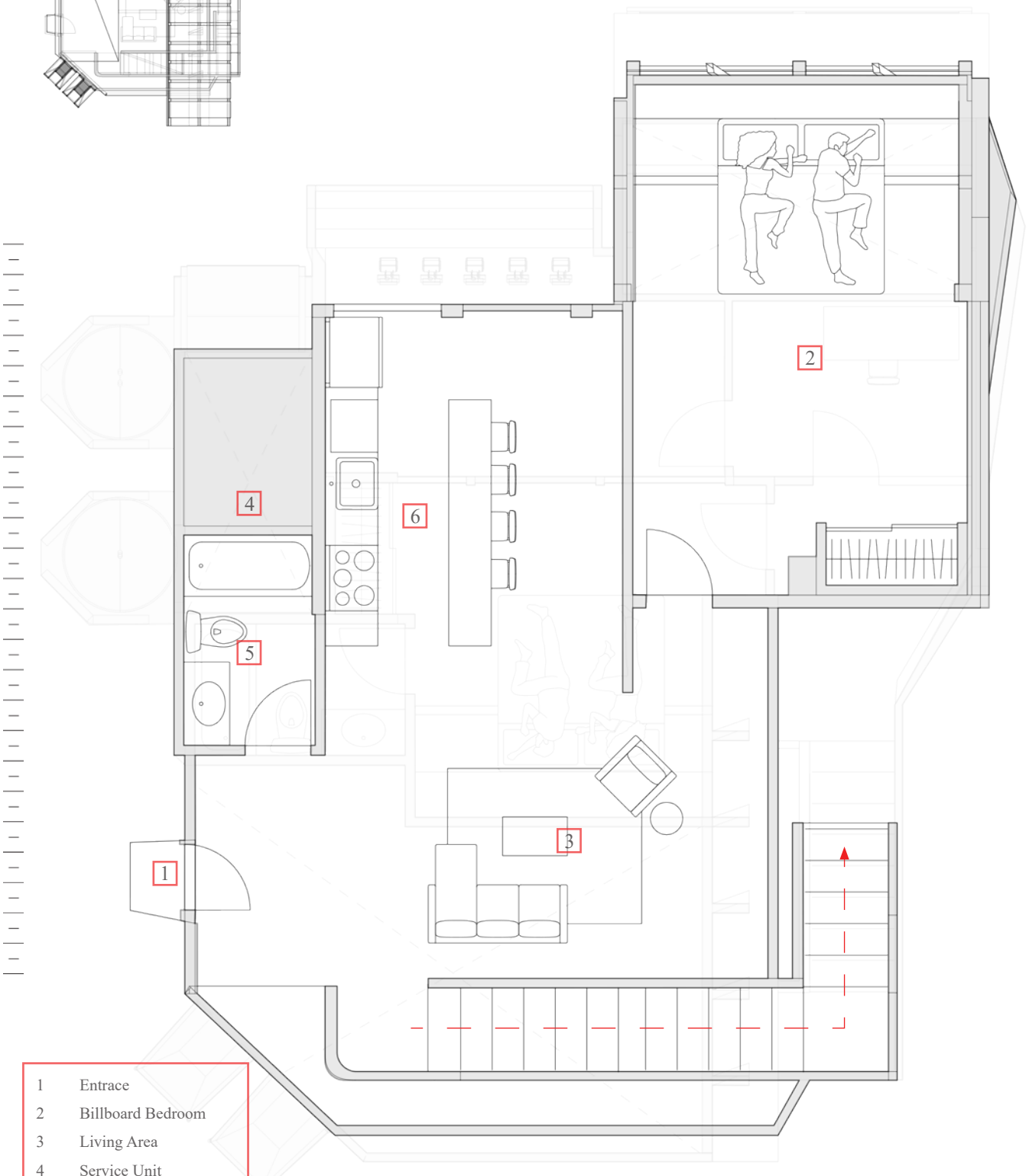

| | |
|---|---|
| 1 | Billboard Bedroom |
| 2 | Service Unit |
| 3 | Nano-hydroponic System |
| 4 | Photovoltaic System |

▲ Fig. 221. Dwelling Exploded.

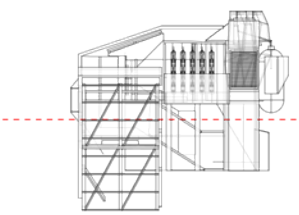


▲ Fig. 222. Dwelling Drawing Set.






| | |
|---|---|
| 1 | Entrace |
| 2 | Billboard Bedroom |
| 3 | Living Area |
| 4 | Service Unit |
| 5 | Bathroom |
| 6 | Kitchen |
| 7 | Nano-hydroponic System |
| 8 | Ensuite |
| 9 | Master Bedroom |
| 10 | Office |



▲ Fig. 223. Dwelling Lower Level Plan.

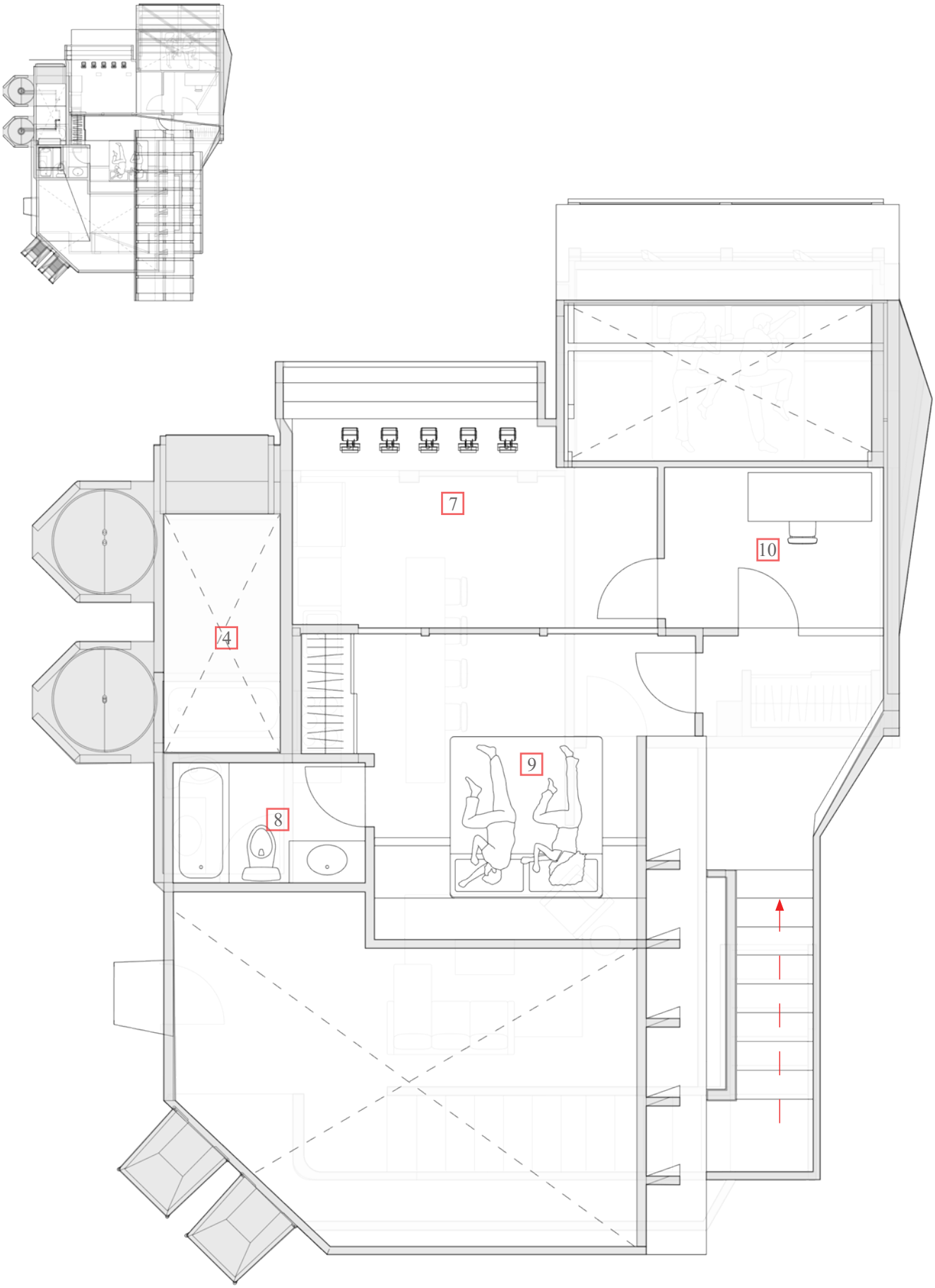
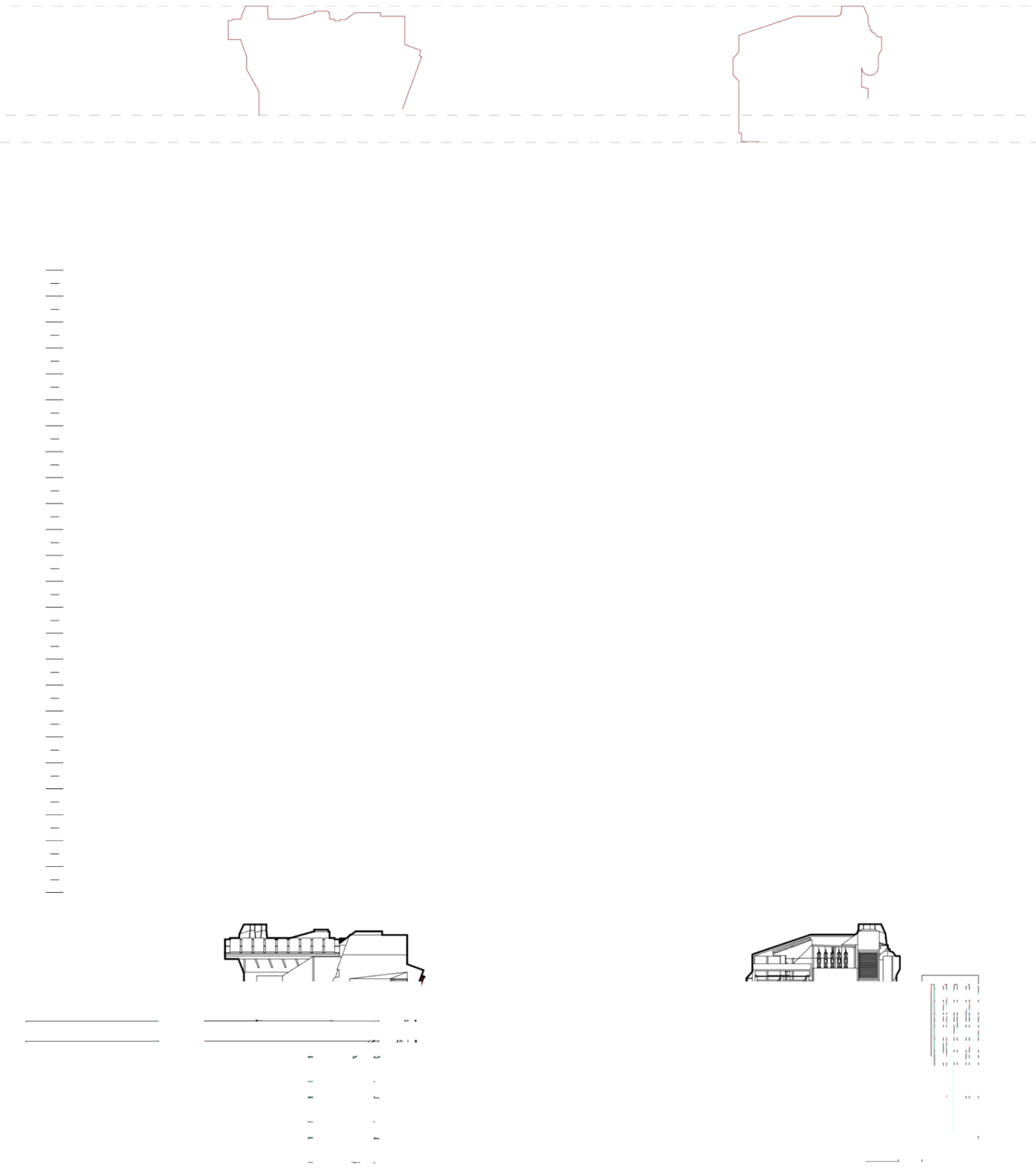



Fig. 224. Dwelling Upper Level Plan.



▲ Fig. 225. Dwelling Elevataions

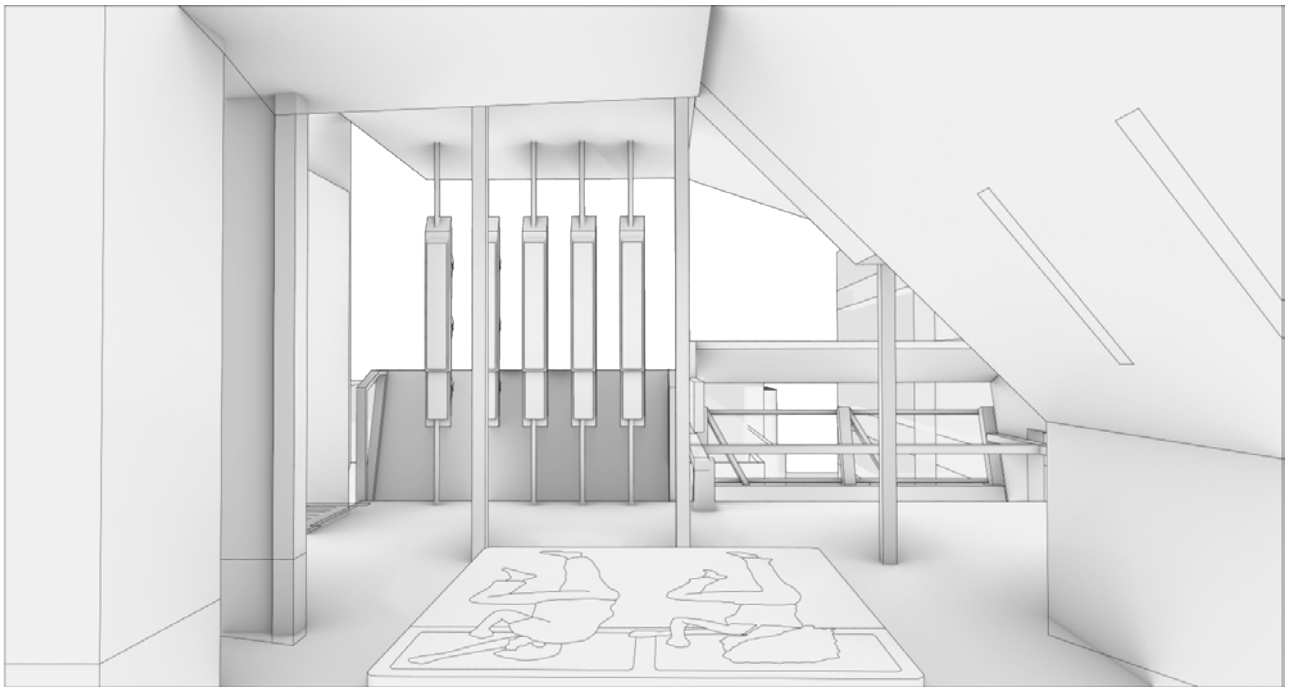
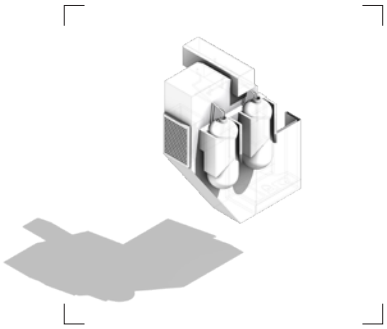


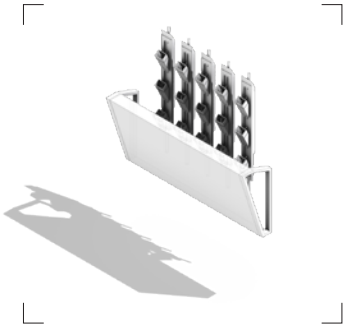
Fig. 226. Dwelling Master Bedroom Interior.

