Diploma Program

Reimagine APT Living

A strategy for implementing a new cycle for Korean apartment

Hayeon Jo 220129
Urbanism and Societal Change, Royal Danish Academy

CONTENTS

EXECUTIVE SUMMARY

Societal Theme
: The cycle of demolition and reconstruction

Every year in Korea, approximately 2,500 football fields worth of buildings are demolished. The majority of these are apartments, the typical type of housing. On average, this housing type does not last more than 30 years and is subject to cycles of demolition and reconstruction. This goes beyond their physical performance and involves a complex interplay of socio-political interests. The project aims to break the pattern of demolition and reconstruction in the Korean apartment market. By reflecting on the motivations, processes, and consequences of this repetitive practice, the project will demonstrate an alternative model that can achieve the values Korean society has sought to achieve through the violent methods of reconstruction in a more sustainable and inclusive way.

Site and Proposal
: New Way of Living in Apartments, with Apartments

This project is developing a strategy for an apartment complex that hasn't been demolished yet, but will be soon. 'Gaepo Complex 5' is a typical Korean apartment complex built in the early 1990s in a densely populated residential area of Seoul. This is used as a case example, to demonstrate a site-specific proposal on a strategic/programmatic level.

The proposal is a "New Way of Living in Apartments, with Apartments" with a focus on expending both physical and social lifespan of buildings. The project will zoom in to existing buildings and the surroundings to investigate the implications of tectonic and spatial proposal. The proposal will be carried out in two aspects. One is developing tectonic typology that sustains physical performance of existing structures and ensures adaptability of added structures. This constructive intervention is to minimize the environmental impact of building new apartments indiscreetly. The other one is the design of spatial program that ensures the apartments more adaptable to social dynamics.

Societal Theme

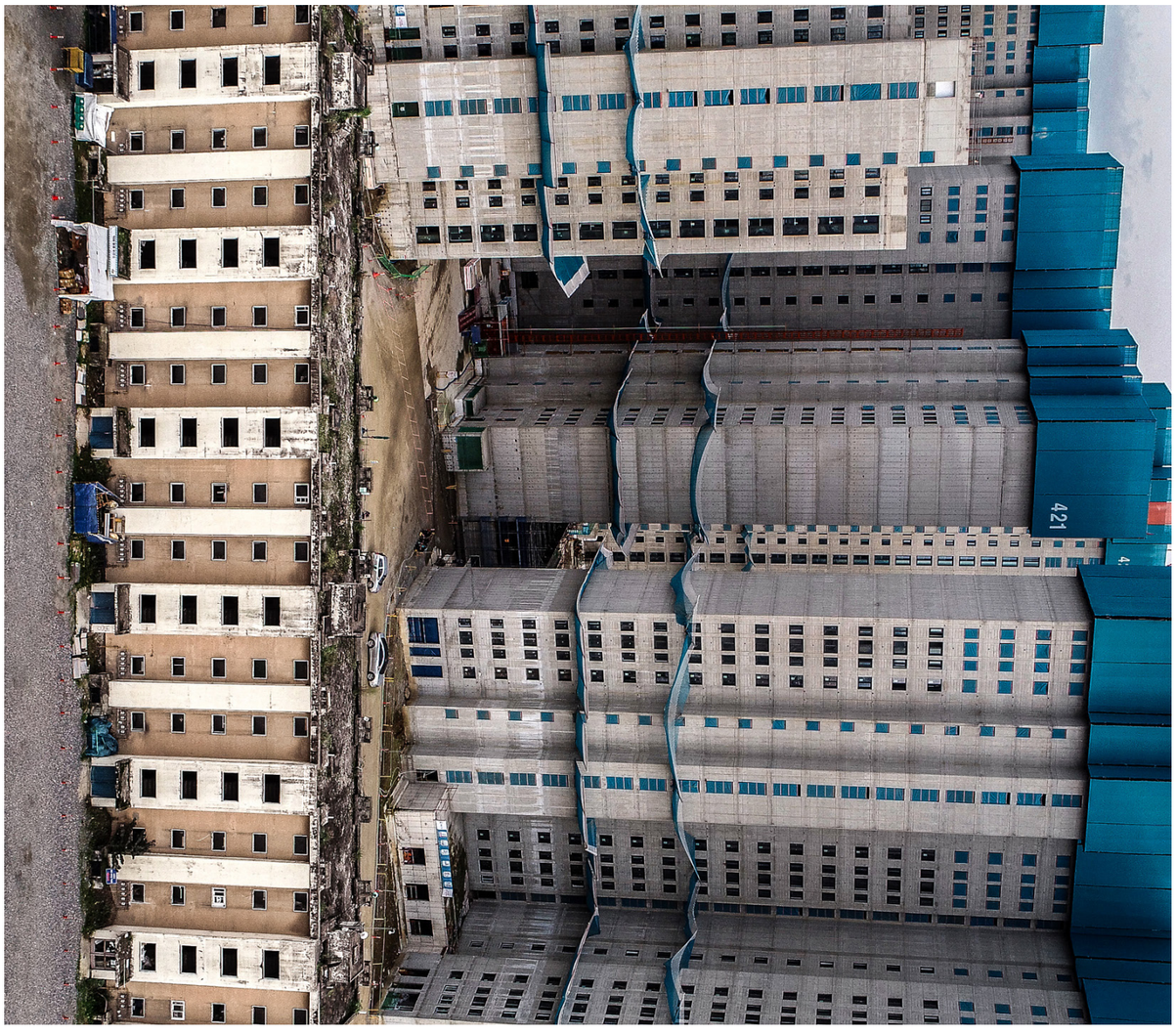


Fig01. An apartment reconstruction site in Seoul

Societal Theme I A City Too Young to Die

Korea has undergone one of the highest rates of urbanization globally. With the onset of urbanization in the early 1960s, cities experienced about 40 years of explosive growth, followed by a period of stabilization in the 2000s. Now, 60 years later, many of buildings in the cities are aging, awaiting refurbishment or demolition.According to statistics, approximately 80,000 buildings are demolished in Korea annually, with the total area of demolished buildings equivalent to 2,500 soccer fields. This number is expected to increase rapidly, as more than half of total buildings are classified as ‘aged buildings*’, having passed 30 years since completion.

* In Korea’s architectural statistics, “aged buildings” refer to structures that have passed 30 years since their completion.

