Turin, Italy

Hanoi, Vietnam

Redefining Collective Housing Space in Vietnam

A methodological recovery project
for KTT in Thành Công Area in Hanoi.

Politecnico di Torino

Master of science program in
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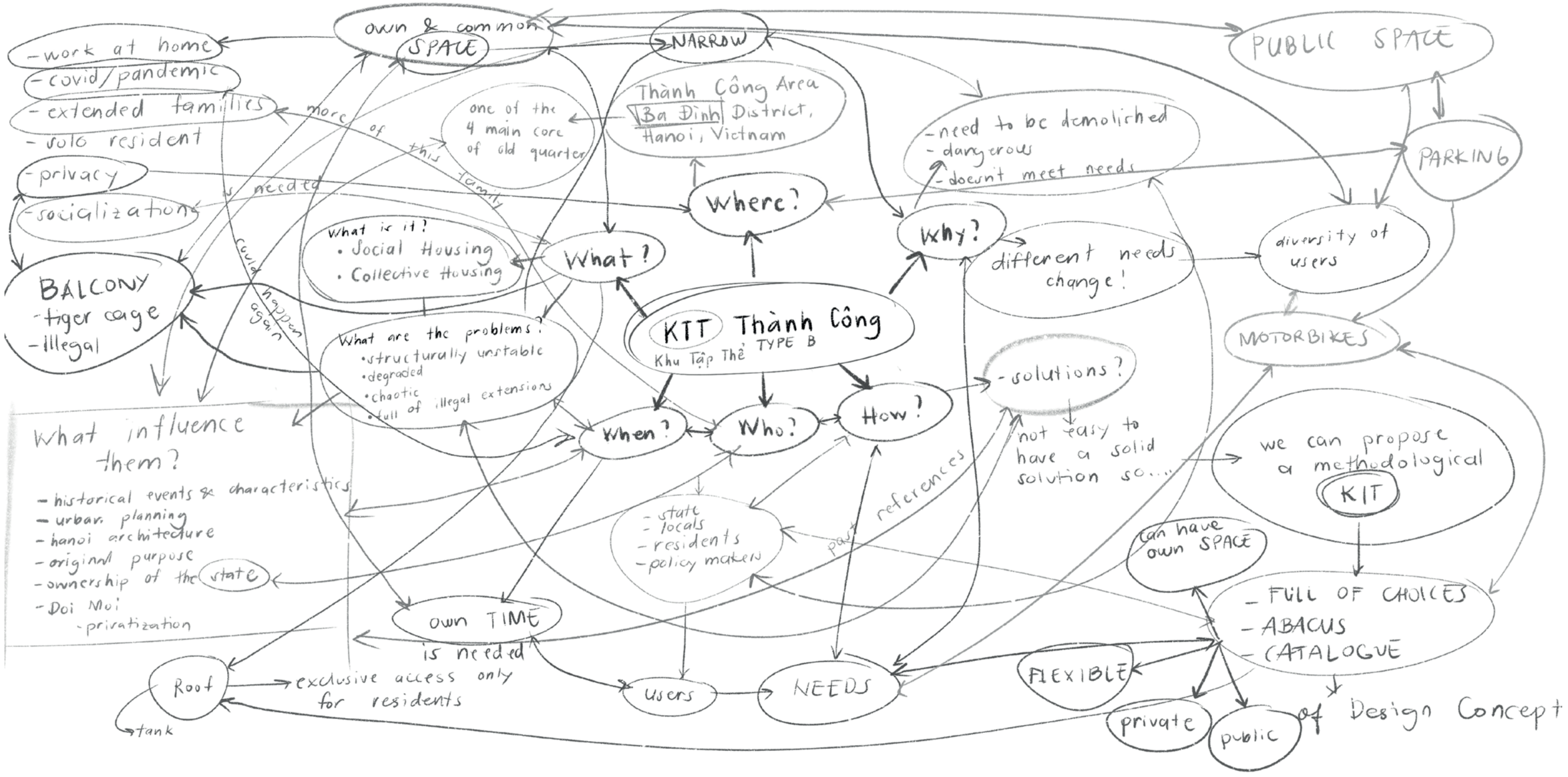
- work at home
- covid/pandemic
- extended families
- solo resident
- privacy
- socialization
own & common SPACE
NARROW
PUBLIC SPACE
PARKING
more of this family
one of the 4 main core of old quarter
Thành Công Area
Ba Đình District, Hanoi, Victnam
- need to be demolished
- dangerous
- doesn't meet needs
Where?
Why?
What?
What is it?
• Social Housing
• Collective Housing
different needs change!
diversity of users
BALCONY
- tiger cage
- illegal
could happen again
KTT Thành Công
Khu Tập Thể TYPE B
What are the problems?
•structurally unstable
•degraded
•chaotic
•full of illegal extensions
MOTORBIKES
- solutions?
not easy to have a solid solution so...
we can propose a methodological KIT
When?
Who?
How?
What influence them?
- historical events & characteristics
- urban planning
- hanoi architecture
- original purpose
- ownership of the state
- Doi Moi
- privatization
- state
- locals
- residents
- policy makers
past references
can have own SPACE
- FULL OF CHOICES
- ABACUS
- CATALOGUE
own TIME is needed
Roof
exclusive access only for residents
tank
users
NEEDS
FLEXIBLE
private
public
of Design Concept

CHAPTER 0:

INTRODUCTION

PREFACE AND ACKNOWLEDGMENT

Writing this thesis has been a make on's way of unearthing the inside depths of the KTT in Vietnam.