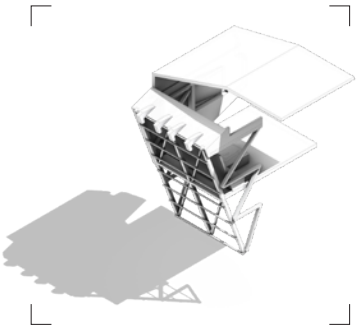
# Operable Elements

The operable elements derived through this design test are:

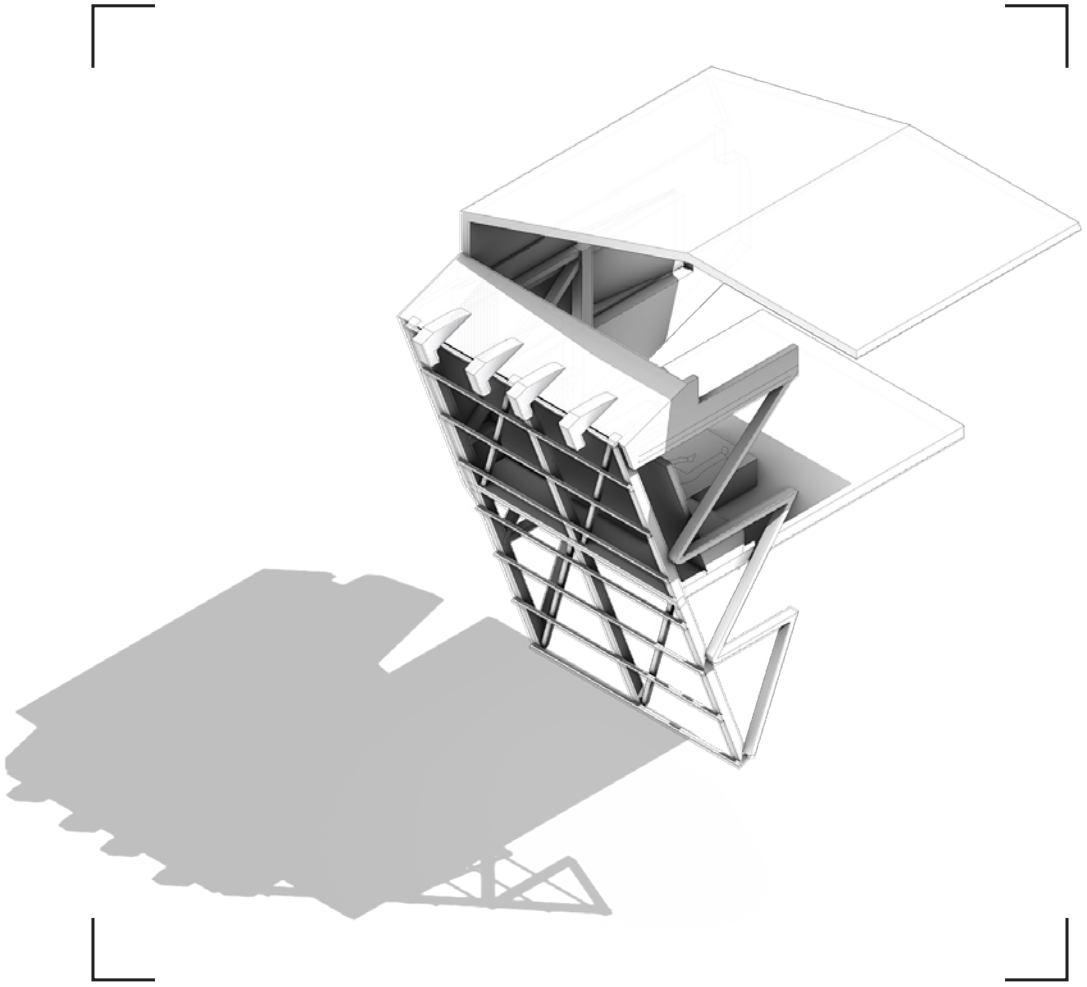
1. Billboard Bedroom
2. Micro-photovoltaic System
3. Service Room Bathroom Unit
4. Nano-hydroponic System



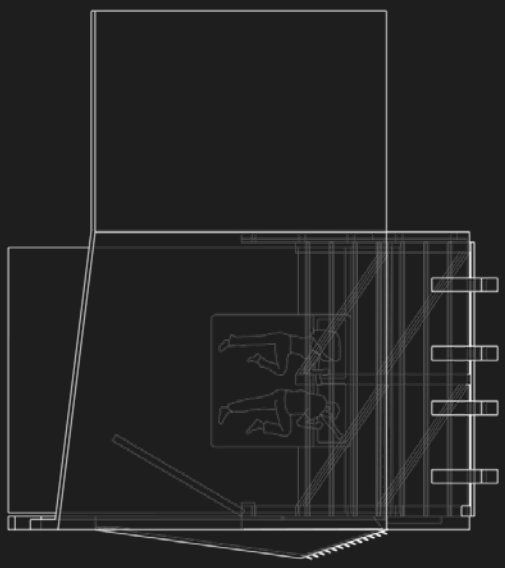


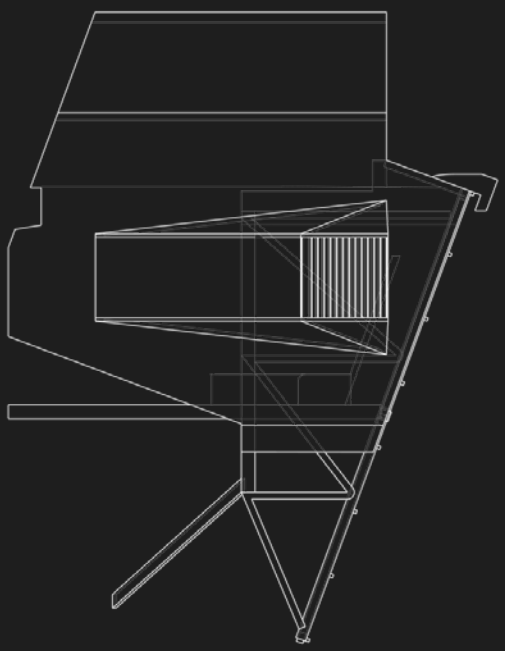


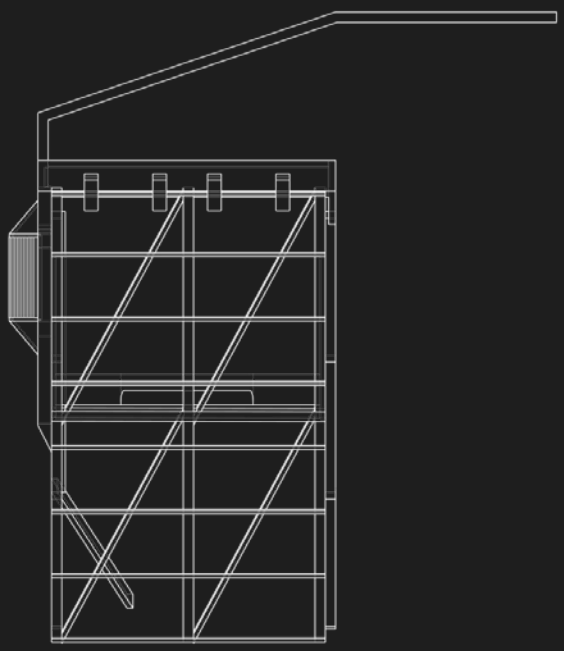
▲ Fig. 227. Dwelling Operable Elements.

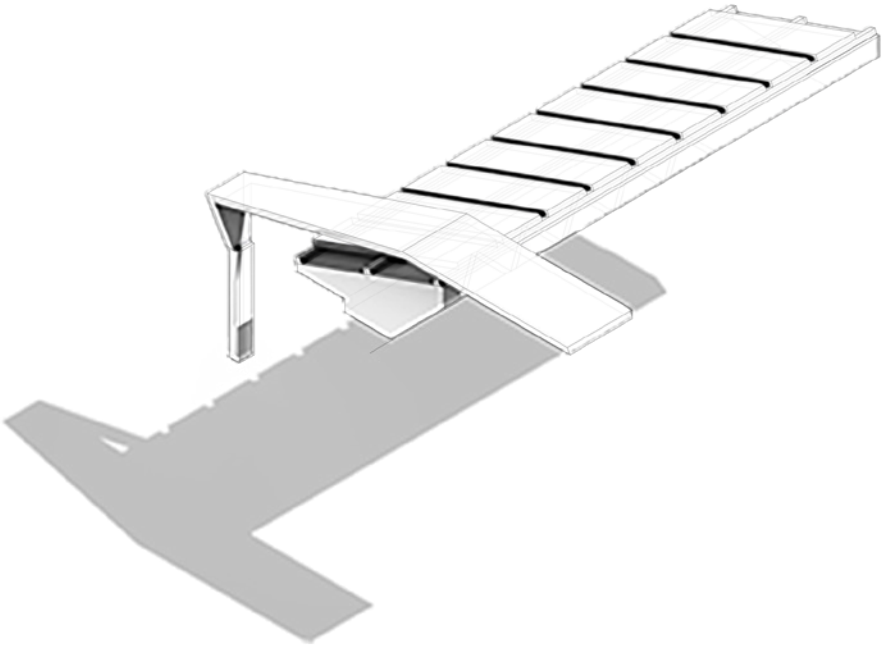


▲ Fig. 228. Billboard Bedroom
► Fig. 229. Billboard Bedroom Drawing Set.

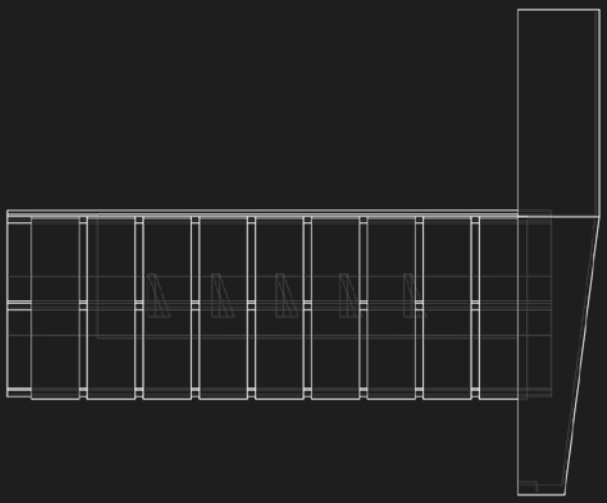


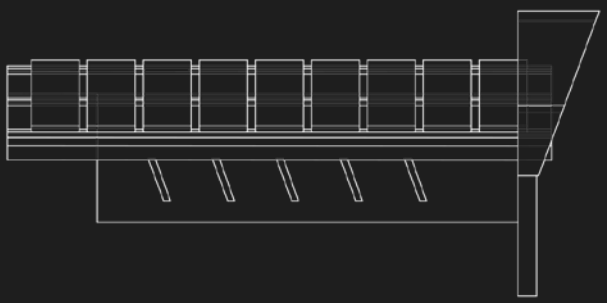


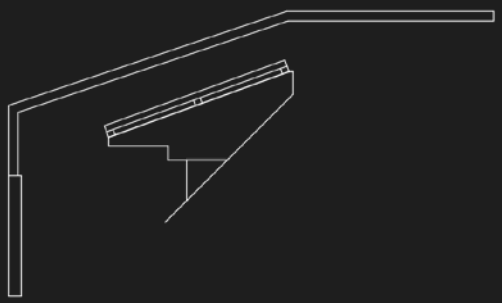


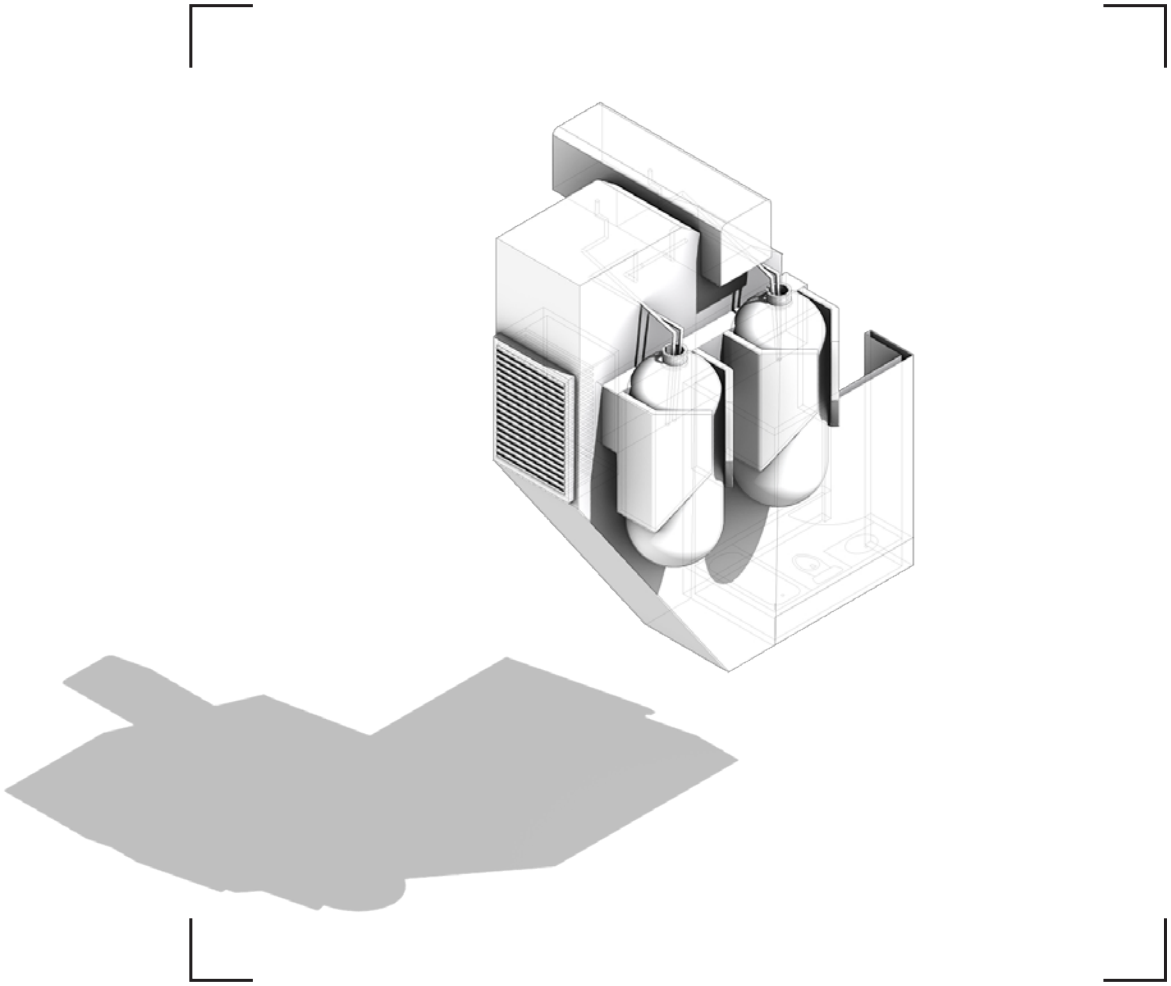


▲ Fig. 230. Micro-photovoltaic System.
► Fig. 231. Micro-photovoltaic System Drawing Set.