Fig02. Share of Building Demolitions by Use

Housing is the predominant building type in demolition, accounting for 70% of all demolished buildings. The speed at which these buildings are demolished is also impressive; the average lifespan of housing buildings in Korea is 26.5 years, significantly shorter compared to other countries’ averages, e.g. 128 years in the United Kingdom, 121 years in Germany and 55 years in Japan. If in that case, what is driving the rapid demolition of Korean housing, and why are there so many demolitions? Is it reasonable to label a 30-year-old house as old?

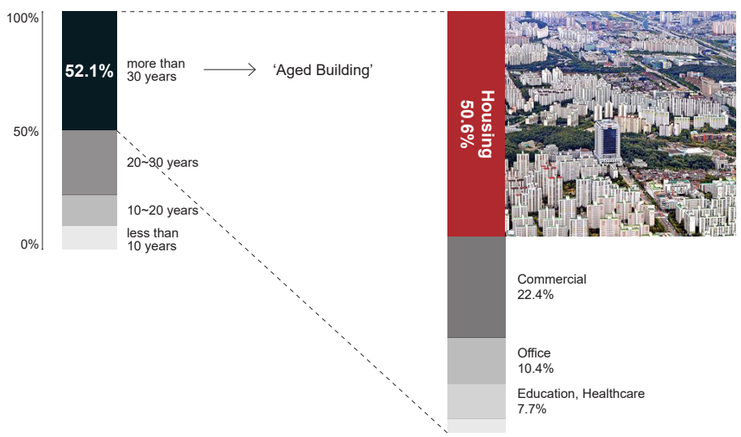
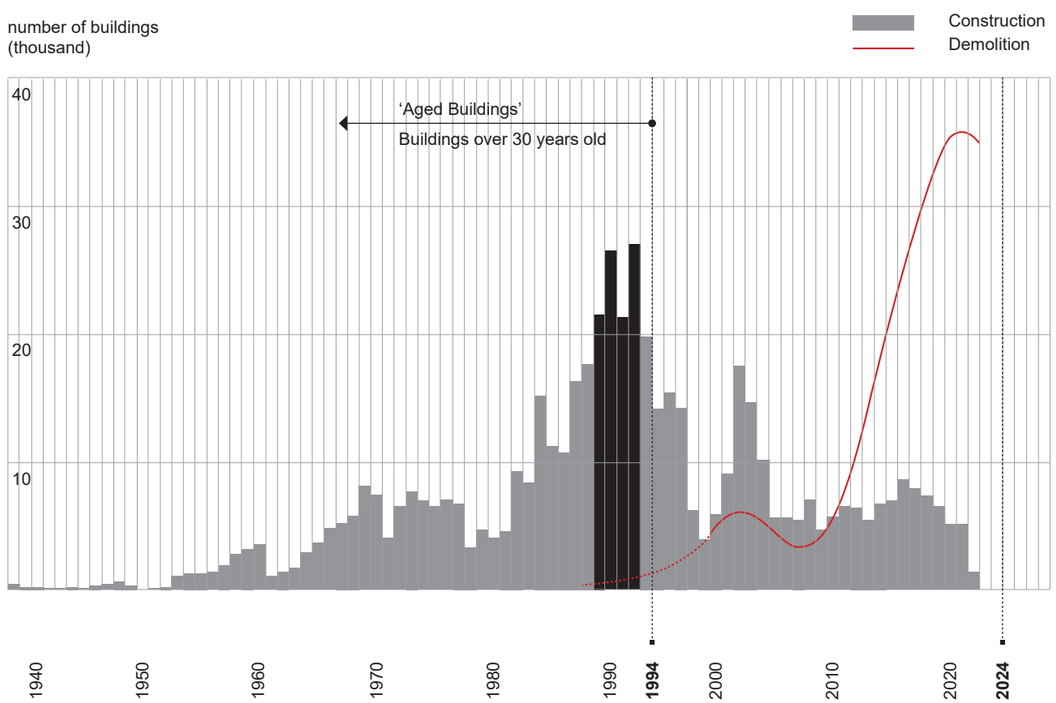


Fig03. Age Distribution of Buildings in Seoul and Share of ‘Aged Building’ by Use

Fig04. Number of Building Constructions and Demolitions by Year (1940 - 2024)

We can observe a cycle of construction and demolition every 30 years. The average lifespan of Korean buildings is 35 years, and for residential buildings, it is even shorter at 26 years. As buildings completed during the construction boom of the early 1990s reach 30 years of age, the number of demolitions in the 2020s is sharply increasing.



Societal Theme II The Pattern of Erasing and Redrawing

In Korea, housing is categorized into single-family housing and multi-family housing, including apartments, multiplexes, and row houses. Apartments are the most common type of dwelling, with 52% of households living in them. This dominance has a significant impact on the average lifespan of residential buildings due to their substantial portion of the stocks and gross floor area compared to other housing types. Basically, the short lifespan of Korean residential buildings is attributed to the practice of easily tearing down and rebuilding the apartments. This pattern is driven by two factors.

The first reason is the unreasonable construction system. Korean apartments are constructed using wall structures to save costs and time. While column structures allow flexible use of space, it's almost impossible to change layout of space within wall structures. This rigid structure makes it difficult to adapt to social dynamics and changing demands of spatial program. Furthermore, the embedded pipe system limits accessibility for maintenance, which can significantly reduce the lifespan of buildings, despite their structural durability.

Fig05. Pipes embedded within the structure is not easily repairable and corrodes faster than concrete structures, thus shortening the lifespan of the building.

The second is the high profitability of housing reconstruction. The Korean government manages its aging housing through three methods stipulated by law: remodeling, reconstruction, and redevelopment. Among these, reconstruction is the most popular option for apartments due to the increased permissible floor area ratio(F.A.R) and additional incentives for contributing to public functions, making it highly profitable for developers. For example, apartments constructed in the early 1990s have an average F.A.R of 180%. However, if these apartments are reconstructed in 2024, they can have a maximum of 350%, allowing for approximately twice the original area. For these reasons, instead of extending the life of housing through proactive maintenance, it is common to initiate reconstruction as soon as the apartment exceeds 30 years. This practice accelerates the pattern of demolishing and reconstructing buildings before they have reached the end of their physical life.

Fig06. Placards celebrating the reconstruction permit

Placards commonly found in Korean apartment complexes. Ironically, it celebrates the fact that the apartment has received an E grade, the lowest grade in structural safety inspections, indicating that the building can be torn down and rebuilt anew. The cycle of reconstruction, occurring every 30 years, causes apartment prices to follow an unusual pattern: they decline for up to 20 years after construction and then rebound as they approach the 30-year mark. Over time, deteriorating living conditions lead to lower rents, while speculation increases due to the expectation of reconstruction.