The inspiration to proceed with the study was rooted from a genuine and upfront attentiveness in the architectural design and the likeness to allow others to the concept design of choices in collective housing. We had the benefit of being guided by our supervisors, Professor Massimo Crotti, co-supervisors, Professor Francesca Frassoldati and Architect Ilaria Tonti, whereas their knowledge and constructive criticism has helped us established the course of this research.

We extend our deepest thanks to our families, parents, siblings and friends in Italy, Vietnam, Dubai and Philippines, whose trust and words of encouragement provided moral support for this study. Thus, to our family members Monalisa, Donna Marie, Denna Marie, Dennise Marie, Mij Aliyah, Arianne Raisa Diego, Chiara Maloles, Franchesca Virtusio-Bautista and family, Janine Angela Dolor, Dolor Family, Rueca Family, Ushani and family, Raychard Atienza, Kathleen Diesta Ferrer, Ngọc Anh, Thu Hương, Bích Phương, Linh Nhi, Phương Nhi, Đức Trung, Tiến Đạt and Quốc Anh, thank you very much for the undying support.

Special thanks to our closest friend, Marjorie Laraya, who departed as she gave one of the biggest support as a friend during hard times of our studies.

And lastly to Architect Alberto Brandinali and Architect Guglielmo Stivala who has been with us during our professional training.

This thesis represents not only the pinnacle of academic efforts but it also shows personal and cognitive growth and maturity. It is our hope that this study will contribute significally to the discourse surrounding KTT and aspire future researches and study broader avenues in this field.

As we share this work into the academic world, we are filled with a sense of accomplishment and anticipation for the discussions and contributions that may arise.

A degree thesis that explores the "**beauty**" and
the "**beast**" of the welfare system,
the so-called **Khu Tập Thể** (KTT).
The beauty as it holds **memories**,
the beast as it holds numerous **issues**.

ABSTRACT

The rapid change in today's living style has affected housing choices and lifestyle preference. This study will present alternatives on how to compose their own space in KTT. It aims to provide a systematic approach to craft skills to collective housing that emphasize the provision of diverse substitutes tailored according to the user needs.

The methodology of this study involves a thorough exploration of catalogues of choices from the ground floor shops, to the residential parts and to the roof or upper part of the building to also set a limit. The aim is to also empower users to actively shape their living environments by incorporating a range of materials, construction techniques and spatial configurations.

The outcome of this exploration serves as a conceptual guide and methodological framework for users of collective housing but also for the policy-makers and developers to have another approach on how to accordingly plan housing designs and living lifestyle for the people of Northern Vietnam. Thus, we present a toolbox of possibilities to help individuals be conscious of their choices in order to enhance their living space.

In conclusion, this research is simply a kit of design choices that can meet individual or peers preferences and needs to give awareness that skyscrapers are not the only solution after demolishments.

INTRODUCTION

In Vietnam and many other Asian countries, the idea of an extended family living together in a house is deeply ingrained in cultural and social norms. The life of this typical family is characterized by time spent more at home, working, studying, cooking, cleaning, gardening and socializing, a daily basis of having a home.

There are collective housing built in the early 1960s, well-known as KTT blocks in Hanoi, mainly categorized into six typologies (A,B,C,D,E and F) located in different districts, built in opposed years adapting non-identical materials however they provide nearly the same area, volume and context. These blocks are distributed in Ngọc Khánh area, Quynh Mai, Kim Giang and many more, in which there are also four main zones that are structurally in danger, Thành Công Area, Kim Liên, Nguyễn Công Trứ and Giảng Võ.

This study will further explore the KTT Type B distributed in Thành Công Area, Ba Đình District, Hanoi, Vietnam with the focus on giving more choices but to also set limitations to not always jump to the idea of skyscrapers.

Chapter 1 is about “Past is Past”, an overview on social housing in Vietnam situated years back which resulted in the design used. The said housing style has a great impact on today’s daily lifestyle and living space.

The chapter 2 discusses the “Unlawful But Functional”, the analysis on the existing situation in building scale, showing the master plan and other technical drawings and diagrams. This helps the whole research to highlight the most important part before designing, which is to understand a variety of daily routines that characterize different spatial use by narrowing down s list of users’ status and activities.

The chapter 3 shows the “Uncontrollable But Livable”, which is directly about KTT, concluding it as the “Old But New”. This part shows the advantages and disadvantages of existing old apartments that still have new problems but can still adapt to every new spatial use. Evident structural damages of KTT apartments have been visible to a greater degree such as horizontal expansion due to lack of functional space and chaotic facades. This results in a call of attention that requires redevelopment which will be tackled in this study as it aims to provide a methodological approach to help provide housing design choices that are fit to their lifestyle and preference.

The chapter 4, “Needs Have Choices”, the proposal on the project in building scale explores different catalogs of choices for every need.

Therefore, a so-called “RE-KTT”, which is a methodological recovery guide for collective housing based in Thành Công Area, will serve as an extension of previous studies about KTT with different approaches for the locals, municipality and developers. It proposes a method with the use of architectural designs that showcase not only a simple aesthetic, but will also provide a flexible and functional space. This kit also gives more options on how to craft one’s personal space.