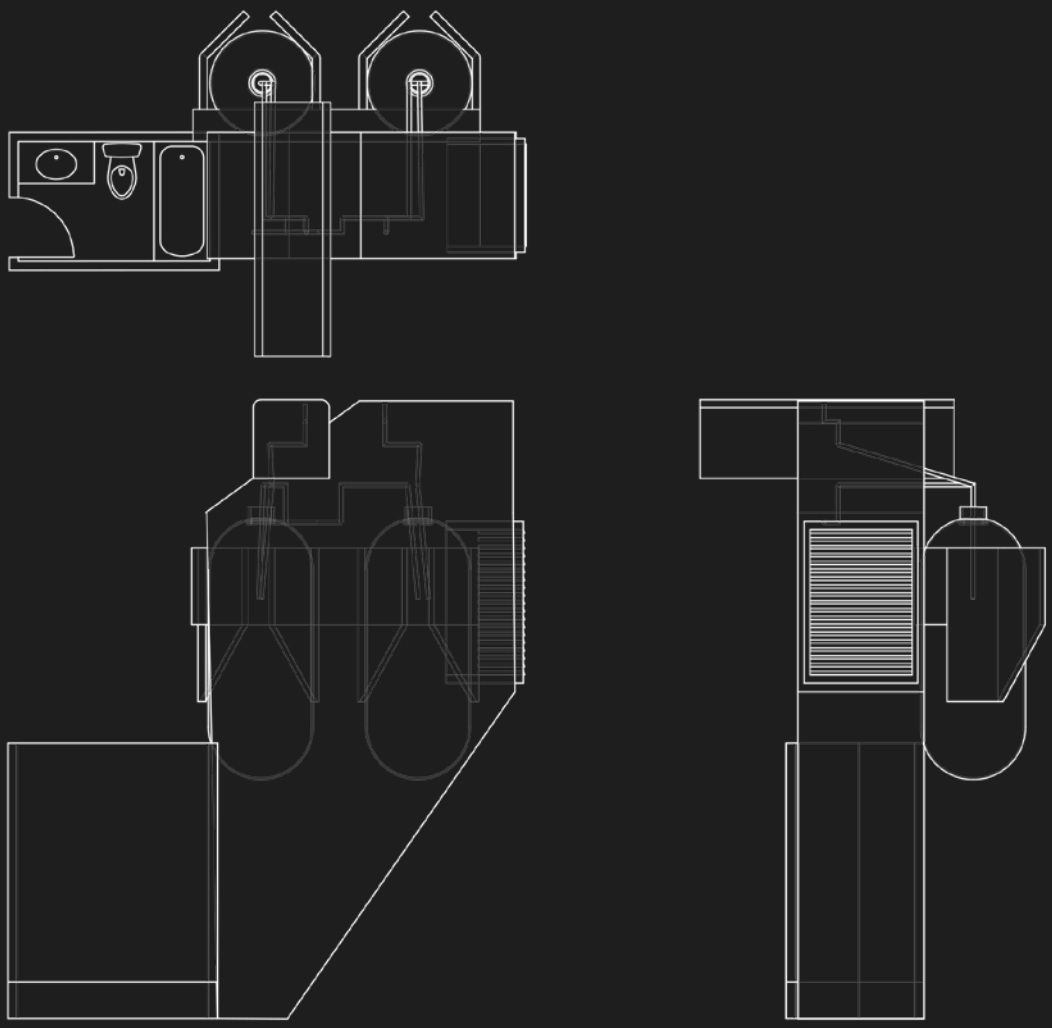


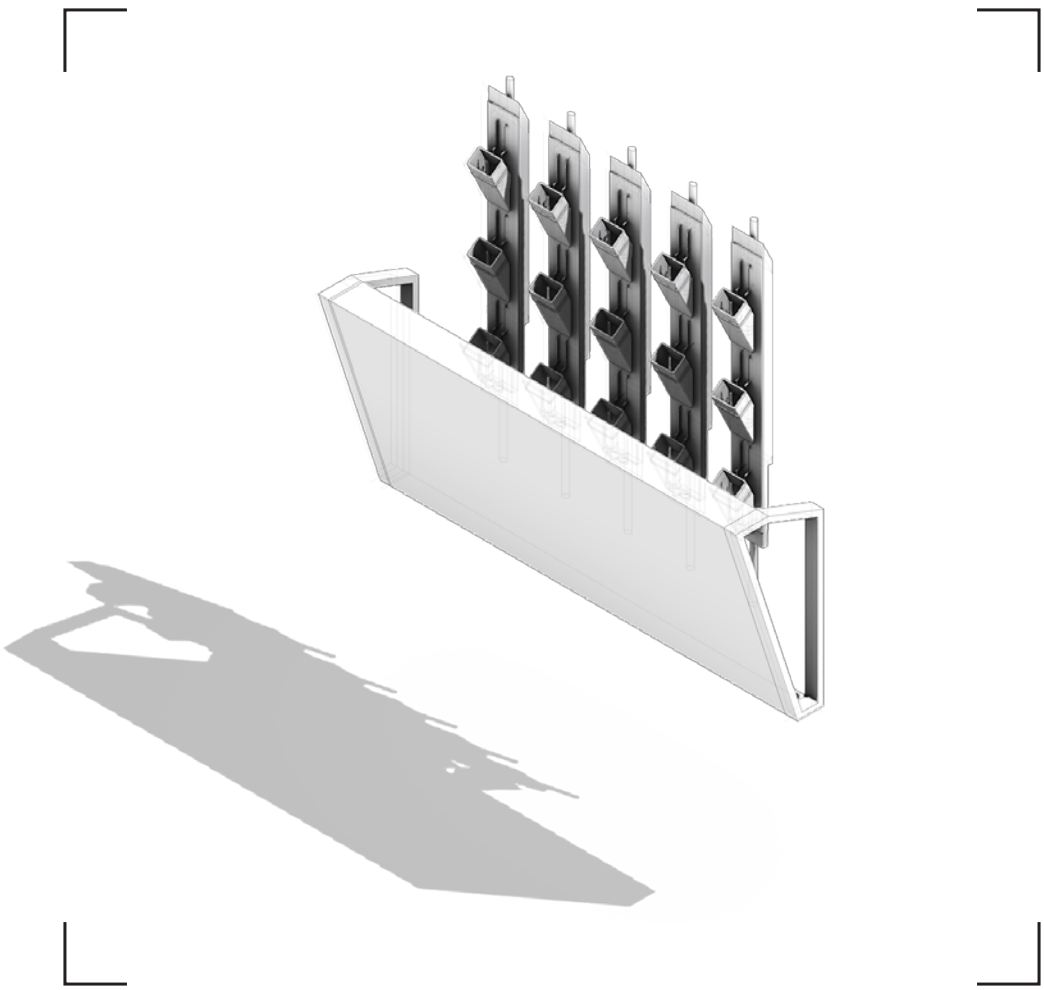




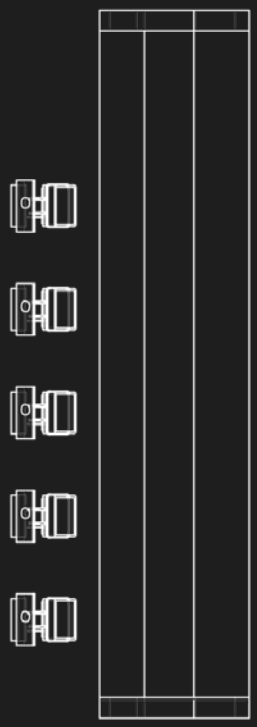


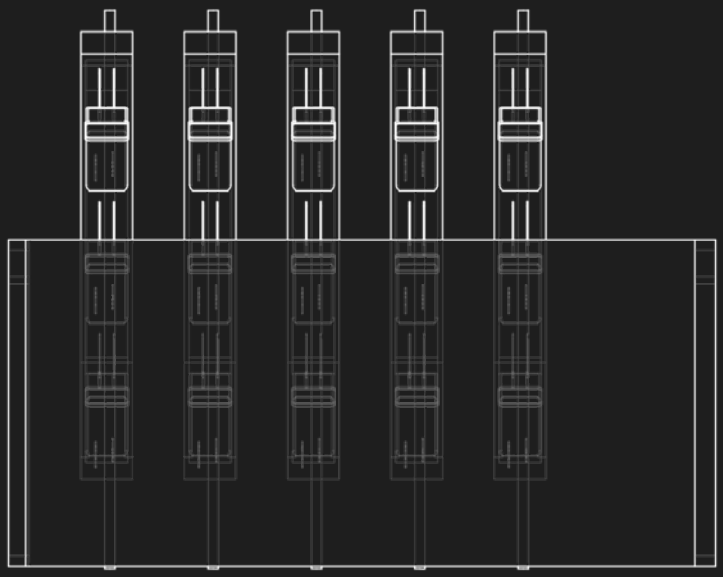
▲ Fig. 232. Service Room Bathroom Unit.
► Fig. 233. Service Room Bathroom Unit. Drawing Set.





▲ Fig. 234. Nano-hydroponic System.
► Fig. 235. Nano-hydroponic System Drawing Set.





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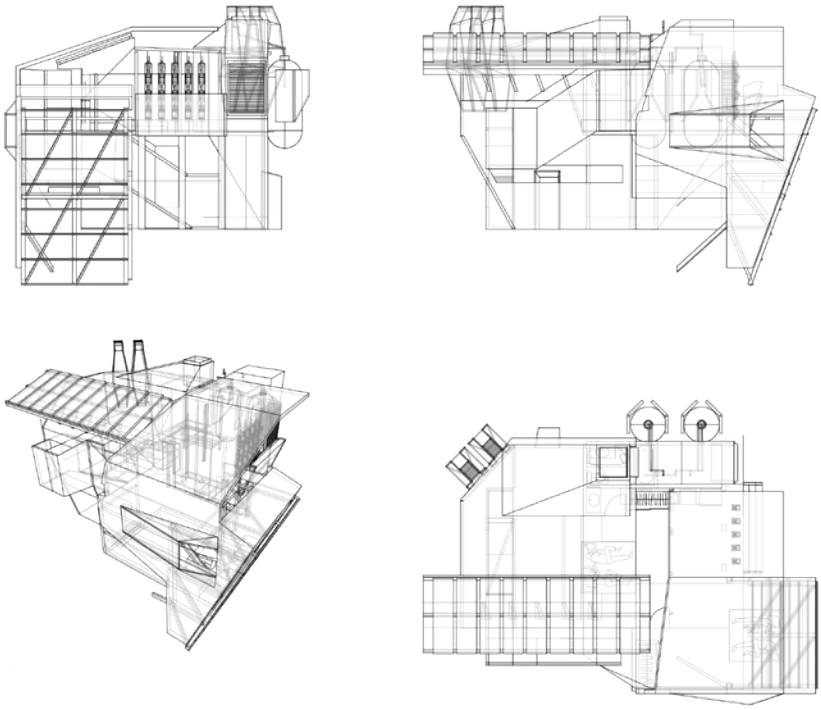


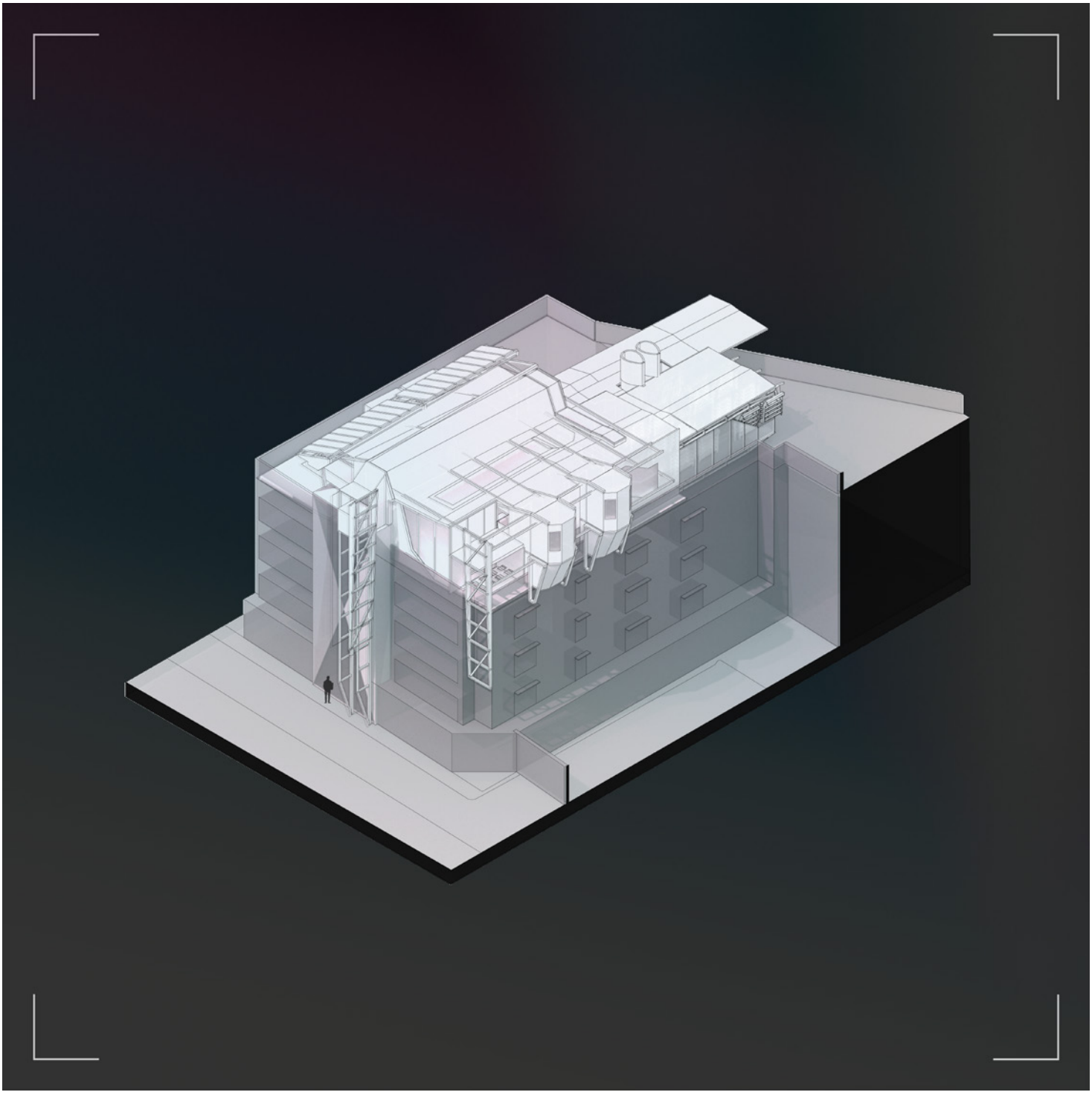
◄ Fig. 236. Dwelling in Context.
▲ Fig. 237. Dwelling Drawing Set.

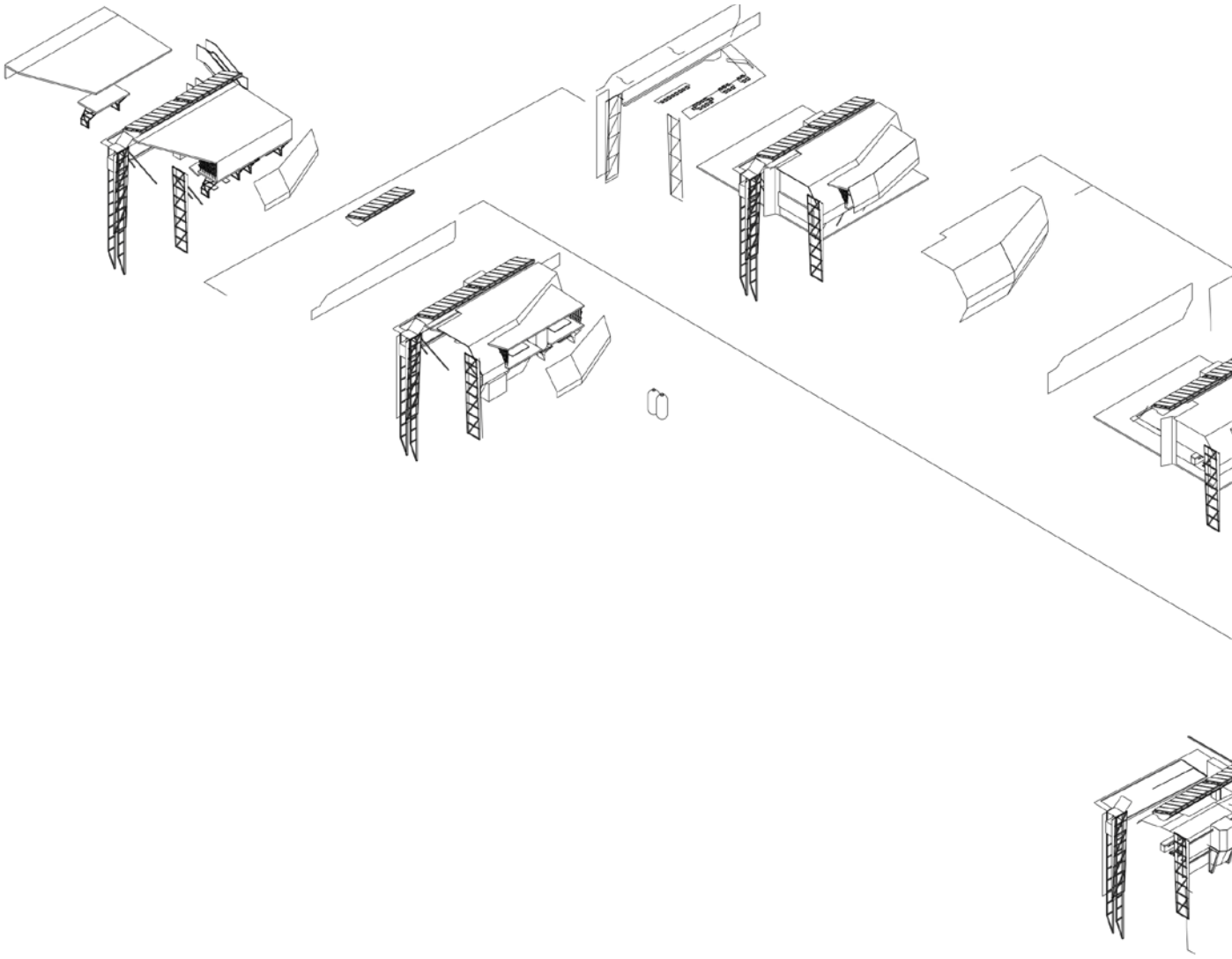
# Urban Farmhouse Restaurant

The Urban Farmhouse Restaurant is an exploration into the application of this investigation into a commercial typology. By embracing the extension culture, this intervention proposes a rooftop extension restaurant that also produces its own produce. The farmhouse will act as an extension of both the host building and the restaurant on its ground floor. The general program of the farmhouse includes a large dining area, two private dining rooms, kitchen and two offices.