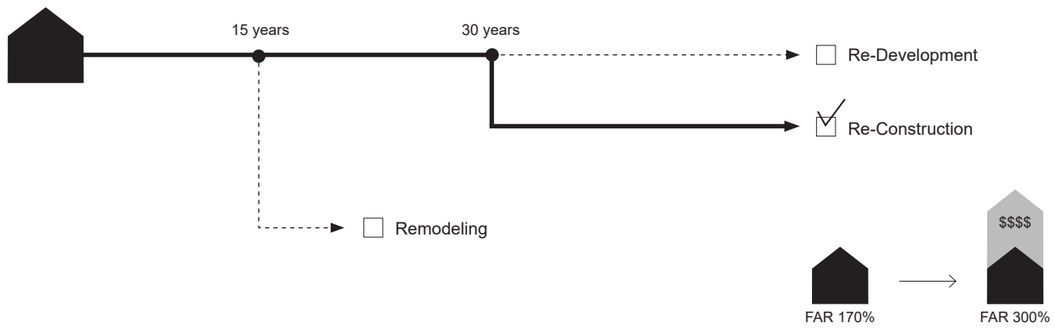
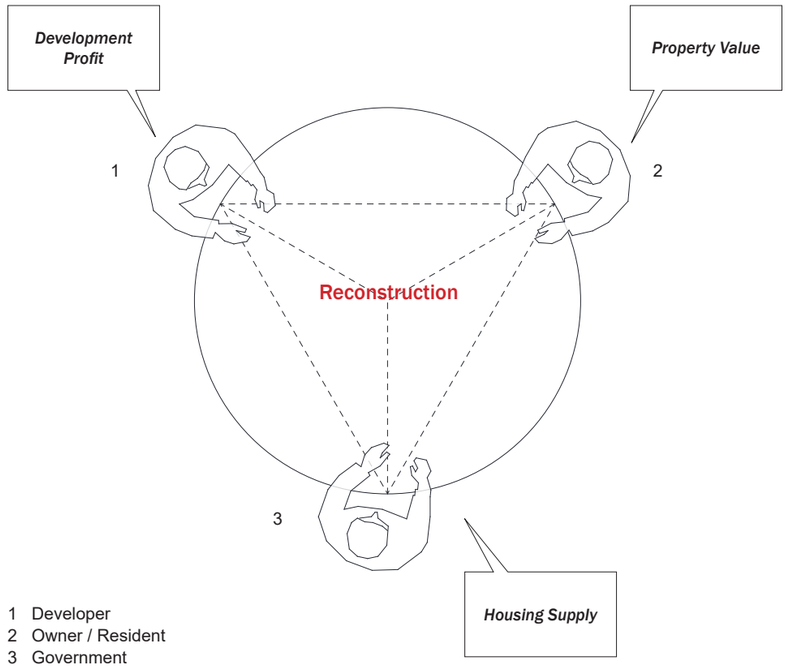


Fig07. Methods to manage aging houses

The intent of the law is to actively manage aging houses through remodeling to extend their lifespan, and to facilitate the supply of new housing through reconstruction at the end of the lifespan. However, most apartments tend to neglect building maintenance in order to expedite the reconstruction as quickly as possible. One study actually showed that 72% of apartment residents prefer reconstruction over the other two available methods.

Societal Impact

The reconstruction of apartments is a reasonable approach that aligns the interests of three stakeholders: the owner, developer, and government. Owners benefit from increased property value and improved living conditions when old houses are replaced with new ones. Developers can sell more housing units with the additional F.A.R. The government can stabilize the market by increasing the supply of housing and restoring urban infrastructure through incentives. However, what if we shift our focus and look at the phenomenon from a different angle? Would it still be reasonable?



1 Developer
2 Owner / Resident
3 Government

Fig08. Stakeholders in Apartment Reconstruction

Shrinking Population

Korea has the lowest birth rate among OECD countries. The population is already declining, and experts predict a decrease of 20 million people in 50 years. While the number of houses will continue to rise through reconstruction, we will soon realize that we do not need so many apartments in the near future. Given the anticipated sharp decline in housing demand, it may be socially wasteful to demolish and build more apartments. The focus should be on extending the life and ensuring the functionality of existing assets.

Economic Shifts

Reconstruction is driven by the potential profit gained from increasing the floor area ratio(F.A.R.). The greater the gap between the F.A.R. at the time of reconstruction and that at the time of initial construction, the higher the profit. However, since the 1990s, most apartments have been constructed as high-rise buildings with 15 floors or more, which reduces the additional area available for reconstruction and thus decreases potential profits. Moreover, construction costs have been steadily increasing because of the rising prices of raw materials and labor. Consequently, the risk of business failure for developers is increasing due to declining profits and rising costs. This indicates that the current high profitability of apartment reconstruction is not sustainable and promising anymore.

Environmental Impact

The Korean construction industry generates nearly half of the total waste and 60% of all landfill waste. Starting in 2025, the government will prohibit the entry of construction waste into landfills in the capital region due to limits of capacity. Demolishing all 300 thousand aging apartments in the Greater Seoul area would generate an estimated 56 million tons of construction waste. The question remains: where should this massive amount of waste go in the future? Even worse, Korea ranks third globally in cement consumption per capita at 1,140kg, which is notably higher than the world average of 267kg. The reckless practice of demolishing and rebuilding apartments contributes significantly to the increase in both resource consumption and waste production in Korea.

Community Extinction

Reconstruction promotes a social climate where apartments are viewed more as commodities, property, and investments, rather than as places to live. In Korean apartments, few people are willing to invest money and time to improve their living spaces. It is commonly believed that after 30 years, one can simply sit back and receive a new house. Even construction companies align all their plans around this 30-year timeframe of reconstruction when building apartments. Is there any other country in the world where they build 50-story buildings with a lifespan of only 30 years? Within this framework, it’s difficult to expect community to develop and the culture of living to thrive. Although over half of Korea’s population lives in apartments, it is challenging to find consideration for apartments as our living spaces.