Thesis Topic:
Khu Tập Thể Thành Công Area, Ba Đình District
(Hanoi, Vietnam)

University:
Politecnico di Torino
(Italy)

Supervisor:
Prof. Massimo Crotti

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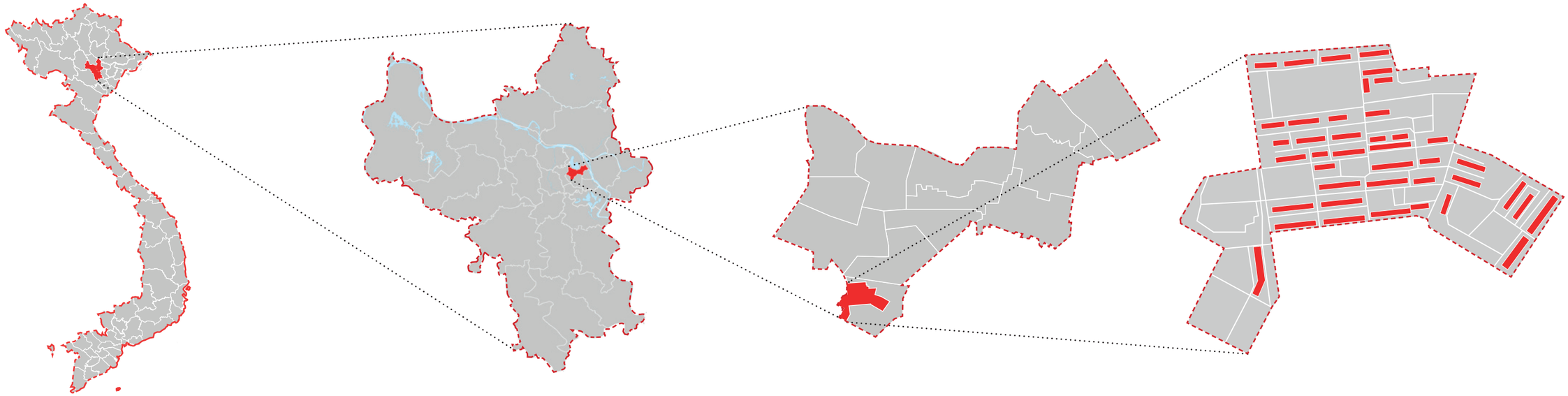
Arch. Ilaria Tonti

Candidates:
Dianna Marie Aquino
(Philippines)

Đức Huy Phạm
(Vietnam)

CHAPTER 0

LOCATION OVERVIEW
Project Area



country : **VIETNAM**

area: 331 690 km²

population: 98,858,950 (2023)

division of cities

city : **HANOI**

area: 3 359 km²

population: 8 053 663 (2019)

division of districts

urban district : **BA ĐÌNH**

area: 9.472 km²

population: 225 910 (2009)

division of ward

area/ward : **THÀNH CÔNG**

area: 0.23 km²

population: 20 000

division of streets

https://www.citypopulation.de/en/vietnam/hanoi/admin/
https://www.worldometers.info/world-population/vietnam-population/

https://www.citypopulation.de/en/vietnam/hanoi/admin/001__ba_%C4%91%C3%ACnh/

Mobility

Hanoi is the capital city of Vietnam, therefore it is one of the places that use a lot of motorcycle/motorbikes in everyday life.

"Four million motorbikes navigate the narrow streets of Hanoi, having close to completely replaced the bicycle as a means of transport." (Hansen, 2015)

In this table, the number of motorbikes/ motorcycles and the number of cars have a huge and significant gap.

Road Transport Vehicles

	Automobiles							
Year	Car	Bus	Truck	Specialized Automobile	Others	Total Automobiles	Motorbike, Motorcycle	Total
2011	218,507	17,477	79,100	3,563	2,530	321,177	3,980,070	4,301,247
2012	226,810	18,334	82,786	3,681	2,788	334,399	4,444,127	4,778,526
2013	231,960	18,560	84,882	3,773	2,947	342,122	4,660,761	5,002,883
2014	255,658	19,702	93,572	3,947	3,538	376,417	4,852,380	5,228,797
2015	275,938	20,155	102,890	4,500	5,230	408,713	5,045,672	5,454,385
2016	327,820	23,141	123,841	5,304	5,849	485,955	5,255,245	5,741,200

Source: UNESCAP - Final Report: Sustainable Urban Transport Initiative - Hanoi, (2017), pg. 4

General Statistics Office, Hanoi City Police

MOTORBIKES OVERVIEW
Overview

A motorbike can carry anything.

The main transportation in Vietnam are private motorbikes (Huu & Ngoc 2021) and these are used not only for personal transportation but also for goods transportation because of its flexibility and capability to go anywhere and for anything.

Photographs show that motorbikes are also used to transport various goods regardless of their sizes.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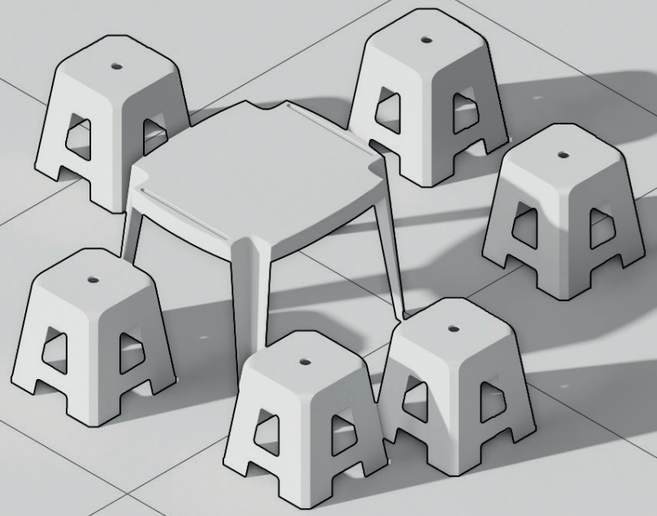
STREET OVERVIEW
Overview