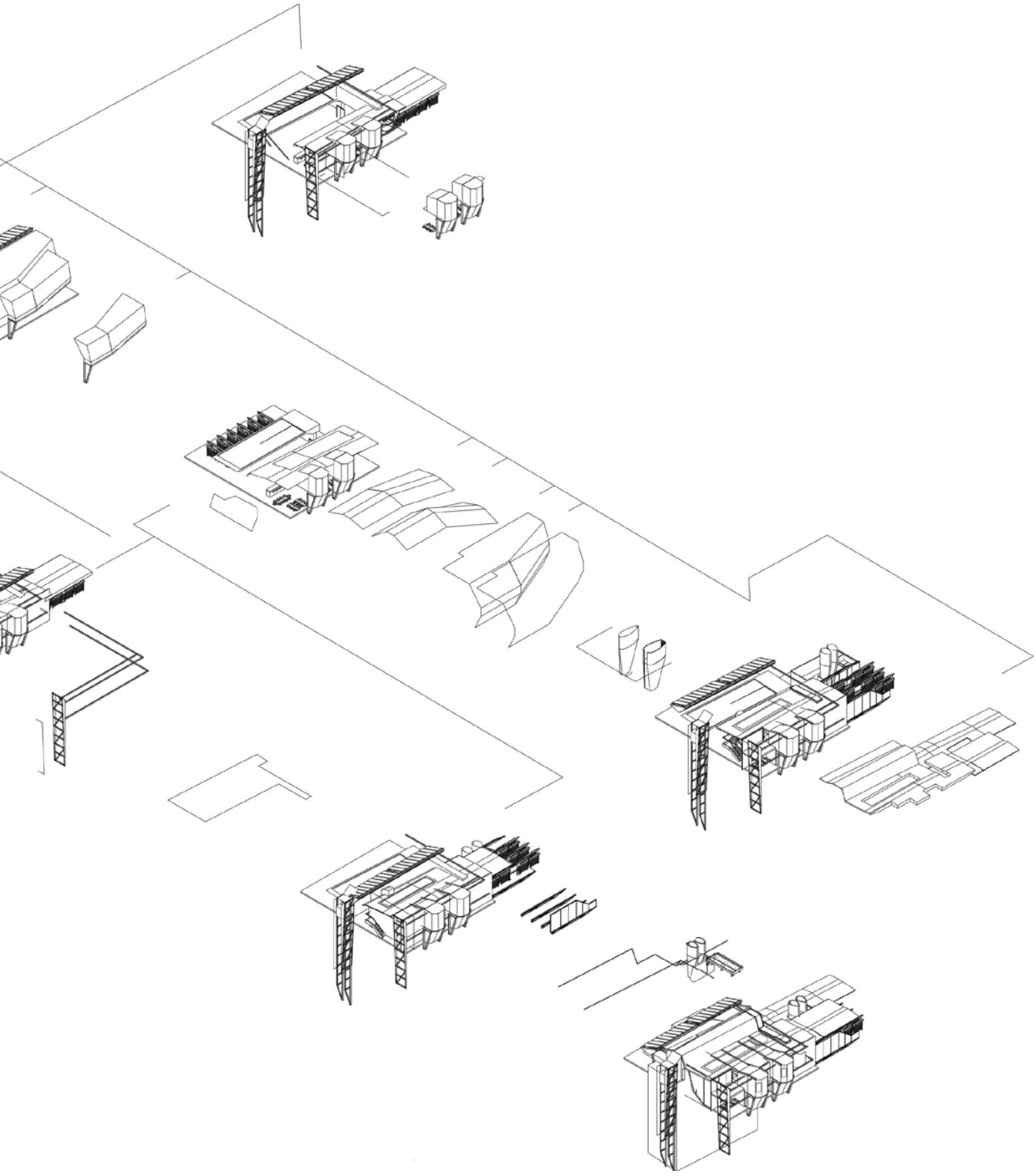
On the multi-functional and self-sustaining aspects, the intervention boasts two vegetation systems, both mega-hydroponics room and an aquaponic system. The hydroponics room is attached to the kitchen with its own rain collecting system and water storage. The aquaponic system is located on the upper floor elevated above the service core protruding out of the rooftop. The nature of the aquaponic systems allows a fish aquarium to harvest seafood whilst purifying the irrigation for the vegetation. Above the aquaponics system sits a photovoltaic system providing additional energy to run the two vegetation systems. To allow direct uncovered access to the farmhouse, the volume of the intervention wraps around and over the core of the host building integrating fully with the circulation system. Inspired by the external lift observed in the Flâneur section, an external produce lift is implemented on the facade of the host building providing ease of transporting produce integrating the other part of the restaurant on the ground floor. The face of the produce lift is utilised as signage for the restaurant taking advantage of the orientation of the site offering full visual accessibility for oncoming traffic on the main road. The functional and formal elements build upon the findings of the previous experiments within this investigation, redeveloping elements according to scale whilst adhering to the architectural language developed.

► Fig. 238. Urban Farmhouse Restaurant Drawing.

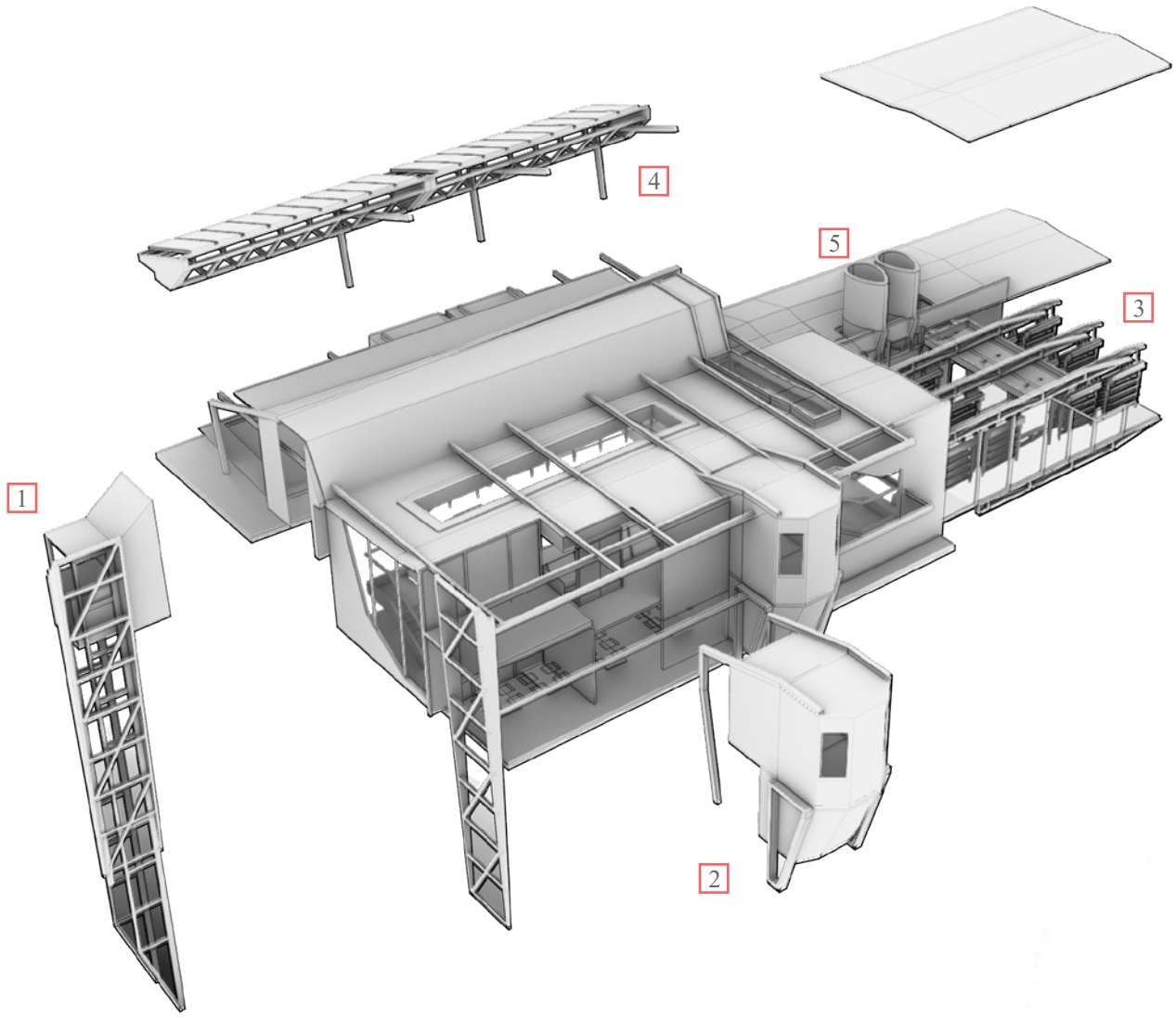




Urban Farmhouse Restaurant Iterative Study

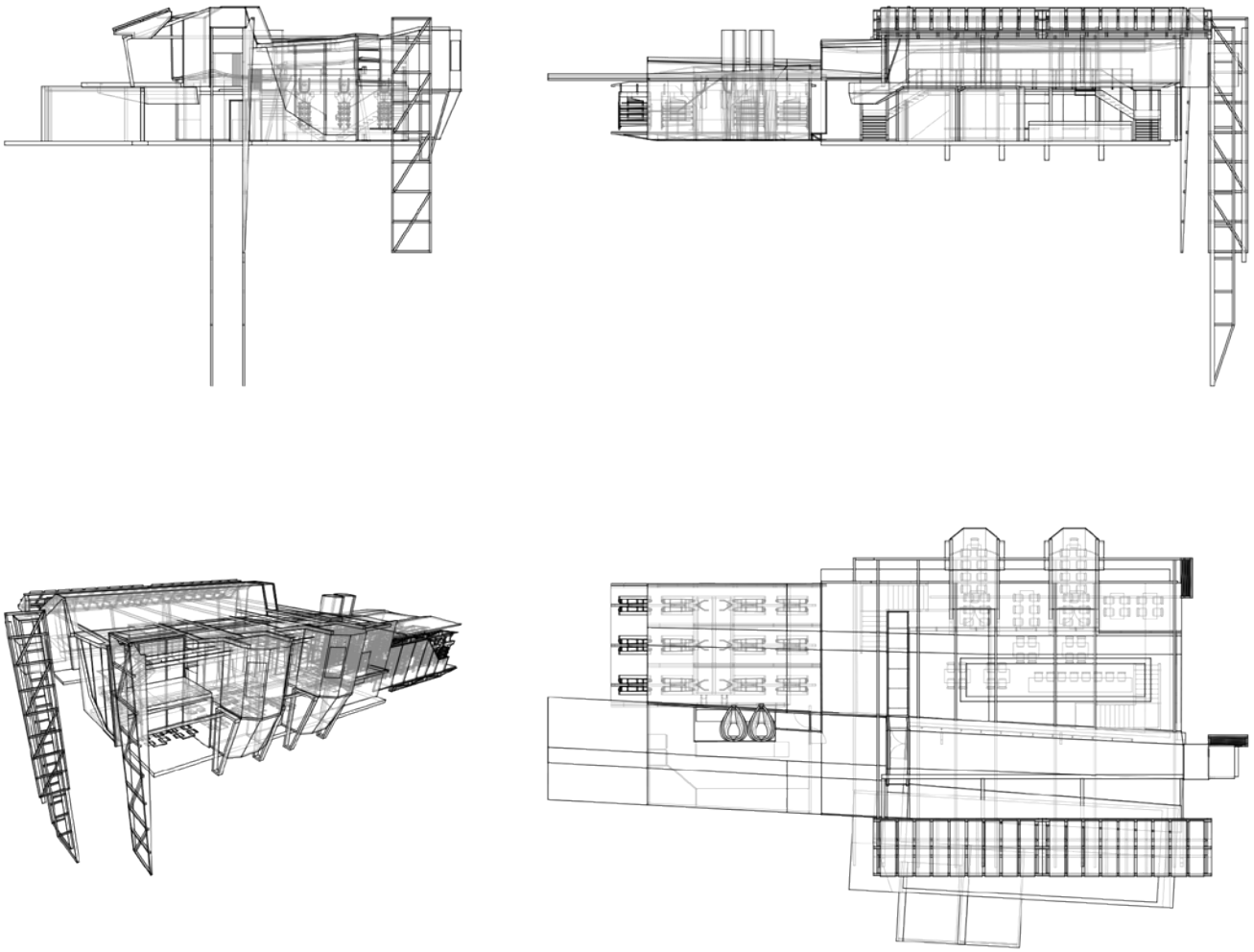


▲ Fig. 239. Urban Farmhouse Restaurant  Iterative Study.

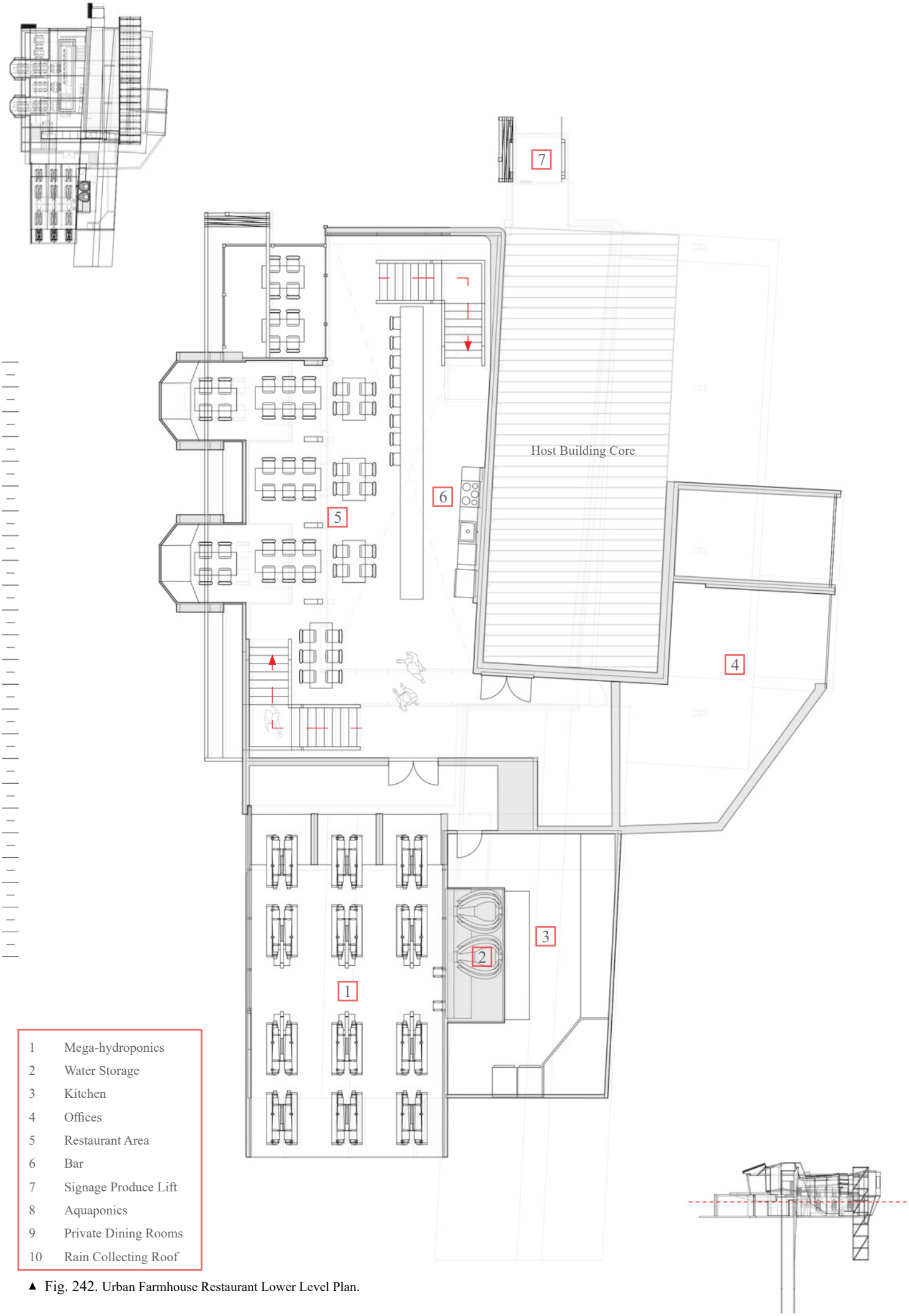



1 Signage Produce Lift
2 Private Dining Rooms
3 Mega-hydroponics
4 Photovoltaic System
5 Water Storage

▲ Fig. 240. Dwelling Exploded.



▲ Fig. 241. Dwelling Drawing Se




▲ Fig. 242. Urban Farmhouse Restaurant Lower Level Plan.