Gentrification

Reconstruction is an efficient method for supplying housing in urban areas as it allows for the construction of more housing units on the same land area. The government encourages reconstruction as a means of stabilizing housing supply and improving urban environments. However, the business structure of reconstruction prioritizes private profit for the cooperative and construction company over the public interest of providing affordable housing, as intended by the government. After reconstruction, apartments often become gentrified and larger, leading to an increase in the price per square meter. Tenants living in older apartments with lower rents and owners unable to afford additional construction costs may leave, resulting in a shift in the economic class of apartment residents. Those who remain are typically existing owners with economic resources, investors, speculators, and new residents who acquire apartments after reconstruction. This phenomenon can result in a stratification of the residential population, which may contribute to gentrification. It is worth noting that only 20% to 30% of the estimated number of residents actually resettled after reconstruction, while those who were displaced continue to be pushed to the outskirts of the city.

Current Discourse

Last month, the government announced the implementation of a special law for old cities. The main goal is to ease the conditions and procedures for reconstruction, creating a fast track, to increase housing supply, and improve living conditions in metropolitan areas. The law accelerates the time for reconstruction by 10 years, from 30 to 20 years after completion, and exempts the structural safety assessment, the first hurdle for reconstruction projects. The main advantage of the special law is the increased floor area ratio, which will be raised from 300% to a maximum of 500-700% to ensure the feasibility of reconstruction. Due to the relaxed regulations, many large-scale apartment complexes that were previously hindered by various regulations are now preparing to restart one after another.

Fig09. Residents protesting for relaxing regulations and the President announcing the implementation of reconstruction fast-track.

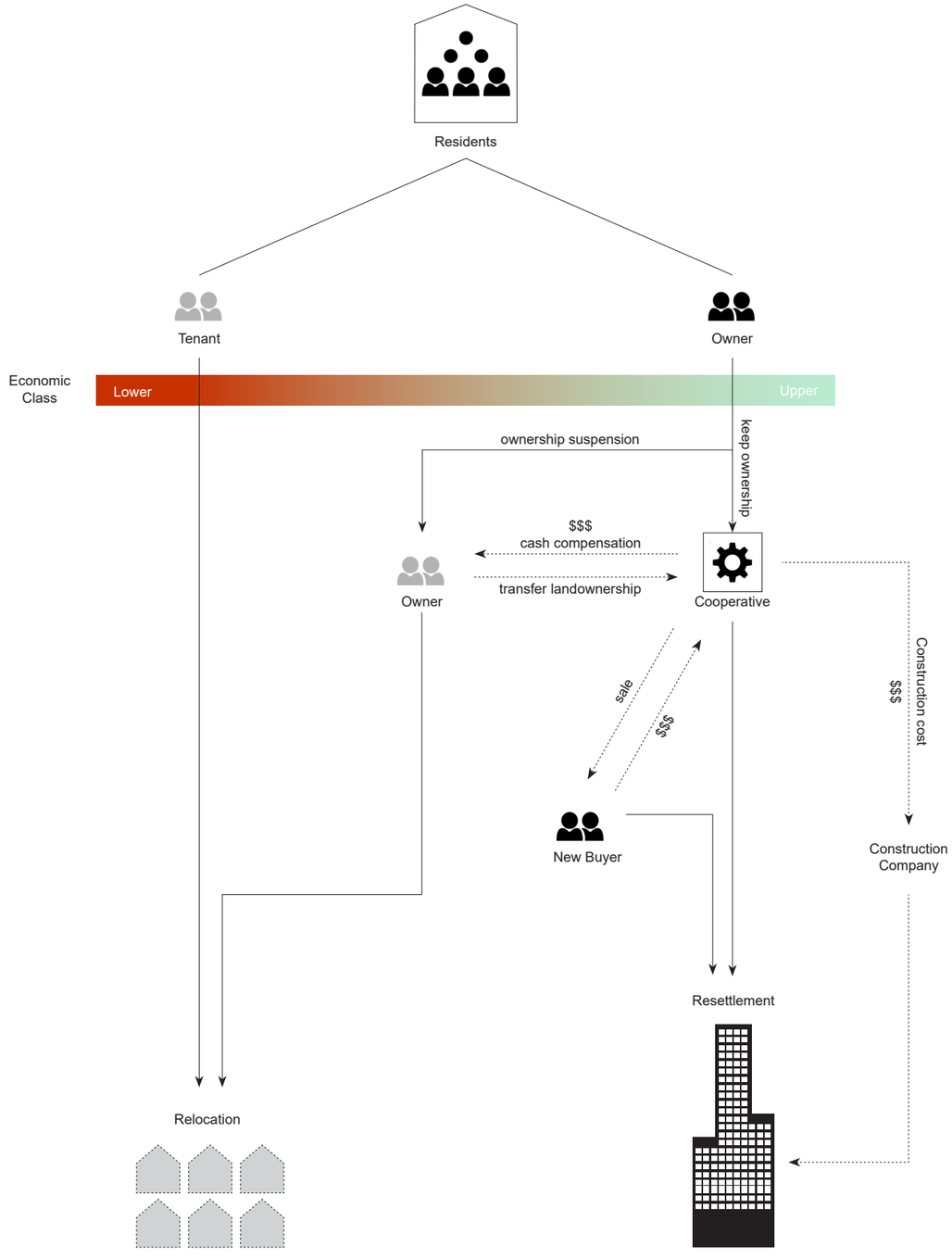


Fig10. The process of reconstruction and changes in property ownership

Proposal / Program

The project aims to disrupt the cycle of demolition and reconstruction prevalent in the Korean apartment market. By reflecting on the motivations, processes, and consequences of this repetitive practice, the project will demonstrate an alternative model that can achieve the values Korean society has sought to achieve through the violent methods of reconstruction in a more sustainable and inclusive way.

The proposal is based on two premises that are in total opposition to the conventional practice of completely tearing down and rebuilding from scratch: 1) Structural interventions to strengthen the existing structure and 2) Maintain existing and partial expansion only within the permitted floor area ratio. Based on these two premises, the proposal aims to explore ‘a new way of living in apartments, with apartments’, which will be carried out in two aspects: Techtonic typology proposal for extending physical lifespan of apartment and Spatial progam design for extedning social lifespan.