Vietnam

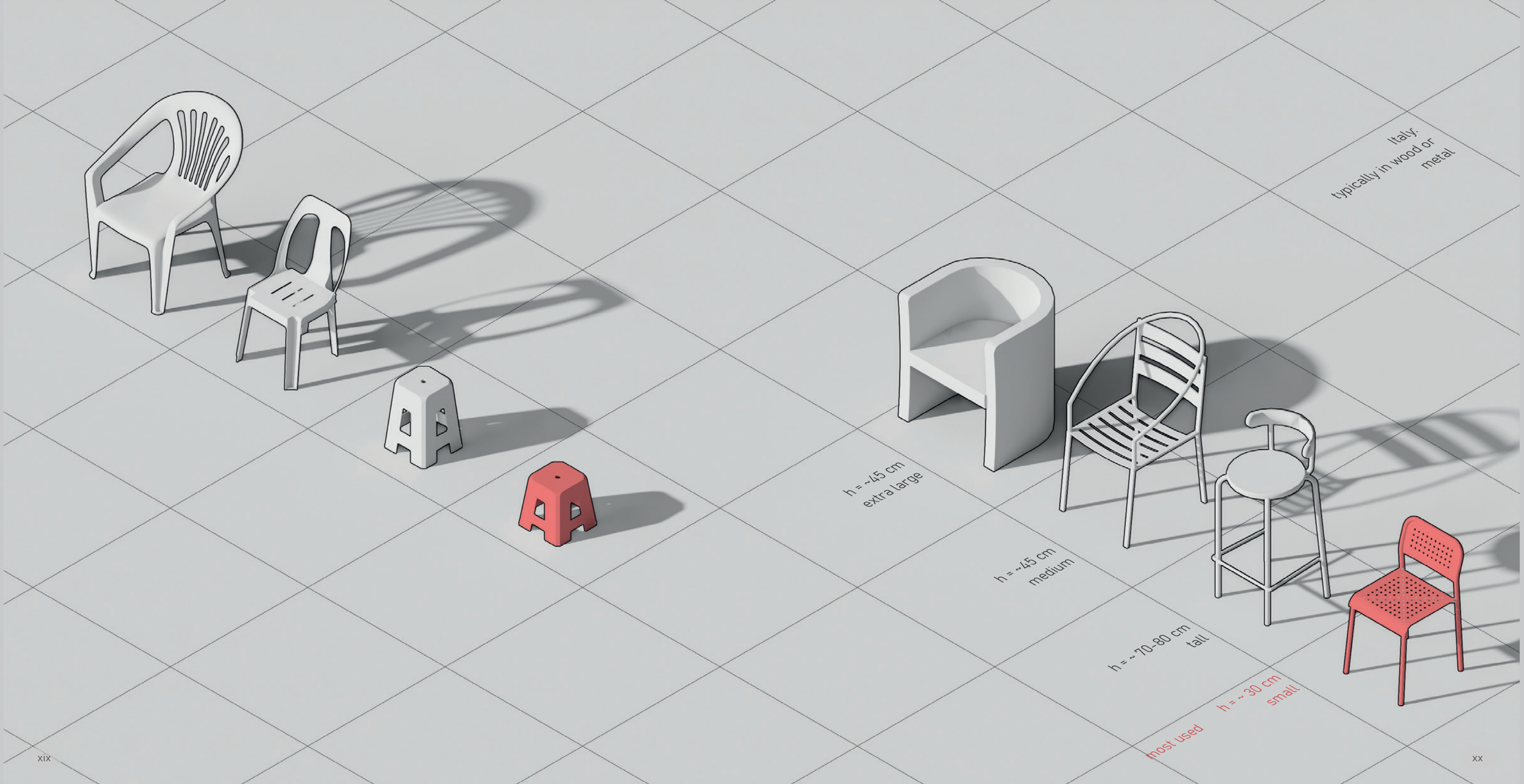


Shows a small table with atleast five small chairs on the sidewalk.

FLEXIBILITY TO ITS *TINIEST*

The use of tiny plastic stools and tables surrounding the street of Vietnam is one of the most eye-catching feature of a street for pop-up businesses.

According Kien et. al. (2023), businesses on sidewalks are one of the typical culture or tradition of Vietnam, in addition to some countries like Thailand, Korea, China and Singapore.


h = ~45 cm
extra large
h = ~45 cm
medium
h = ~ 70-80 cm
tall
h = ~ 30 cm
small
most used
Italy:
typically in wood or
metal

© Coomber 2006


© Author/s 2012


© Hilton 2017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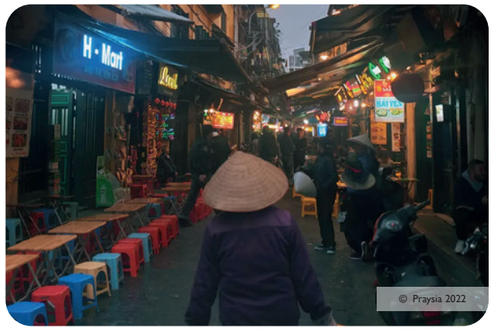

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HOUSING OVERVIEW

Tube House: The Most Common Housing in Vietnam

1926

2022

present

CHAPTER 1:

PAST IS PAST

1

This chapter aims to shows a brief history through short timelines on the urban planning and development of Hanoi architecture, collective living quarters and Ba Đình district considers all of these past factors as part of those that influenced the built features of existing KTT housing model and others infrastructure.