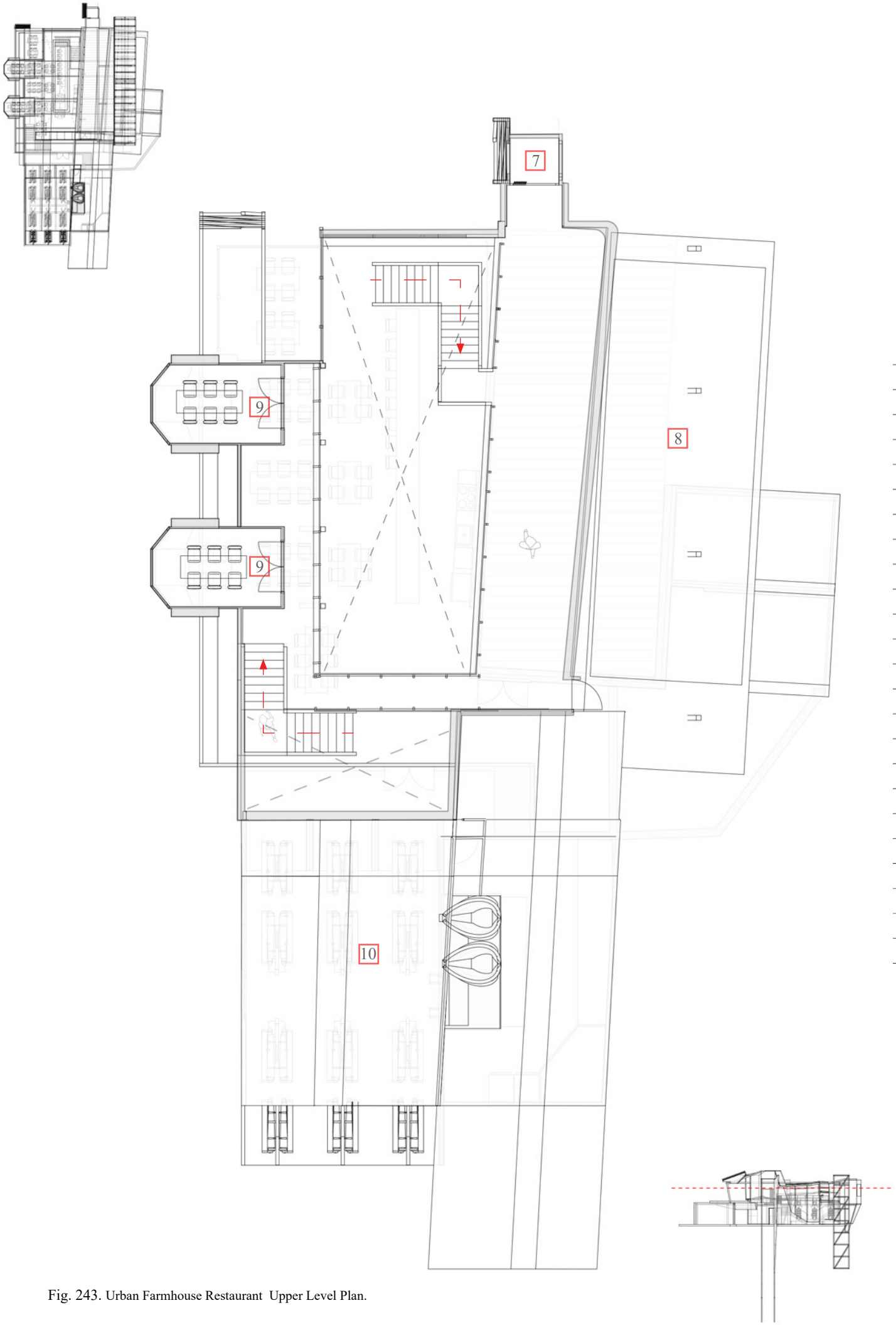
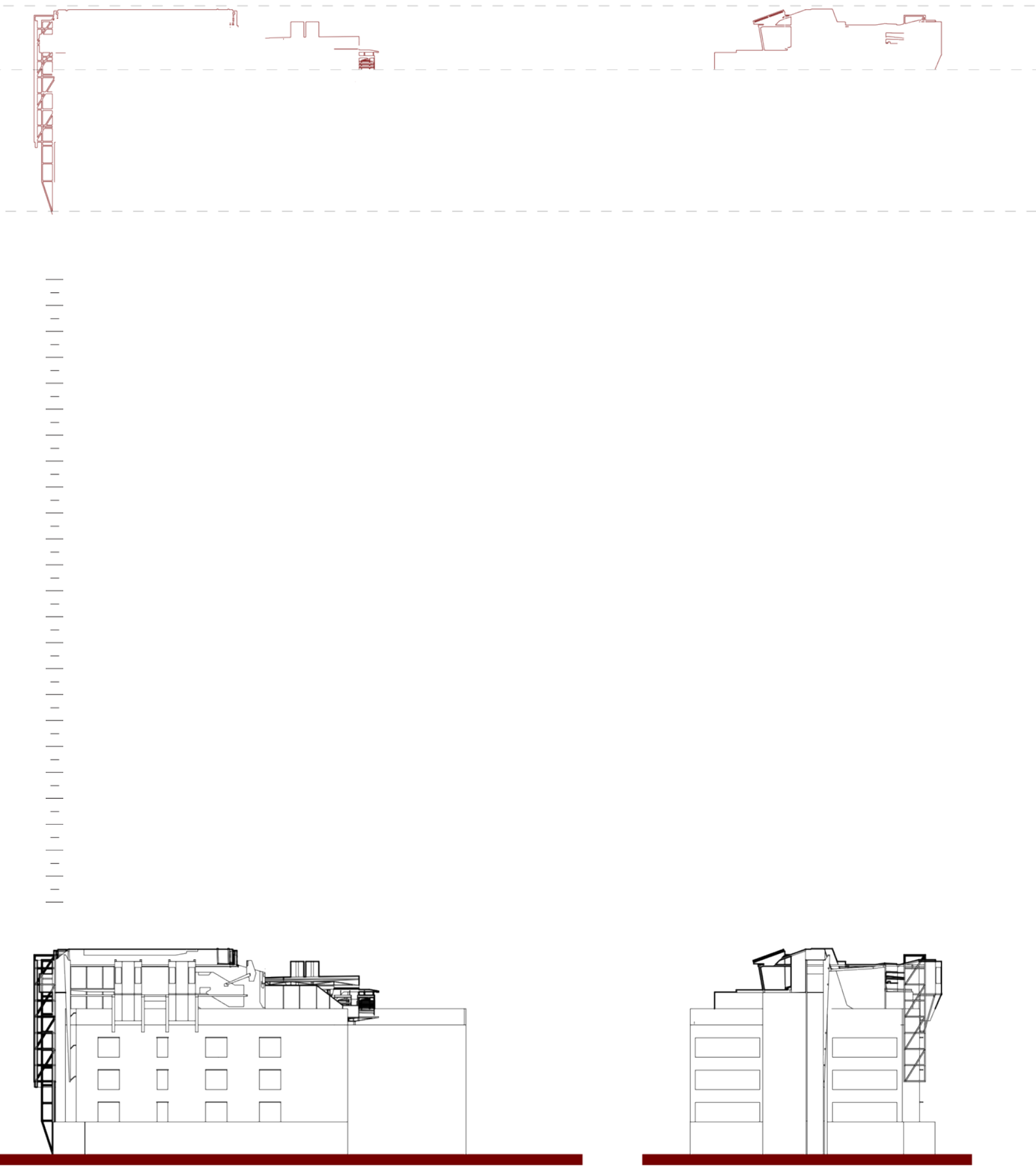



Fig. 243. Urban Farmhouse Restaurant  Upper Level Plan.



▲ Fig. 244. Urban Farmhouse Restaurant  Elevataions

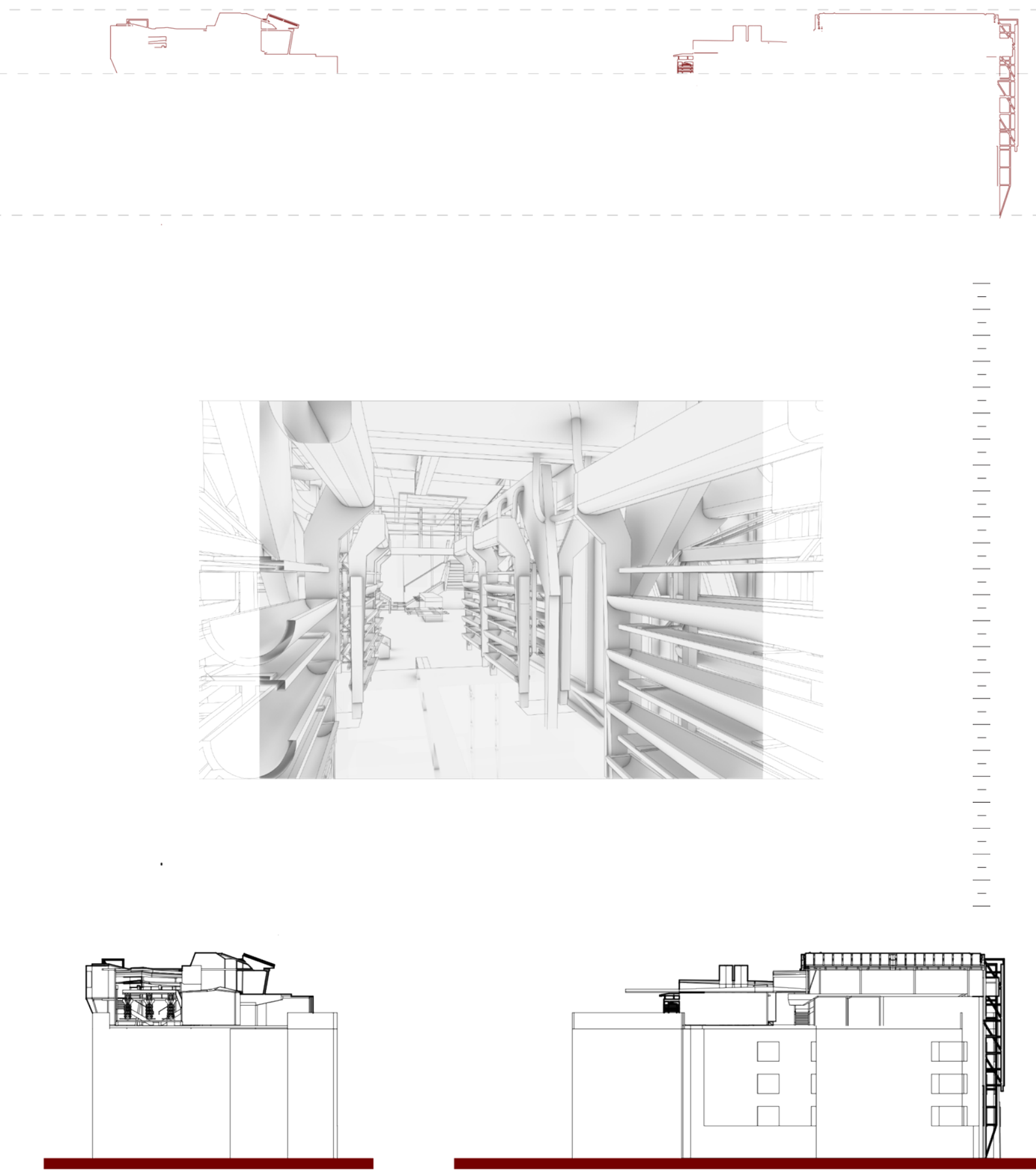
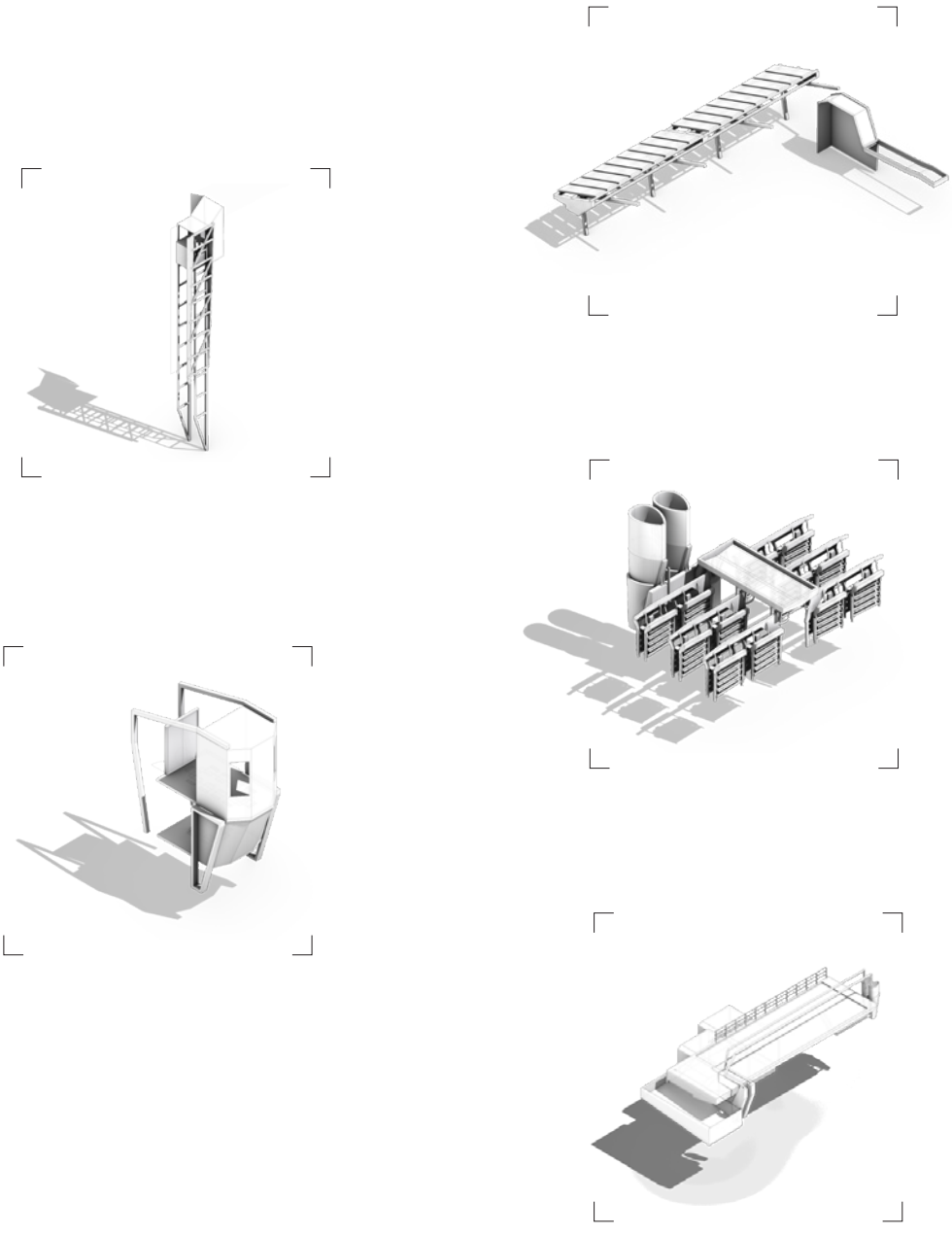


Fig. 245. Urban Farmhouse Restaurant Hydropnics Room

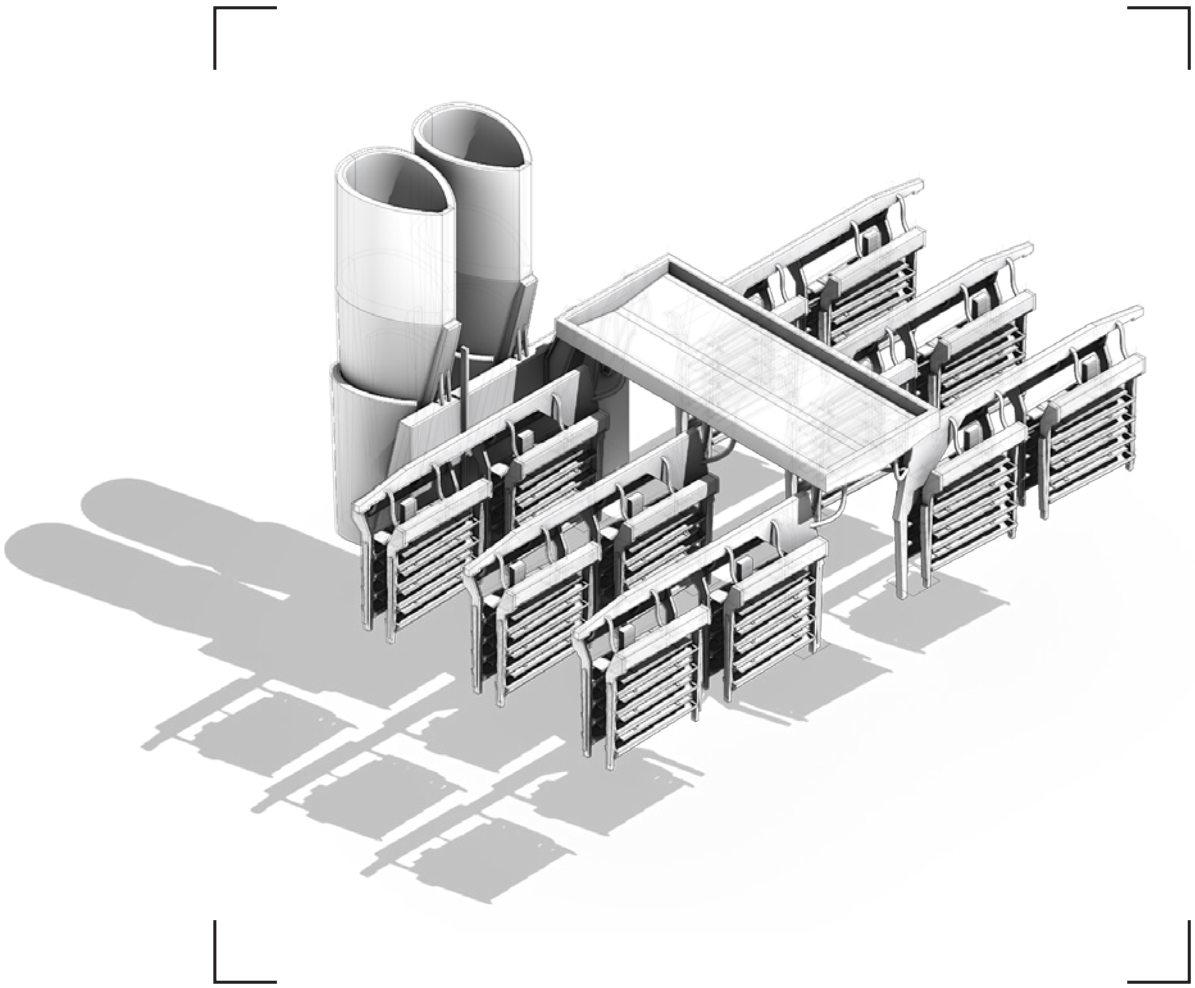
# Operable Elements

The operable elements derived through this design test are:

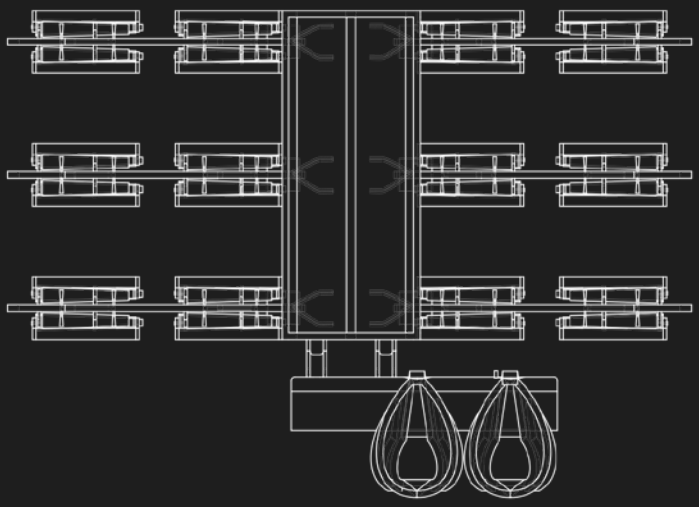
1. Mega-hydroponic System
2. Aquaponic System
3. Private Dining Room Attachment
4. Signage Stock Lift
5. Mega-photovoltaic System

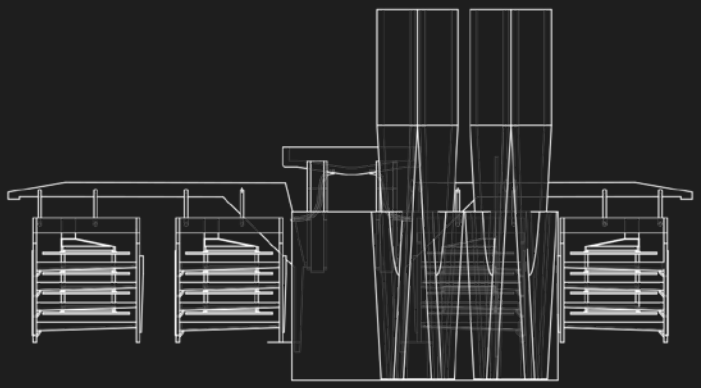


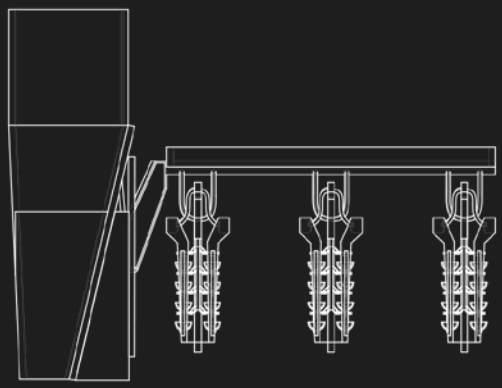
▲ Fig. 246. Urban Farmhouse Restaurant Operable Elements.