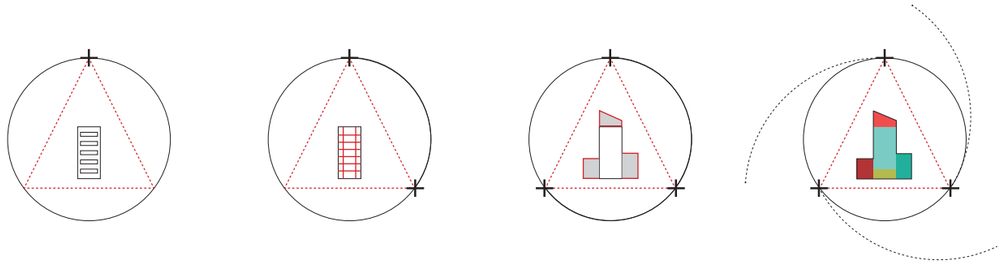
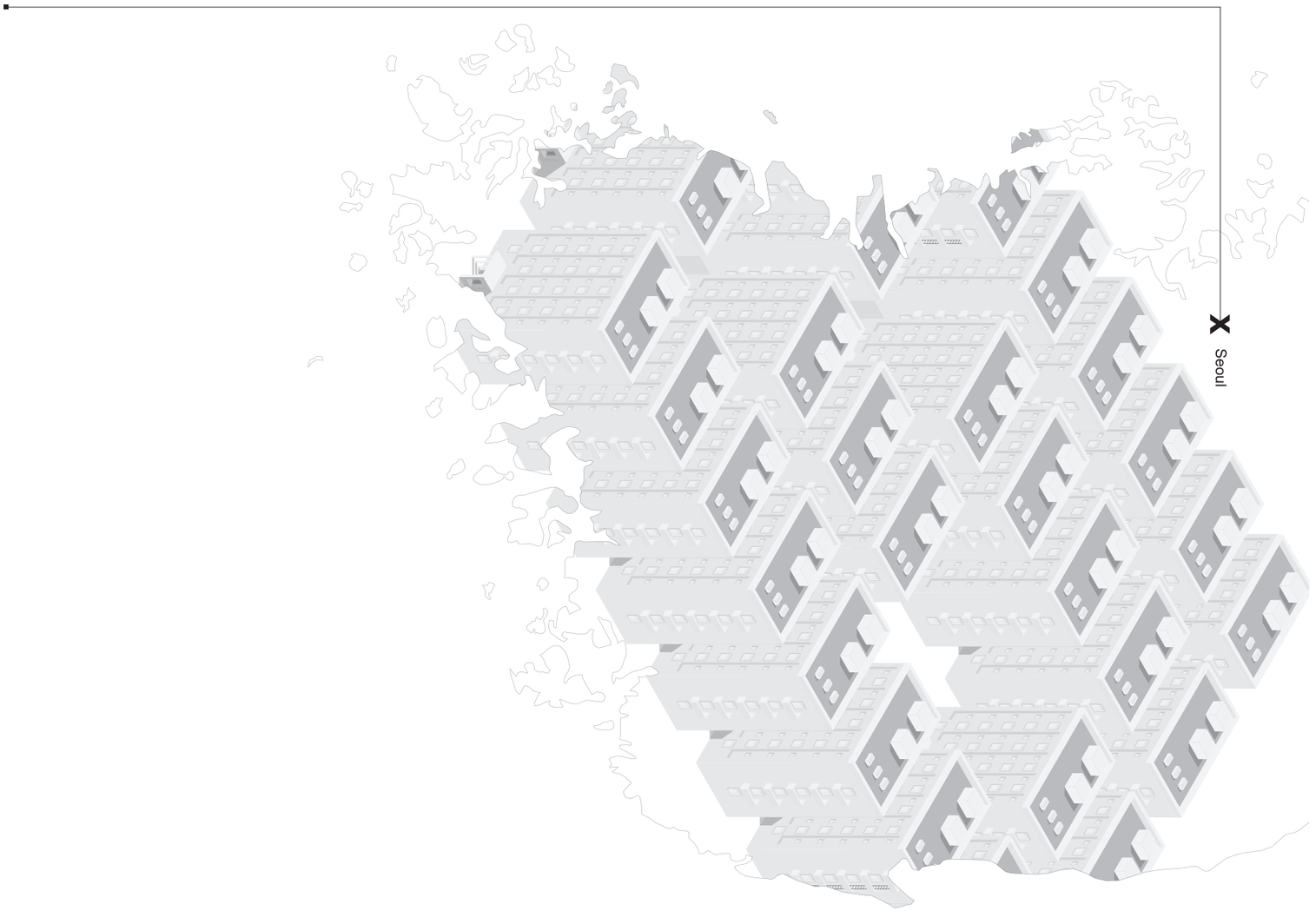


Fig11. Concept of proposal

Goal	Proposal	Function / Task	Potential Outcomes
Extending Physical Lifespan	Tectonic Typology	+ Improving the stability and durability of existing structures + Overcoming rigidity in existing structures + Ensuring sustainability of added structures	<u>Developing Constructive Solution</u> > Design for disassembly(DFD) > Carbon neutral material > Modular system > Recyclable structure
Extending Social Lifespan	Spatial Program	<u>From huge economy to local economy</u> + Economic drivers offsetting profit from reconstruction : Improving living condition, Magnet program + Adapting to the economic shifts : Activating local economy <u>From commodity to living space</u> + Fostering community and flourishing culture of living <u>From exclusive to inclusive</u> + Encouraging resident and local neighborhoods engagement <u>From monofunctional to multifunctional</u> + Facilitae new way of living + Adapting to societal dynamics	<u>Spatial Implementations</u> > Commercial and office spaces to bring in rental revenue > Rooftop restaurants and cafe to attract people > Communal outdoor spaces for cooking and dining > Yard rooms for gathering and socializing > Upcycling stations for exchanging or repurposing > Housing repair centers with a local workforce > Deformable housing units for different social groups > Homeoffice for freelancer or working mothers/fathers > Sharing platform for resources and information sharing > Information kiosks with access to local resources and services