How come these narrow spaces of KTT housing models were constructed? How come it has a touch of French Style? How come everything is structurally the same? What was the reason behind these extensions?

All these questions open existing and future discussions about all the factors on deciding which features to keep and take away from the past to design a more "modern" style because certain structures may still be beneficial in today's growing needs.

It is known that memories have marked and influenced present activities that had bult the environment. Old infrastructures that cannot meet new standards; Old apartments that have new users; Old space that is not capable of new functions; Old factors that still influence new needs nowadays; and lastly old context that needs new adaptations and new limitations.

Does the past really stay in the past? The key objective of this chapter is to show an overview of awareness of the past to address issues of the present and to design for the future through historical events and characteristics that had major impact on existing KTTs.

PAST IS PAST

"You can't escape the influence of architectural history."

- Richard Meier (2013)

2010 was the 1000th year of existence of Hanoi and its **fabric has been shaped by** variety of influences like **Chinese** rule, **Vietnamese** rule, **French** colonial rule, **American War**, the **Soviet era** and the ***Đổi Mới*** [1] period (Horen, 2005).

The **Ancient Quarter** or **36 Pho Phuong** (36 Old Streets Quarter) surrounds Hoan Kiem Lake. The city's old districts are renowned for the **good quality of the built environment**, the lively ambiance and the reflection that these areas have of the city's history (Parenteau et al., 1995).

Hanoi's planning authorities recognised the importance of heritage assets such as **the Ancient Quarter** and Hoan Kiem Lake as being crucial to the maintenance of cultural heritage and tourism. These **ancient areas are reflected in urban planning and management policy**. Hanoi's City Land and Housing Department maintains the South of the Ancient Quarter, the Hoan Kiem Lake and also the French Quarter, together with the residents (Horen, 2005).

11th century
many **religious buildings;**
streets keep on being **modified but** the street's **activities are always there**

15th century
shop-houses, markets, temples, pagodas and irregular road pattern

1954 - 1985
Northern Vietnam **adopted** its **own** version of a **centrally planned economy**

1975
after the reunification, the **central planning model applied in the North** and **extended** to **the** whole **country** was a waste

since 1986
the country has undertaken the ***Đổi Mới*** policy in response to macroeconomic instability;
marketization and decentralisation have **boosted** the **foreign and private development;**

1986 - 1995
private enterprises in industry **arose** (Nguyen et al., 2002)

[1] Đổi Mới is a reform that increases linkages with western countries that involves opnness to foreign investment and private ownership that has seen rapid economic growth (Horen, 2005)

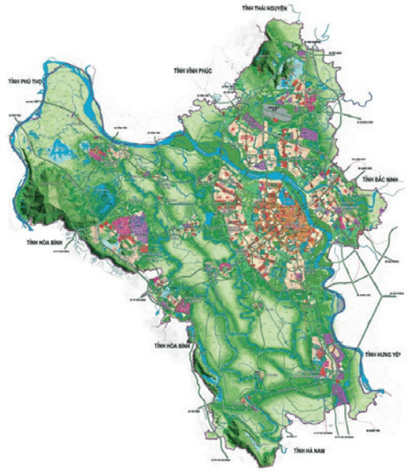
URBAN PLANNING

Hanoi Master Plan

Hanoi Master Plan, 1873

Hanoi Master Plan, 1898

Hanoi Master Plan, 1936



Hanoi Master Plan VISION 2030

Sources: (Saigoneer, 2018)
(Lamster, 2011)

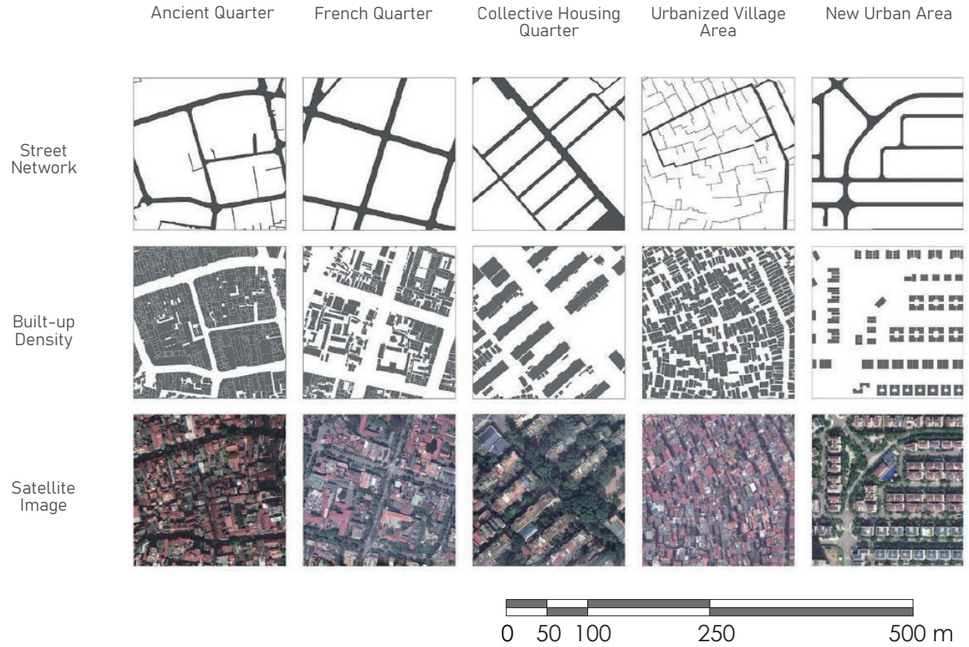


Figure 1: *Spatial characteristics of the five urban typologies*
Source: *(Ho et al., 2021)*