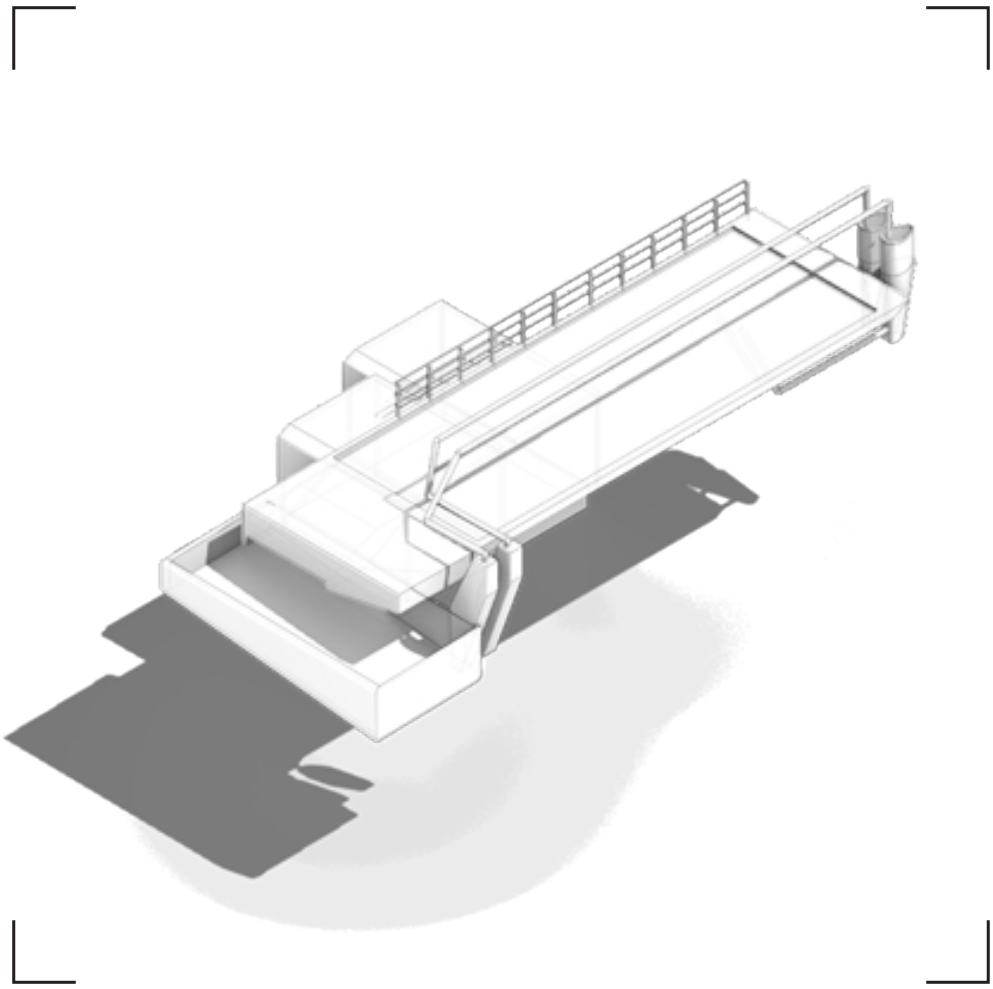


▲ Fig. 247. Mega-hydroponic System.
► Fig. 248. Mega-hydroponic System Drawing Set.

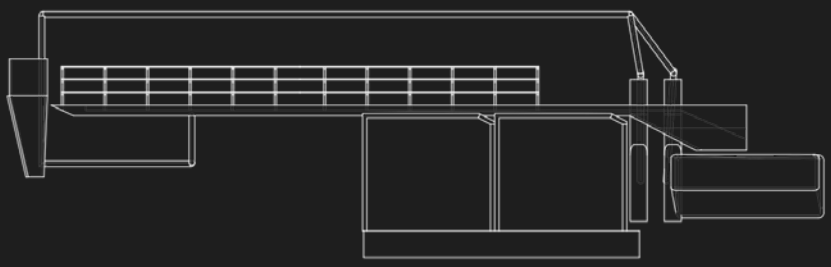


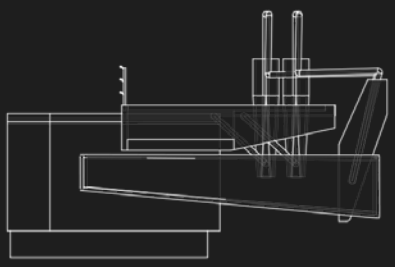


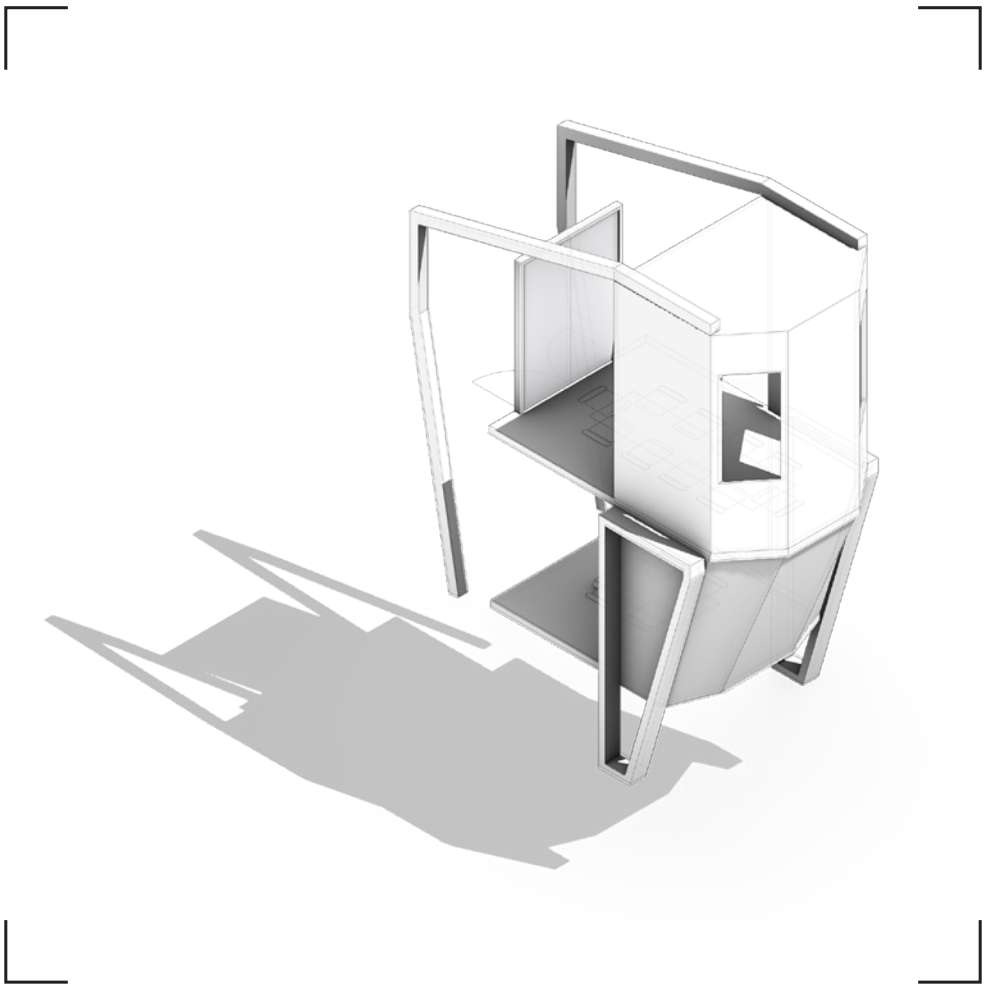




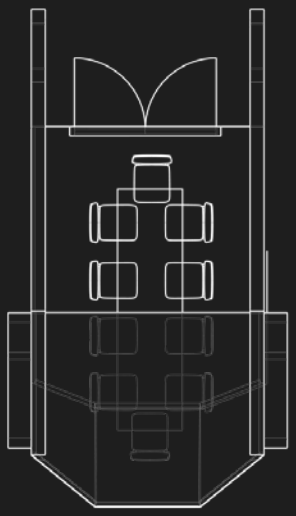
▲ Fig. 249. Aquaponics System.
► Fig. 250. Aquaponics System Drawing Set.

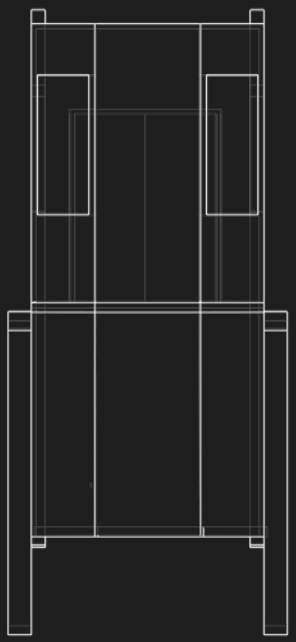


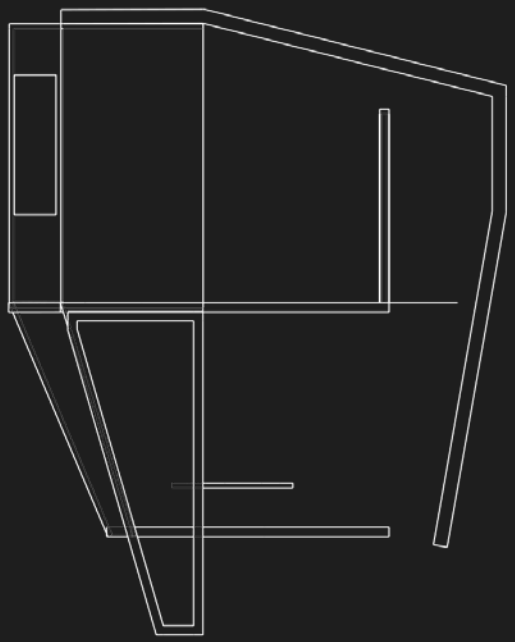




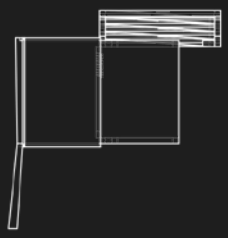
▲ Fig. 251. Dining Room Attachment.
► Fig. 252. Dining Room Attachment Drawing Set.

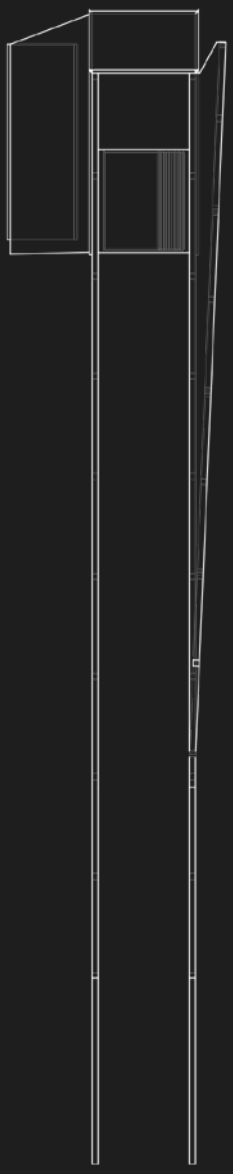


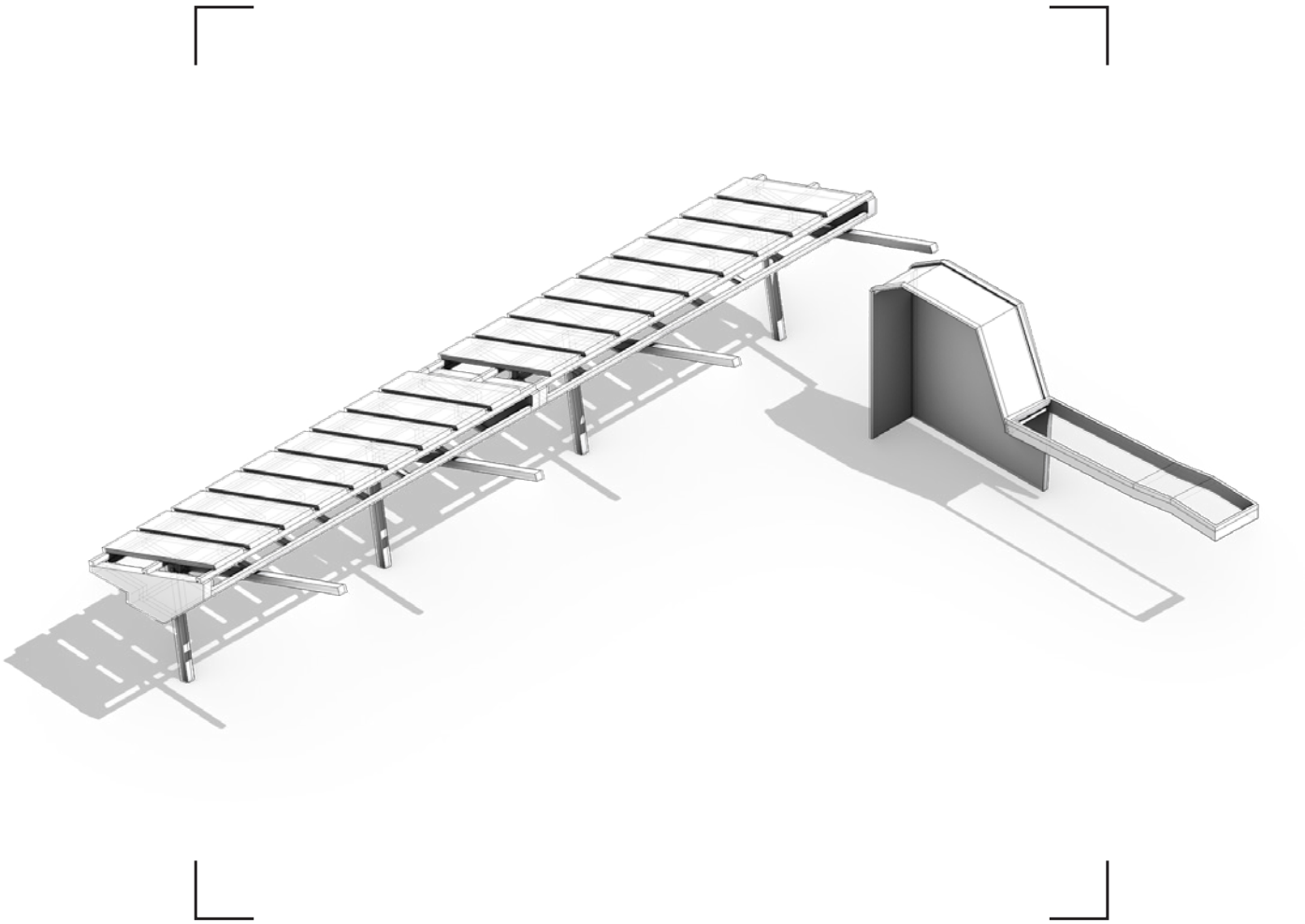




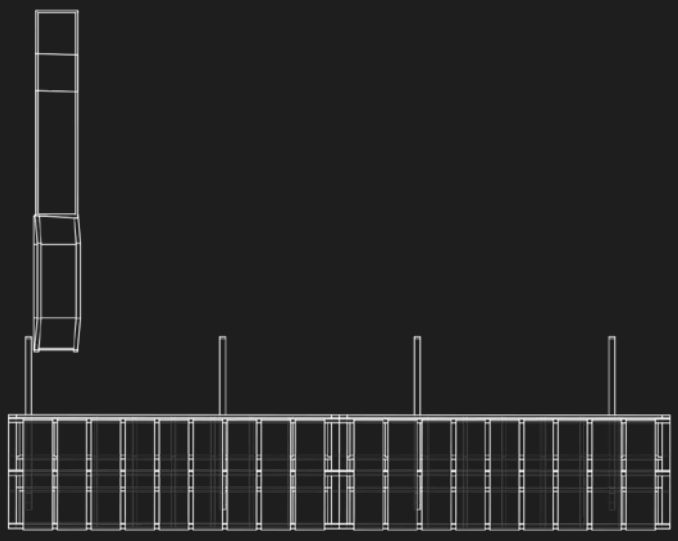
▲ Fig. 253. Signage Produce Lift
► Fig. 254. Signage Produce Lift Drawing Set.