→ Implementation within context of chosen site

Site



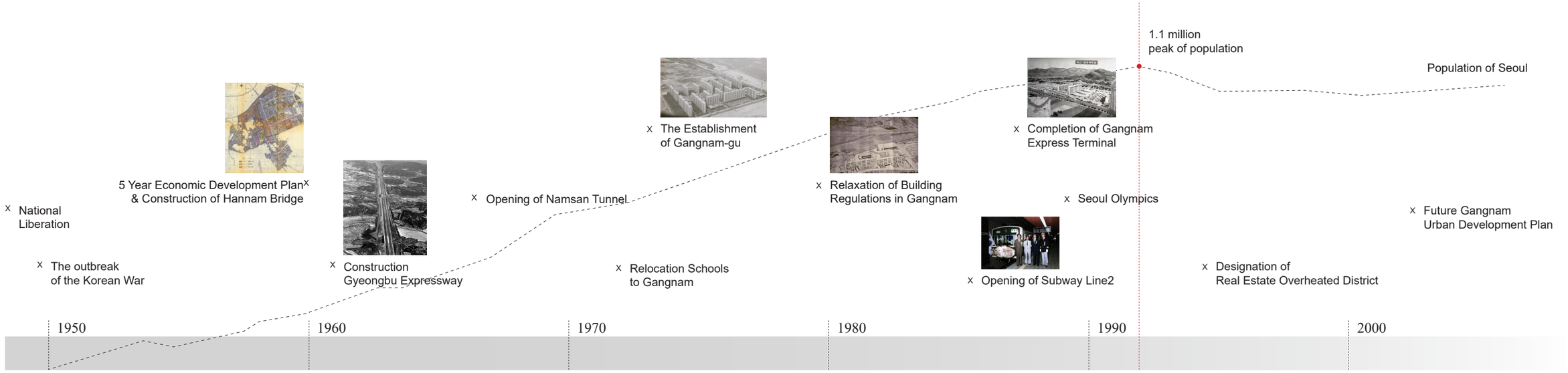
Urban Scale - The Emergence of Gangnam

During the 1960s, Seoul experienced explosive population growth, leading to serious urban problems, including insufficient urban infrastructure, traffic congestion, and housing shortages. To address the problems, Seoul expanded the administrative area and began developing ‘Gangnam*’ to disperse urban functions and population concentrated in the north. Initially planned to alleviate population concentration, Gangnam was predominantly residential. However, in the 1970s, Seoul shifted its urban structure from the monocentric to the polycentric seeking balanced development, Gangnam was designated as one of the three city centers: Sadaemoon, Yeido and Gangnam.

The completion of the bridges across the Han River connected the old and new city centers, and then social infrastructures that were previously concentrated in the north began to relocate to Gangnam one by one. To accommodate the growing population resulting from the expansion of Gangnam, the government directed the public sector to develop land for a large housing supply. Consequently, the population of Gangnam reached one million in 1995, only 25 years after the development began. As the population surged, commercial and business facilities were attracted to the area, leaving the saturated old city center. The opening of the subway solidified Gangnam as a central business district connected to the rest of Seoul. Gangnam, which began as a residential area to absorb the explosive population growth in the early years of urbanization, has since become one of the centers of Seoul.

* Gangnam originally means ‘south of the river’ in Korean, which is also the name of one of Seoul’s twenty-four administrative districts. In this article, Gangnam refers to the latter.

Fig13. Timeline of Gangnam Development and Demographic Change in Seoul



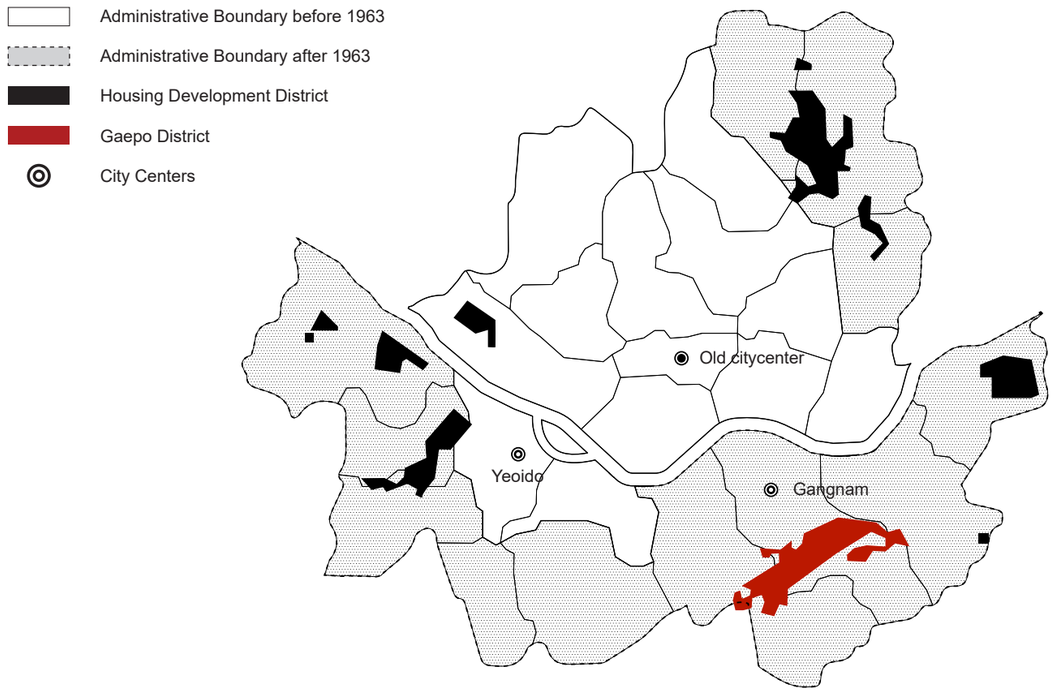


Fig14. Changes in Urban Structure of Seoul

Historically, Seoul has developed from the north of the Han River, with the land to the south being primarily used for agriculture to supply the north. As urbanization progressed, development began to expand to the south of the river. In addition to the existing old city center in the north, two new city centers were planned in the south to decentralize the urban functions. Massive residential development was carried out in five areas to solve the housing shortage. Among them, Gaepo District, the site chosen, is planned to meet the increasing demand for housing in Gangnam.

Neighborhood Scale - Gaepo District

Gaepo District is one of the residential areas developed to meet the growing demand for housing resulting from the expansion of Gangnam. Completed in the 1980s, Gaepo District consists of large-scale apartment complexes with 30,000 units in a total area of 9 million square meters, and is dominated by low-rise, ultra-compact affordable housing. As Gangnam has developed into a major center of Seoul, the surrounding living environment has improved and housing prices have risen dramatically, but Gaepo has been an exception to this trend due to its strong perception as a low-income neighborhood and its distance from the central living area. Recently, however, Gaepo has undergone extensive reconstruction and its property values have been reassessed. This old neighborhood is being gentrified and is emerging as a new wealthy neighborhood in Seoul, setting new records for the most expensive apartments.