An overview of the major **historical events and features** is an important phase of the storytelling of this study narrowing the periods to highlight only the **main construction material and style** that this work considered as **one of the factors that influenced KTTs.**

1860-1900

Early Colonial Architecture

Constructions: **mainly for military residence, etc.**

architectural **designs**: **from France** and **Europe**

1900-1920

Classical and Neoclassical Style

Major administrative buildings: **designs were symmetrical**

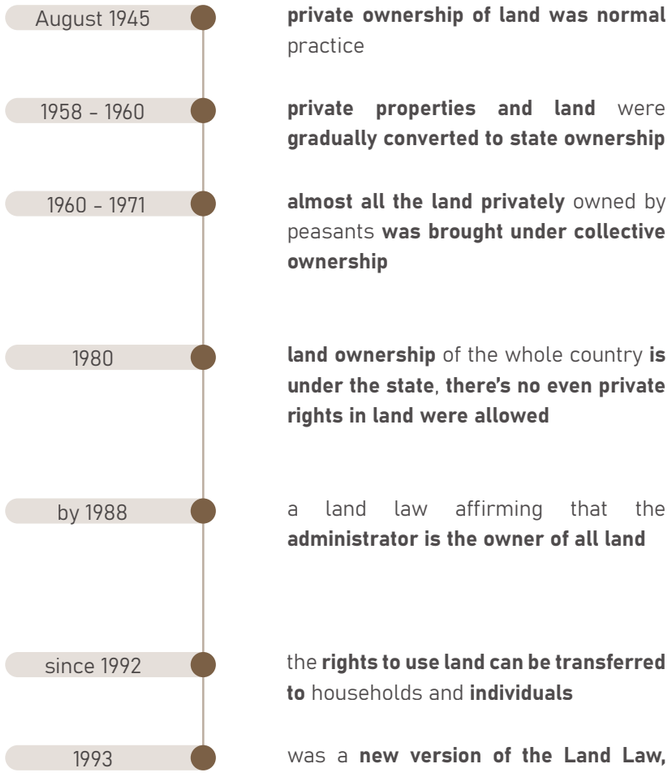
1920-1945

Indochine Style, Franco-Chinese Style, Art Decor Style

More attention to the roof and **symbols from Buddhism, Confucianism and Taoism** (Vuong et al., 2019)

Source: *Ly (2015)*

LAND USE RIGHTS
Housing



(Nguyen & Kammeier, 2002)

According to Nguyen and Kammeier (2002), the State was the sole producer and distributor of housing for most urban residents. The residential construction was four to five-storey apartment blocks for technical and economic considerations, workplaces and service facilities. Since Đổi Mới, there have been changes in housing production. The State encouraged people to build their own houses and the measures included private housing construction, commercialization of the building materials industry and so forth.

HOUSING LAW/LEGISLATIVES

Housing

Housing development policies have a considerable **effect on urban spaces** and **large scale of public housing development** was well demonstrated in Vietnam (Hong & Kim, 2020).

Housing Ordinance Policy 1991	allowed private housing ownership on state owned land
Land Law 1993	land owned by the people but managed by the state
	LURC[2] including rights to transfer, lease, inherit and mortgage
Decree 61 1994	BOLUC[3] system providing combined legal title for use rights and housing property
Land Law 2003	Land allocated to domestic enterprises and leaased to private enterprised.
Housing Law 2005	Legal framework for housing development including commercial houses, self-built houses, social houses.
Land Law 2007	Residential projects can be carried by domestic and foreign firms.
Housing Law 2015	Provision for social housing, foreigners' ownership and information system.

[2] LURC: Land Use Regulation Commission
[3] BOLUC: Building Ownership and Land Use Right Certificate
Source: (Hong & Kim, 2020)

HOUSING DEVELOPMENT MODELS

Housing

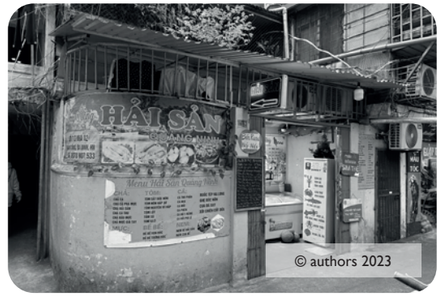
1960s - present

1960s-late1980s

"Khu Tập Thể" (KTT)

1990s

self-built houses



2000s-present

Khu đô thị mới (KDTM)

In Hanoi, the term "**collective living quarters**" or "**old collective living quarters**" is a term **used to distinguish these structures from others** with similar functions **that were built from the 2000s onwards** and they are **imprints of Soviet architects** and characteristic of **Hanoi's lifestyle** in the past. These structures were **constructed from 1954 to 2000** and became a symbol of modern life with all essential living conditions within the area (Tat, 2022).

Housing in the Ancient Quarter are known as "**tunnel**" or "**tube**" **houses** that are no more than 2-4 meters wide, with depths varying to 20 to 60 meters. Deterioration of housing conditions is one of the problems of residents. State-ownership of housing discourages tenants from carrying out maintenance work and repairs and improvements are either undertaken with the assistance of Hanoi's City Land and Housing Department or are managed by residents themselves without external assistance (Horen, 2005).

Most public housing areas were built after World War II in Europe to meet housing demand, while a large number of housing areas were also built in many countries in Asia (Nguyen and Yoshimitsu, 2011).