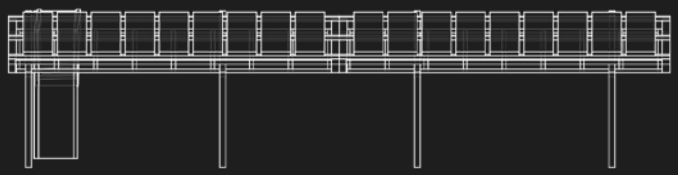


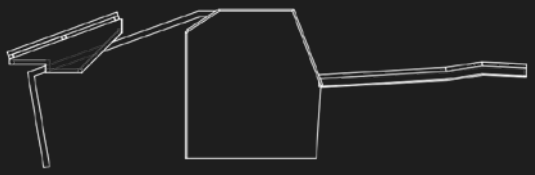




▲ Fig. 255. Mega-photovoltaic System.
► Fig. 256. Mega-photovoltaic System Drawing Set.







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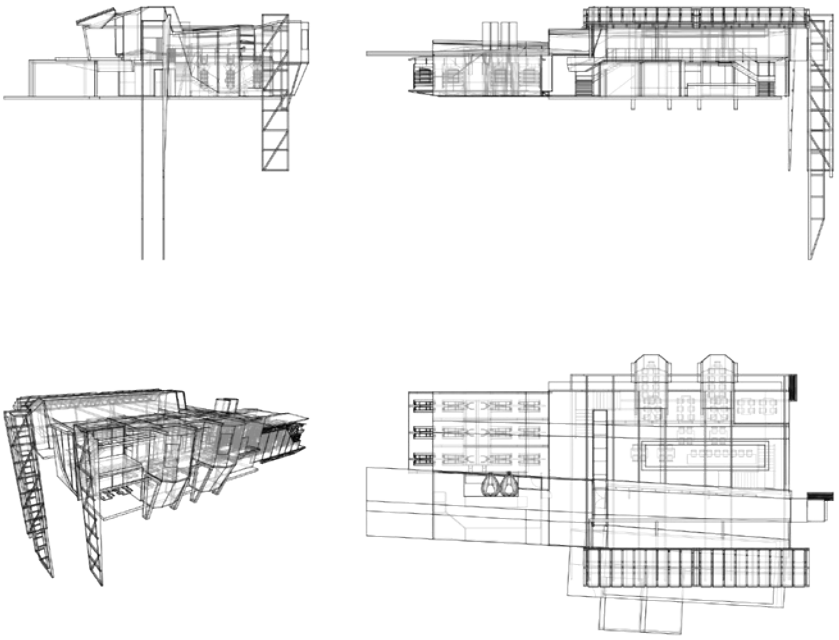
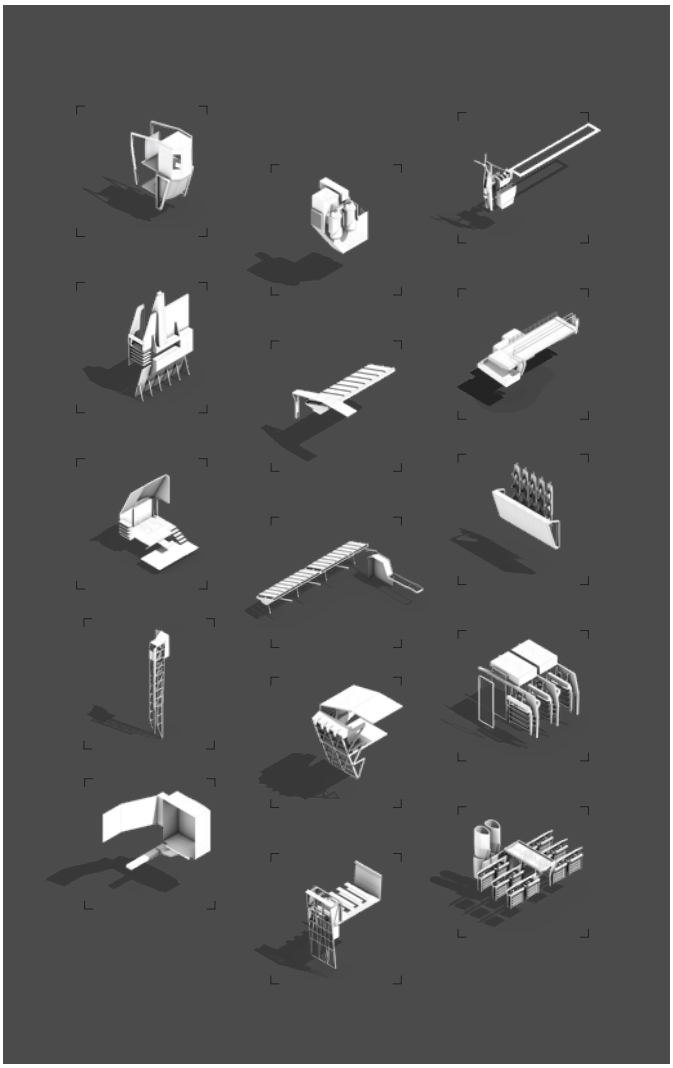
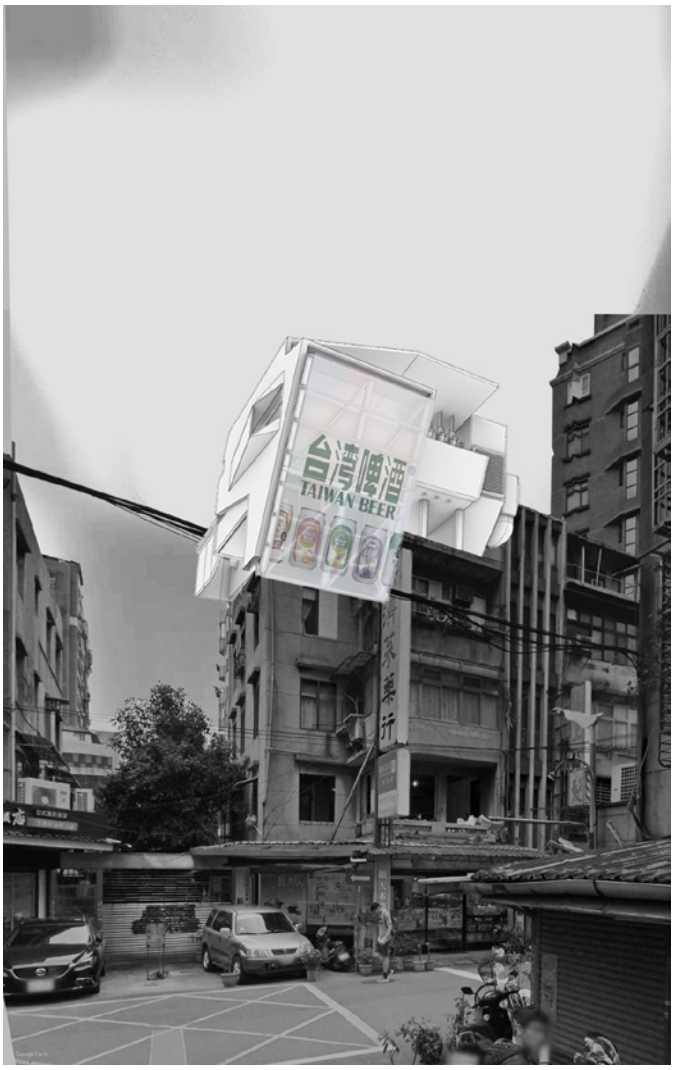
日式簡約食堂



◄ Fig. 257. Urban Farmhouse Resaurant in Context.
▲ Fig. 258. Urban Farmhouse Resaurant Drawing Set.



▲ Fig. 259. Design Experiment Three Outcome.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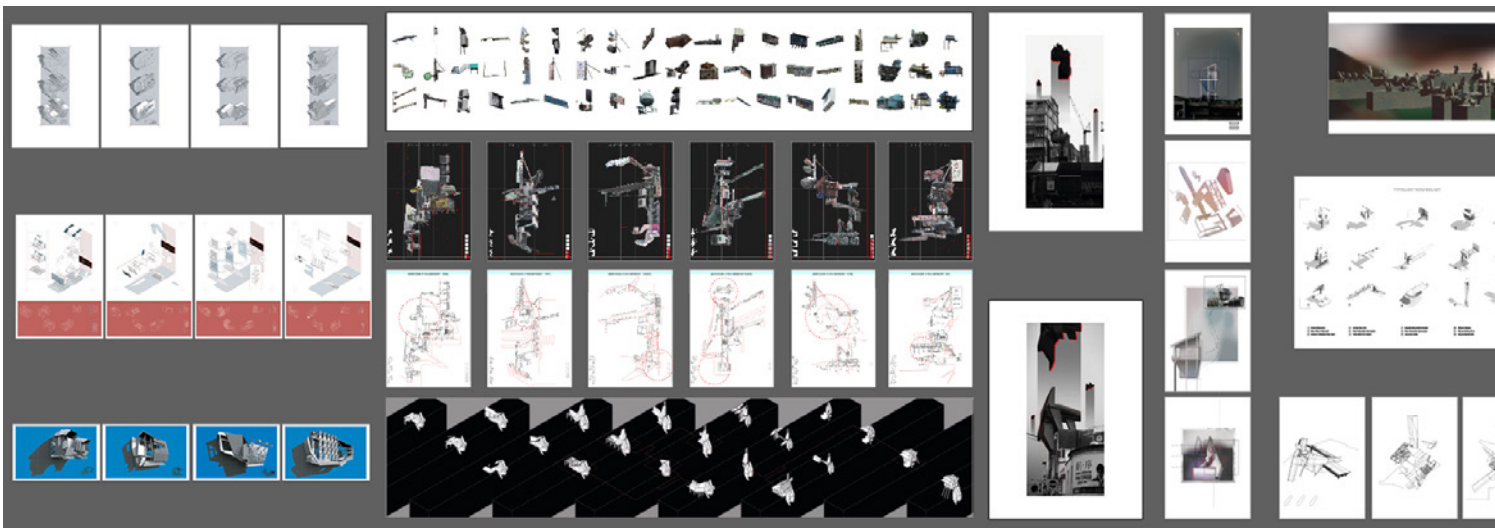
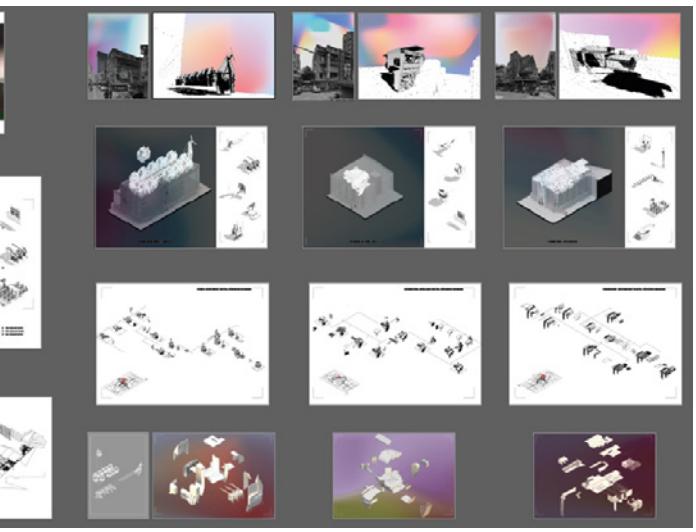
# Final Review

The final review was a discerning discussion concerning the three design experiments. The representation and body of work was well received; the reviewers saw the large body of work as the creation of a catalogue that can advance and develop through various scales and typologies. The integration of architectural language and multifunctional typologies successfully created a better correlation between the interventions and the architectural extensions in Taiwan. The reviewers pointed out that the act of developing objects is a constant in the investigation and has its pros and cons. The adaptation of John Hejduk and Plug-in City's interpretations of interrelated elements was understood and received positively. The main critique of this process was that this could lead into problematic spatial planning. It was noted that the spatial planning of the Studio Apartment and Dwelling were composed adequately, but there were some flaws in the Urban Farmhouse Restaurant. One reviewer pointed out that this was not the intent of the investigation and emphasised the aim of integrating the developed architectural language and multifunctioning elements. In conclusion, the final review was positive in the context of the research question.



▲ Fig. 260. Final Presentation Layout.
► Fig. 261. Final Review.

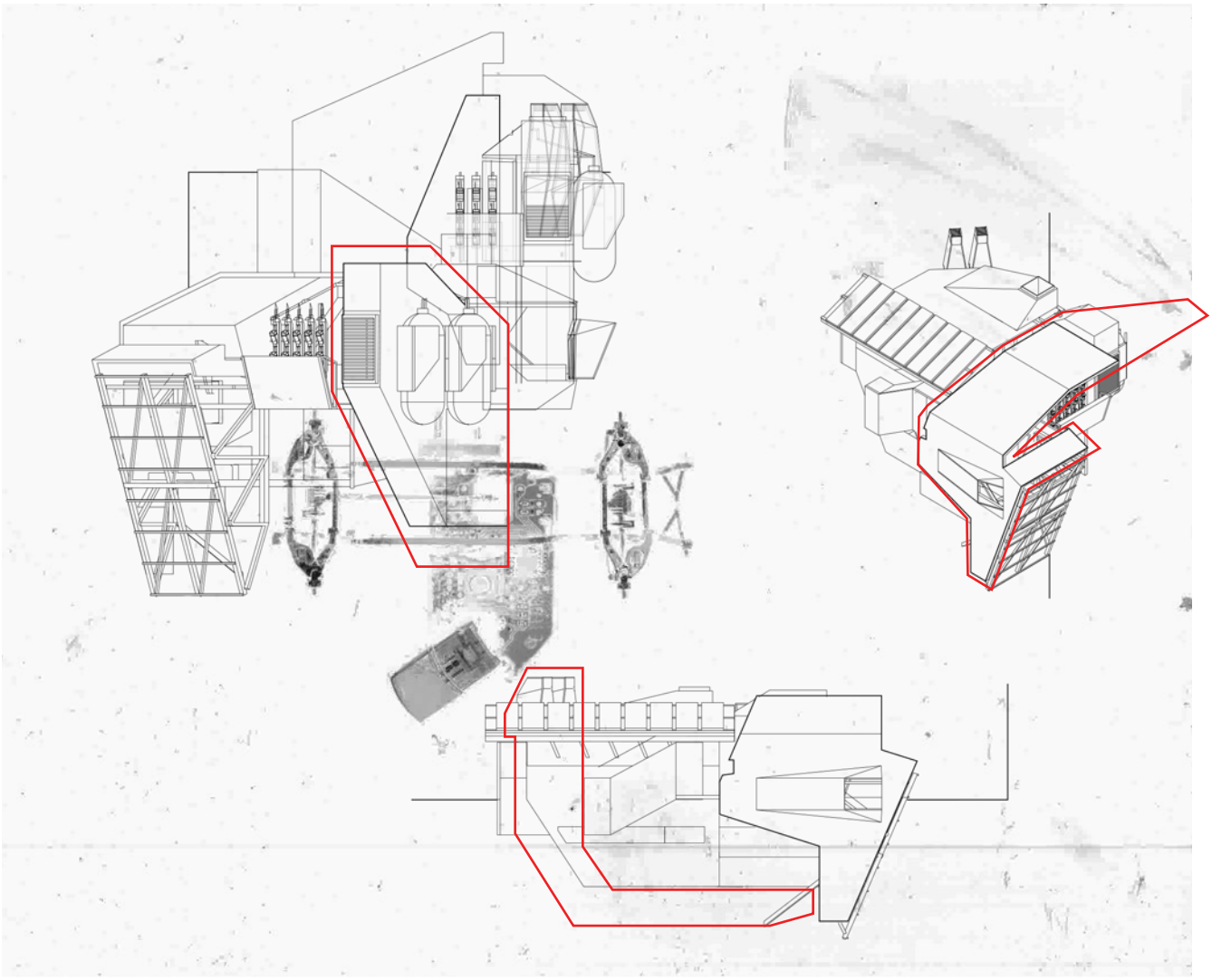


▲ Fig. 262. Final Review Set up.

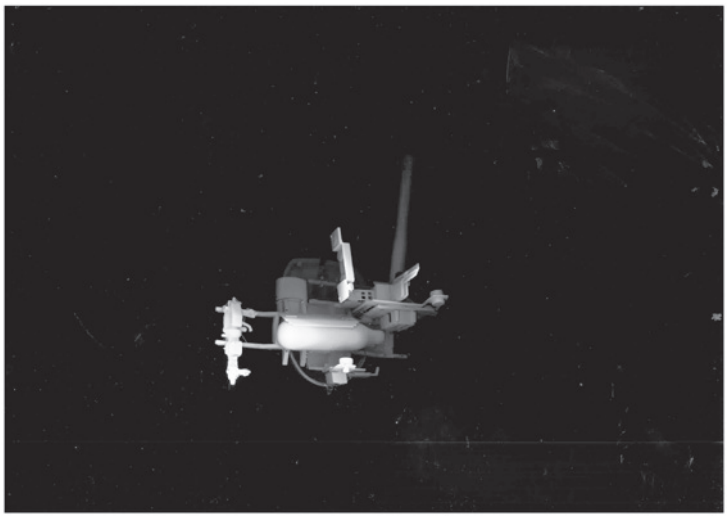
# Critical Reflection

The primary goal of this experiment was to integrate the identity expressive architectural language with the operable functions that exist in the Taiwanese extension culture and furthermore, speculate functional typologies that can better the occupant's lifestyle. This in turn presents a vision of the future of Taiwanese extensions that retains the culture and lifestyle of its people. It is evident that the development of a Taiwanese architectural language would be of assistance to its journey of defining national identity, and DE2 successfully formulated an identity expressive vocabulary. This experiment bridged the gap between abstract freespaces and the operational aspects of the phenomenon. Additionally, the experiment provided potential applications of such language into speculated functional schemes.