Fig15. Urban Layers of Gaepo District

(1) Proximity to Gangnam CBD (2) High-density apartment neighborhoods (3)Shantytowns for people pushed out of the city center by urban redevelopment (4)Prestigious schools relocated from the old city center (5) Apartment complexes designed with high green space ratios & Neighboring green infrastructure (6) Low-rise multiplex houses surrounding the apartments

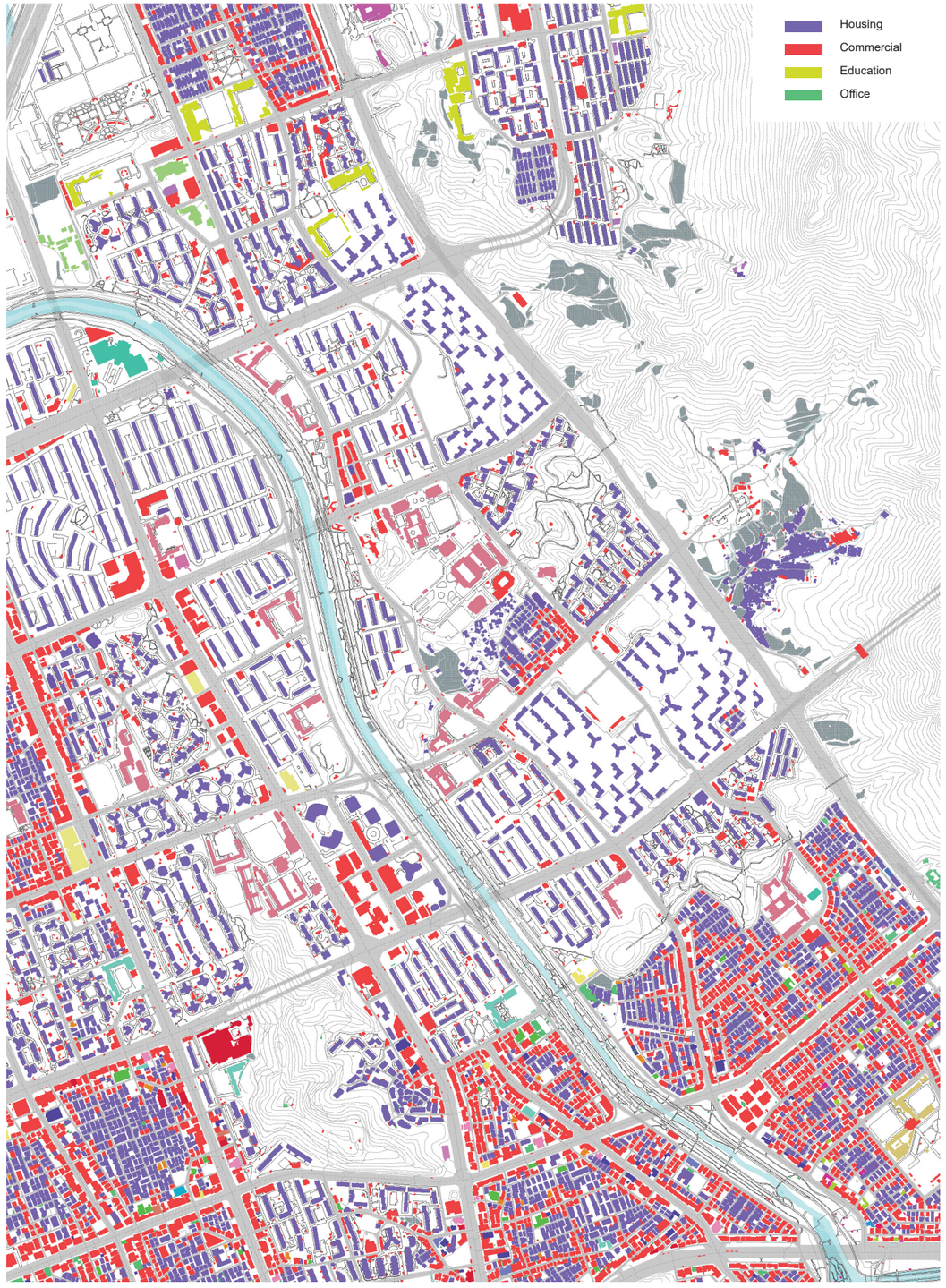
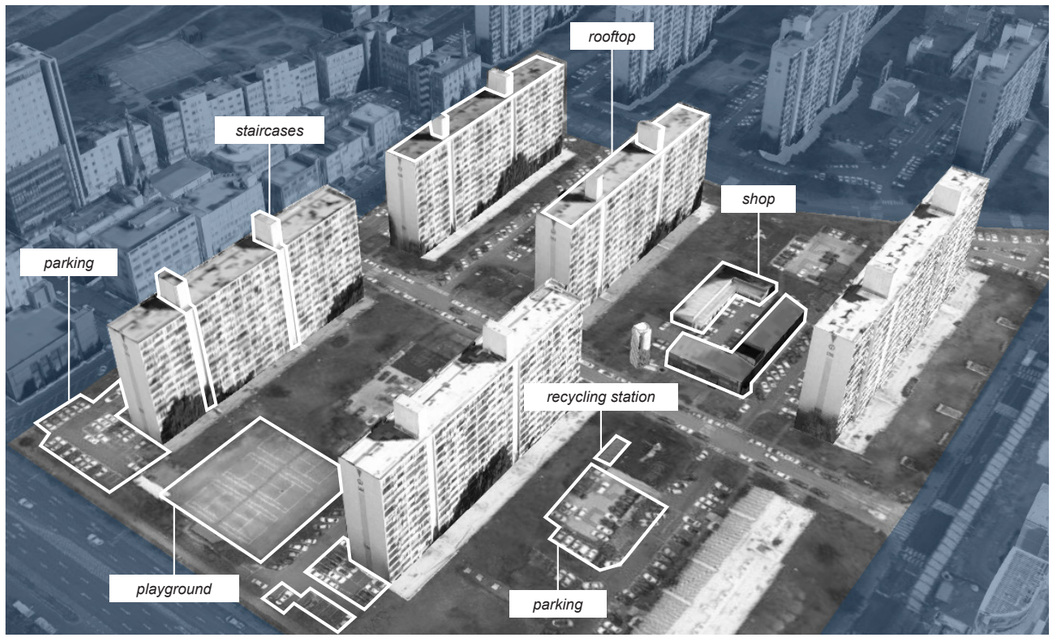


Fig16. Urban Context of Gaepo District

Architectural Scale - Gaepo Complex 5

Gaepo complex 5 is one of the remaining complexes in the area that have not been demolished. Completed in the late 1980s, the complex consists of six apartment buildings and one commercial building. The apartments have 14 floors and one basement, made of reinforced concrete. The public sector led the development of the land and housing construction, resulting in a high percentage of greenery in the complex. The apartments have a typical corridor design, with all units connected by an external corridor. The unit area ranges from 75 to 116m^2, with small-sized residences being predominant. Currently, the F.A.R is 151%, with a maximum allowable of 300%. The residents have formed a cooperative and attempted to obtain a reconstruction permit multiple times. However, they have faced obstacles due to various socio-political issues. Thanks to recent government deregulation, they can now resume the project.