Public housing blocks in Hanoi **were very homogeneous in appearance and were organised according to Soviet urban development principles, with living quarters containing four to five-storey** (Nguyen et al., 2002). One of the problems is that **they were designed for nuclear families rather than extended families** which are more common in Hanoi that result in serious space constraints within units (Horen, 2005).

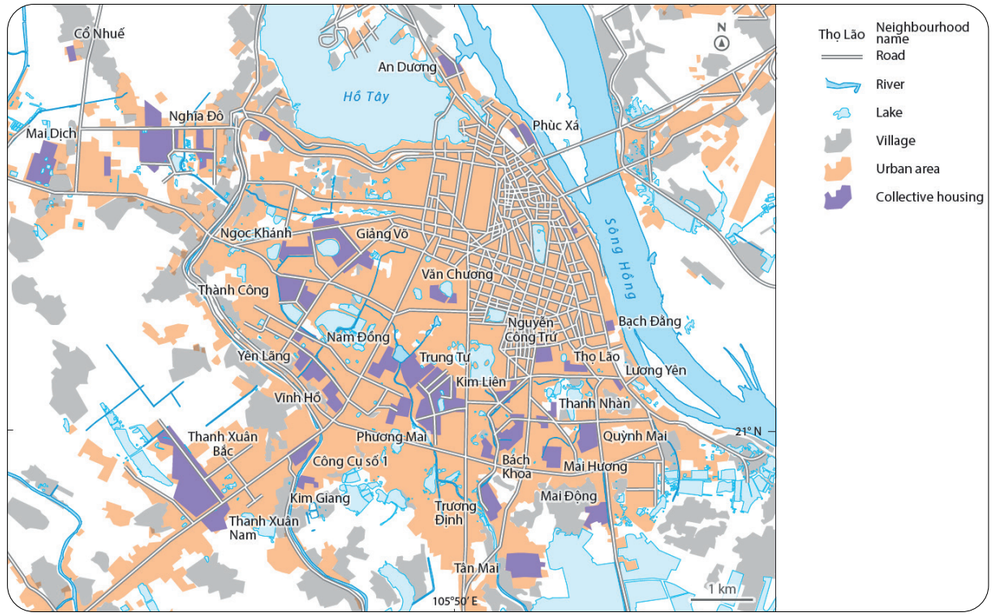


Figure 2: *Collective Living Quarters in Hanoi*
Source: *Fanchette (2016:84)*

The history of developing these quarters can be divided into:

1960s - 1970s

many housing areas were built in many countries in Asia and Africa (Nguyen and Yoshimitsu, 2011)

1960s - 1975

testing and applying the model of **living quarters** in Hanoi with p**refabricated concrete panels, single materials of low-rise buildings**;

1975 - 1986

many new upgrades in techniques wherein **collective houses** were built of **large assembled concrete panels, there are high rise buildings** (5 floors) (Tat, 2022);

1970s - 1980s

several Soviet-style industrial zones and residential neighborhoods were constructed on the periphery of Hanoi.

1985

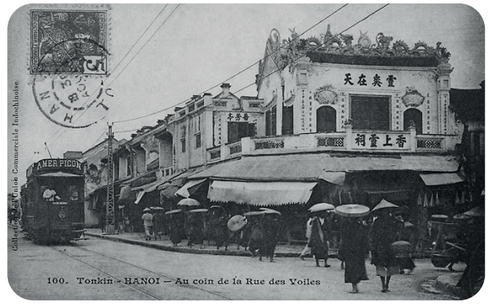
nine industrial zones had been built on the periphery and development of **Soviet-style residential neighbourhoods** in the vicinity are linked to them, **to accommodate workers** from the manufacturing plants and offices (Horen, 2005).

after 1986 - 2000

last period of developing the model of quarters with some **new structures** however those old buildings were downgraded and the **new types of higher-quality houses were built** (Tat, 2022).

PHOTOGRAPHS

Historic Hanoi's Old Quarter over 100 years



junction between Hang Bac and Hanh Dao

crossroads of Ma May and Hang Bac Streets

Vietnam History Museum

Source: *BN (2020)*

junction between Hang Khay and Dinh Tien Hoang Street

Street of the Wooden Bridge

Trang Tien Street, Cong Nhan or Workers Cinema

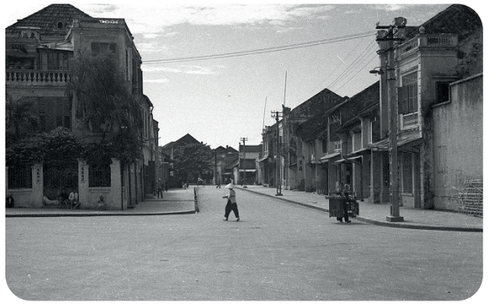
Source: BN (2020)

Part of the Basket Street

crossroads of Dong Xuan and Hang Ma Streets

An exit from the Paul Doumer Bridge or the current Long Bien Bridge

Source: BN (2020)

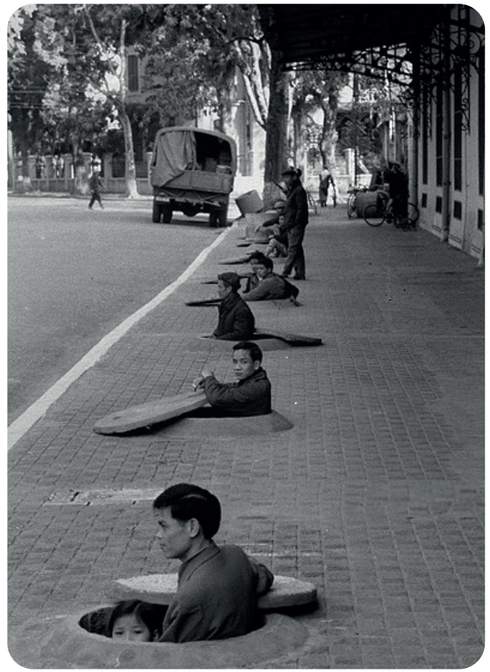


intersection between Hang Tre and Hang Thung Streets

Dinh Tien Hoang Street at the intersection of Trang Tien Street and Hang Kay Street