Upon reflection, one of the most significant challenges was the decision to tackle the commercial typology, as it is an unexplored and unprecedented category within this investigation. Therefore, along with the approach of componential thinking there were weaknesses in the spatial planning of the Urban Farmhouse Restaurant. Although it successfully addressed the aim, the application of the intervention needs development and an additional program analysis.



▲ Fig. 263. Parti Model Palimpsest.



▲ Fig. 264. Parti Model Scan.

# Conclusion

# 9

## Critical Reflection

The extension culture in Taiwan is currently facing the threat of demolition, which disrupts the lifestyle of the people and their endeavor to define national identity. The phenomenon exists as a national identity expression and a reflection of the history of Taiwan. This design-led investigation explores a potential architectural alternative that provides an architectural language that retains the cultural identity whilst speculating about and corresponding to the multifunctional needs of the structures. As a result, the thesis developed a phenomenon-specific body of work that transformed the current vernacular architecture into an identity-expressive and multi-functional vision of the phenomenon's future.

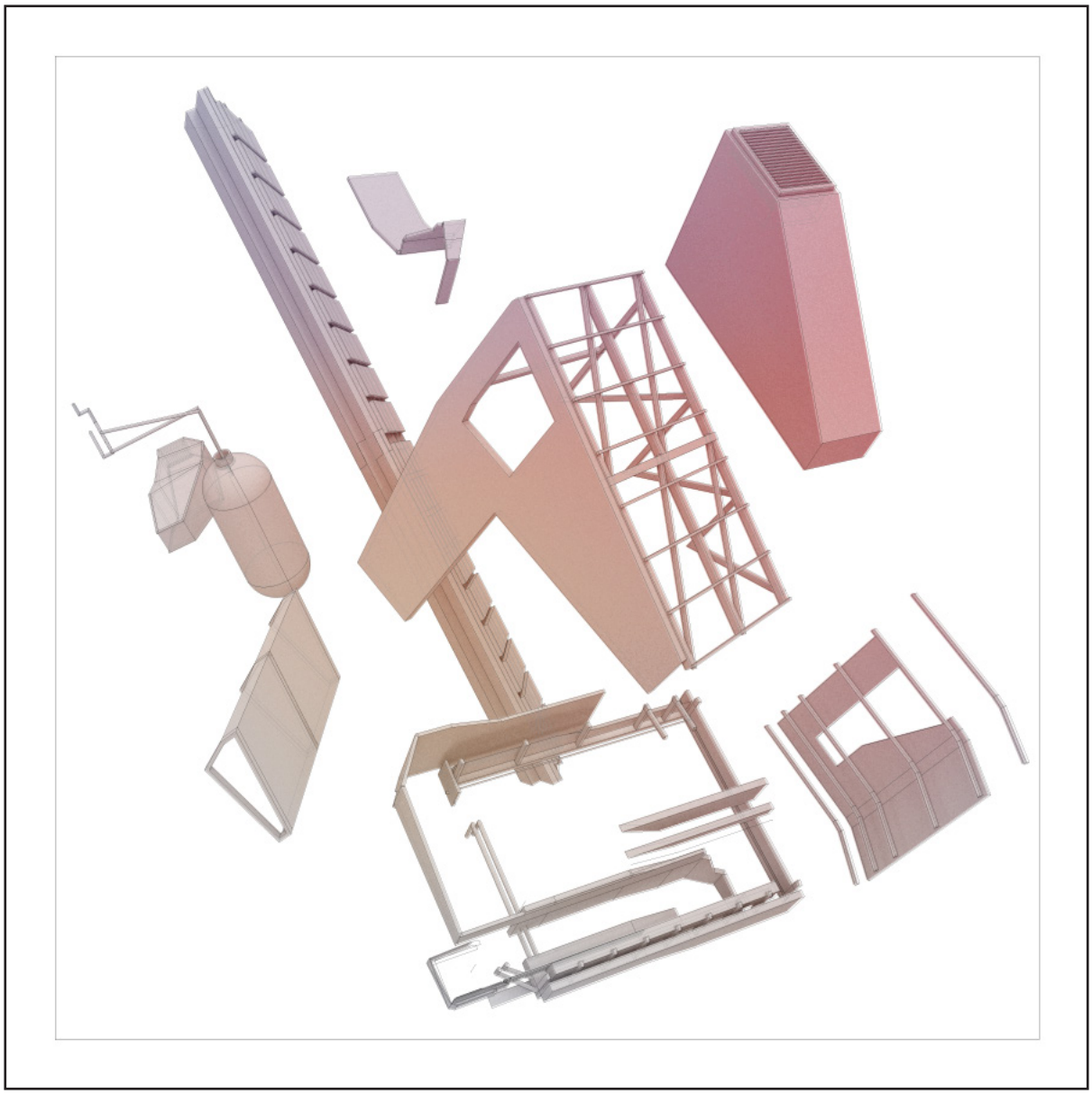
To effectively address the issue, this investigation divided the research question into four primary components: to understand the phenomenon's contextual and physical attributes, to develop an architectural language that embraces the phenomenon's formal condition, to examine and speculate on the multifunctional needs of the phenomenon and finally, to develop an outcome that integrates the architectural language developed and the multifunctional nature of these extensions. These components were reflected in the structure of the investigation. Through three design experiments with multiple interventional tests, this thesis established a body of work reflecting a shared agency of formal and functional embodiment of the phenomenon.

This research offers insights into the potentials of the extensions, in functionality and identity expression. The investigation was successful in analysing the phenomenon's characteristics in terms of birth, development, threats and operation through the research-for-design chapter. This was effective in providing the design phase a preliminary foundation. The brief historical analysis in the Context Analysis chapter assisted in understanding of the national identity disruptions of Taiwan and drew correlations between the historical events and the birth of the extensions culture. The chapter also provided insights into the current situation of the phenomenon; the well-intentioned enforcement of the extensions' demolition was understood, but criticised as it still disrupts a lifestyle that has existed for half a century.

The theoretical approach chapter offered meaningful interpretations of the extensions and the urban environment of Taiwan. Drawing the correlation between Lebbeus Woods's works and the disruptive colonial history of Taiwan were crucial in tackling the national identity issues in Taiwan through architecture. The "reverse interpretation" of John Hejduk's sequential environments proved to be effective in analysing the urban environment and assisted in the production of an empirical vocabulary. The findings from Robert Venturi's theories surrounding iconography and critiques on modernism were supportive, but upon reflection it is evident that this was not as influential within this investigation compared to the other two literature reviews. The utilisation of theorists of interest was essential in the development of approach to the thesis; it allowed a more experimental process. Despite this, the applications of these strategies only addressed the aims and objectives within the scope of this thesis; a more comprehensive and rational approach is needed to advance the outcomes.

The design cases reviewed were extremely influential in terms of providing insights into multifunctional spaces and the thinking behind the proposed outcome. It assisted in questioning the limitations of restricted spaces and the interpretation of urban environments. The findings provided precedents that both directly and indirectly relate to the research issue. These findings were taken into consideration throughout most of the design phase.

The first design exploration, Design Experiment One, primarily focused on understanding multifunctional spaces and through understanding of the potentials of balcony and facade extensions. Explorations of the notion of configuration and operable elements were effectively conducted. The speculations on future typologies were also



▲ Fig. 265. Elements of the Investigation Scattered.

executed with thought and consideration of issues the current phenomenon possesses. Upon reflection, a large portion of consideration in this series of design tests was placed upon the formal language, instead of solely concentrating on the functional element this design experiment sought to explore. This concern was discussed during the first review, and the correlation between speculative architecture and the phenomenon was made. This thus drove the structure of the design experiments to be directed into creating its own architectural language.

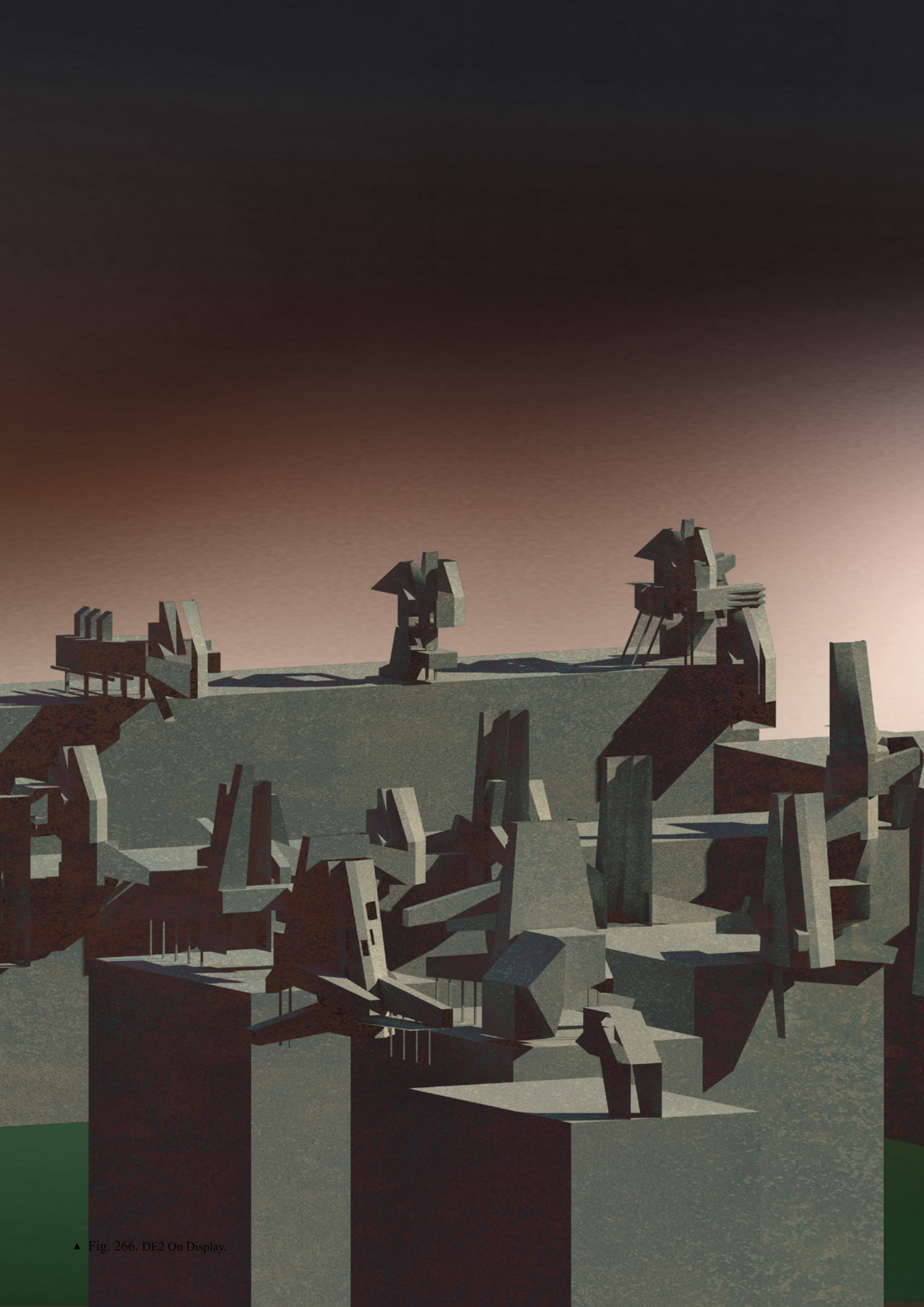
A major development in the investigation was the Taiwan Fieldwork chapter. The ethnography nature of the field study provided crucial insights into the lifestyle and circumstances of the extensions culture. The Flâneurie process advanced the understanding of the informal structures both functionally and spiritually. The participatory observations gave further insights into the circumstances and essentiality of the phenomenon. The two case studies conducted both influenced the design phase in two different ways. The Pigeon Lofts introduced a new typology of the phenomenon that possesses an exaggerated formal value of the extensions. The visit to the Jin-Mei Pedestrian Bridge provided strategies of multifunctional extensions. Overall, the Taiwan Fieldwork chapter was a crucial component to the investigation and propelled the research into an even more stimulating realm.

The second design exploration was extremely valuable in terms of addressing the aims and objectives surrounding architectural language. The multiple processes applied enabled the resulting interventions to reference the phenomenon without simply imitating it. The architectural language established was one of complexity and identity expressiveness. This series of design explorations also tested the limitations of two-dimensional and three-dimensional exploration. The findings exhibited the value of form-making to develop an architectural language and pushed the formal capabilities of the phenomenon. Despite all its success, the main flaw of this series resides in the moderately convoluted nature of the various methods. It successfully created an architectural language that references the phenomenon during the process, but the critiques of the review evidence that the relationship was challenging to identify in the outcome. This issue facilitated the decision to choose a specific site preceding the next design exploration, which will provoke functional responsiveness in the architectural language enabling a more distinct relationship to the phenomenon.

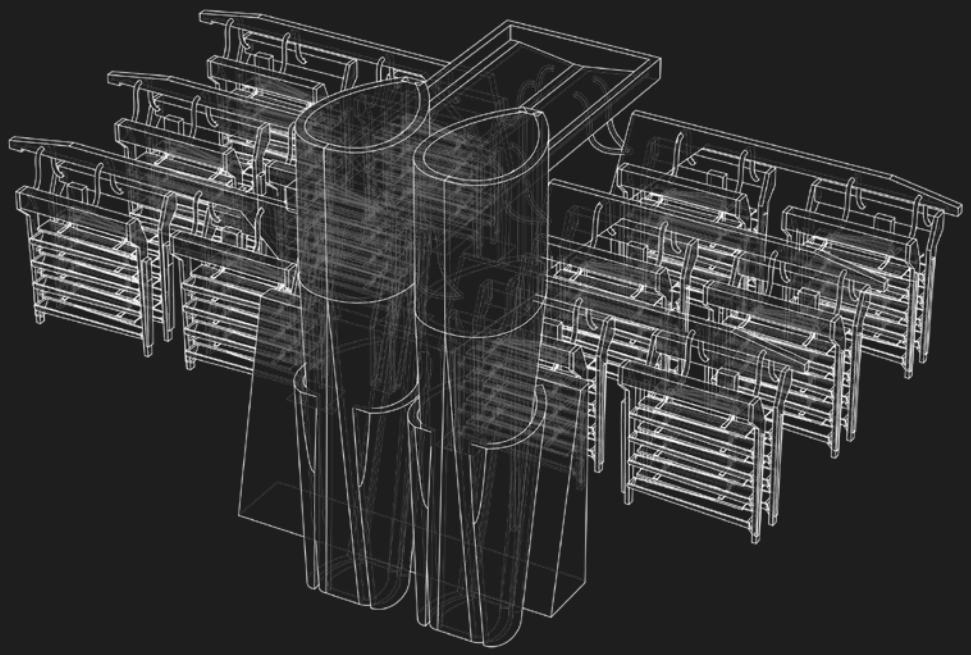
The final design exploration seeks to integrate the findings from the entirety of the investigation. The predictions from the previous design exploration were confirmed; the site chosen provoked functional opportunities. The development of operable multifunctioning elements following the architectural language successfully presented a more distinct relationship to the phenomenon. Thus, it provided a convincing alternative for the extensions culture in Taiwan. Through the conducted research and explorations, this investigation successfully addressed the research question in terms of the scope established.

If assuming that the objective of an architectural thesis is to achieve one fully resolved design solution, this work could be seen as achieving limited success in this context. Theoretically, if this investigation followed an alternative framework of developing one singular program and specific site, it would achieve a detailed and developed structure. However, one single building was not the intention of this investigation. Due to the incremental and scattered nature of the extensions, this project focused on developing a system approach that could be applied in a multiplicity of situations. A more challenging limitation of this investigation is that it is attempting to formalise something that is informal in nature; that in its essence is the factor that developed the initial attraction. At the risk of contradiction, the investigation is attempting to design for something that can only be led by the people of Taiwan themselves, and thus it is a utopian project in its own way.

In conclusion, the investigation provided a vision that portrayed the future of architectural extensions in Taiwan. This investigation aspires to raise awareness of the importance of these informal extensions in Taiwan to its people and hopes to provoke action in retaining them. Perhaps the findings from this thesis need not be confined to just the extensions; they could also be imaginably applied to stand alone buildings in Taiwan, representing a newfound national identity.



▲ Fig. 266. DE2 On Display.



## Advancing Extensions

This design-led thesis emphasised the importance and value of the Taiwanese extension culture, in relation to the lifestyle of its people and its national identity. The investigation developed an applicable identity-expressive architecture whilst adhering to current needs and speculating on potential functions. The sequential nature of the investigation allows a coherent exploration. If the scope of this thesis was to be expanded at a national-specific level, the same approach could be applied to other nations' specific architectural phenomena and their national identity conditions. If the scope of this thesis was to exceed the speculative trajectory, structural analysis and construction methods will need to be examined along with a more in-depth analysis of proposed systems.

Although structured to address the extension phenomenon, a considerable intent throughout this thesis was to approach the national identity issue following the disruptive colonial background of Taiwan. Therefore, the findings of this thesis could serve as a precursor to identifying a truly Taiwanese architecture, standalone and latched-on, inspired by Taiwan and for its people.

◄ Fig. 267. Mega-hydroponics System Drawing.

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▲ Fig. 268. Travelling to Taichung.

90