Fig17. Existing Situation of the Complex



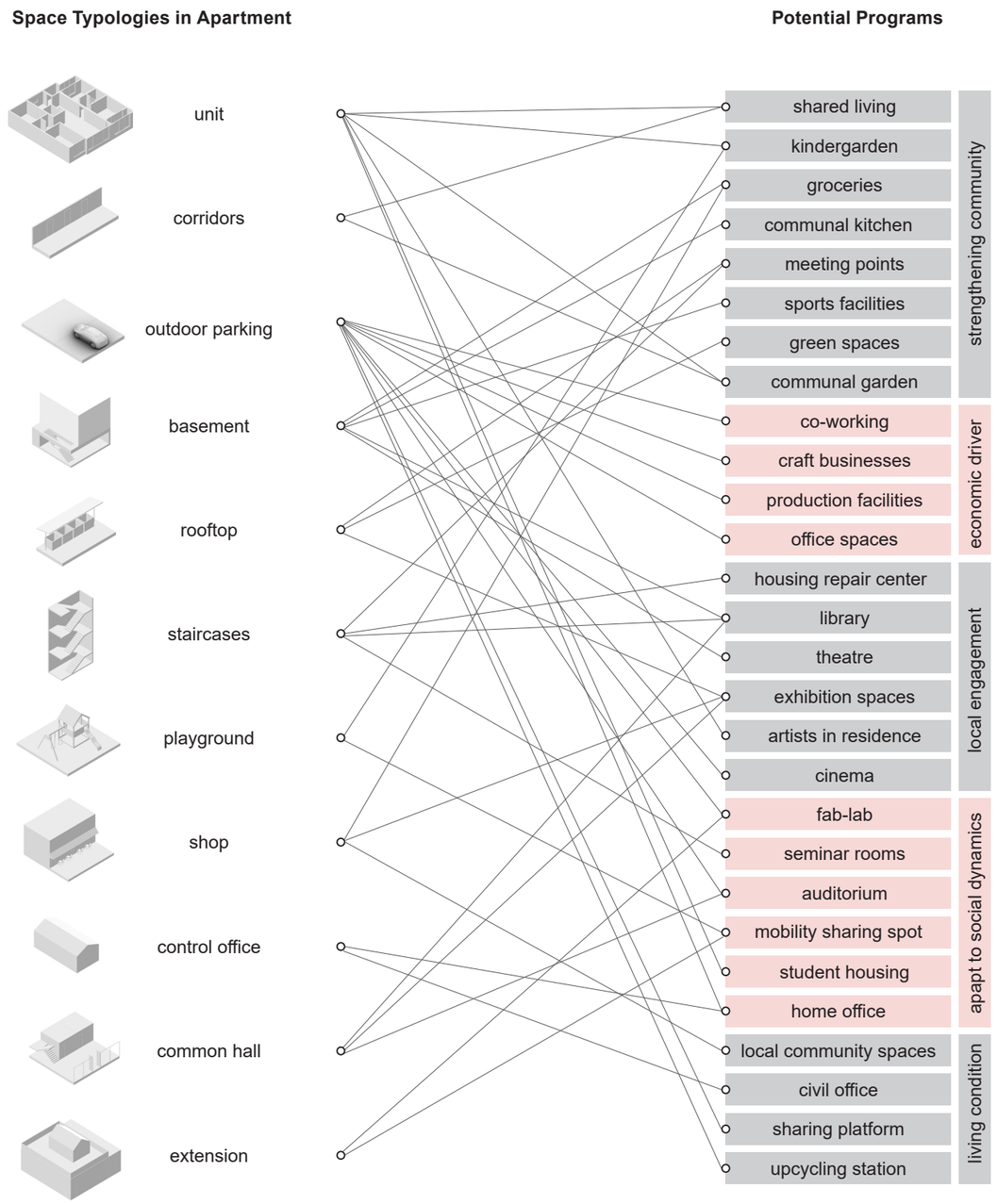


Fig15. Space typologies in the apartment complex and potential program match

Deliverables

Neighborhood Strategy

Strategic Sites	1:2000
Contextual Model	1:5000

Architectural Design

Architectural Drawings (plan, section, elevations)	1:200
Architectural Model	1:500

Tectonic Typology

Constructive Concept	diagr
Structural Drawings (plan, section, detail)	1:50
Structural Model	1:100 - 1:50

CV

Hayeon, Jo

1989.09.26 Seoul, Korea

Education

2022 - The Royal Academy - Architecture, Design, Conservation
- Master of Architecture (Urbanism and Societal Change)

2017 KyungHee University, Korea
- Bachelor of Architecture

2016 ENSAPB, Paris, France
- Credit Exchange

Work

2017-18 JOHO ARCHITECTURE, Junior Architect
- Maker Space for Kids, Seoul, Korea
- Samsungdong Housing, Seoul, Korea
- Van Cleef & Arpel Flagship Store Invited Design Competition
- Exhibition, "the FAR game", Seoul Biennale of Architecture and Urbanism
- Exhibition, "Once upon a time", AMPM
-Publication, "Pergola of the Club at Nine Bridges"

2018-22 SEORO ARCHITECTS, Project Manager
- Yangcheon Park Book Shelter, Seoul, Korea
- Seongsoo Officece & Commercial Complex Building, Seoul, Korea
- SK DND Officece Planning, Seongnam, Korea
- Deokso Elementary School Renovation, Namyangju, Korea
- UOS Engineering Building Design Competition/3rd prize
- Gyeongnam Economy Innovation Town Design Competition/3rd prize
- Jeju Civic Center Renovation Design Competition/3rd prize

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05 Understanding Urban Stocks by Emilie Gobbo
06 Building a Circular Future by Guldager Jensen

Figures

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Diploma program
Spring semester, 2024

The Royal Danish Academy
Urbanism and Societal Change
Institute of Architecture, Urbanism and Landscape

Hayeon Jo(210129)

Supervisor: Carlos Ramos Tenorio