Hoan Kiem Lake Shore Tram Station

Source: BN (2020)



Bomb shelters were present in the majority of Hanoi streets during the period 1965 - 1972

Hoan Kiem Lake seen from Hang Khay Street

Source: BN (2020)

The given photographs help this study to evidently show the architectural features of buildings and environment **as a support that historical events and characteristics have been influencing every structures not only KTT**.

In 100 years, a lot changed like the use of space, application of new materials, additional greenery, transportation, and the street. Tube houses, social housing models and the street are one of the most important layers of factors that this paper mainly considers understanding the past and present context of KTT TC. It can also be seen that the physical features of other buildings changed but with the same footprint or main structure.

"*This transition in urban policies on housing and land caused changes in the development environment and urbanization process in Hanoi. The KTTs' social and physical features also changed after reform implementation. As part of these changes, Soviet-style KTTs were regarded as a thing of the past"* as indicated by Hong and Kim (2020)

"As an architect, you design for the present, with an awareness of the past, for a future which is essentially unknown."

- Norman Foster (2007)

CHAPTER 2:

UNLAWFUL BUT FUNCTIONAL

A chapter that shows **the analysis of KTT in Hanoi.**
What is KTT? To what extent do they expand their balcony? Do extensions really are capable of providing enough space or is it really just a survival purpose due to urgent demand?

This analysis phase is a general introduction of what are the origins of the ongoing issues, structurally and/or aesthetically, present in KTT model housing. Other KTTs can still structurally withstand but degraded just like the rest.

Illegal extensions that marked and stays as a negative image but are still **functional** and capable to provide space and use. Degraded but still functional, but until when?

Is it really still functional despite of extending balconies illegally? The key objective of this chapter is to show an **overview of awareness of the past to address issues of the present and to design for the future through historical events and characteristics that had major impact on existing KTTs.**

UNLAWFUL BUT FUNCTIONAL

"One for All"

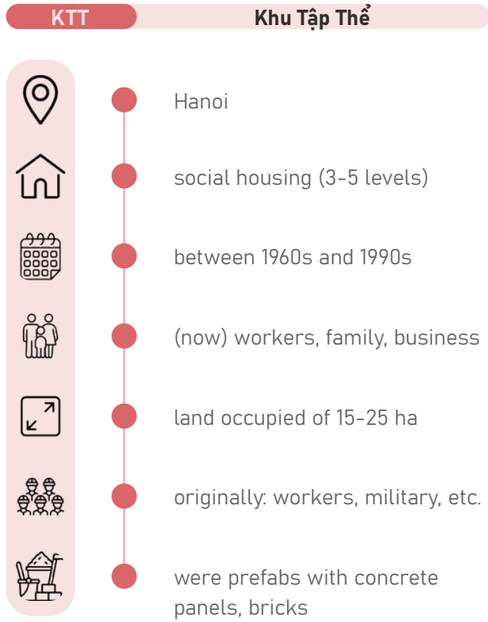
- according to the study of Tat (2022), it was a common slogan from a socialist living style means everyone was living with collective rather than personal reasons.

This chapter will discuss the exploration of the "**beauty**" and the "**beast**" of the welfare system, the so-called "**KTT**". Its **beauty as it holds historical, cultural and even economic values of collective housing**. While it is a **beast itself for its monstrosity when it comes to illegal extensions of balconies , its structural stability and its chaotic appearance of use**. Existing studies about KTTs in Vietnam have provided insights into this study.

Khu Tập Thể (abbreviated as KTT) is an **old Soviet-Style Apartment Estates that represents one important layer of the city's built environment**. There are about **1516 KTTs** that are mostly **3-5 levels** that were **built between 1960s and 1990s** in Hanoi according to Hanoi's Department of Construction. (Phuong, 2019).

Most of them housed 7000 - 15000 and occupied a land of 15- 25 ha. **KTTs' development was influenced by the state-led mass housing model from the micro-district concept of the former Soviet Union** and were originally built on the outskirts of Hanoi but with the urban expansion of the city, **they became situated in the central area**. They were **originally owned by state** agencies **for state employees as work benefits.** (Hong & Kim, 2020).

The idea of an **extended family** living together in a house is embedded in the cultural and social norms in Vietnam and many other Asian countries as mentioned on the introduction. **Daily basis is more emphasised with this type of family**. This thesis will keep its position on giving alternatives on how to **compose their own space** in KTT with huge consideration of **possible extensions and closures of space in the future** as modifications. It aims to present a methodological approach to craft skills of users to collective housing that highlights the provision of multiple alternatives tailored to individual user needs.



KTT PERIODS
Overview

KTT Period 1 1954-65

- housing demand was not high;
- the concept of micro-district[2] residential planning was introduced;

KTT Period 2 1965-75

- housing demand increased;
- state's attention was more on the constructions of houses rather than the organization of urban space;

KTT Period 3 1975-86

- after the Vietnam War, the urban population in Hanoi and postwar reconstructions increased;
- National Housing Program was implemented for housing condition improvements (Hong & Kim, 2020).

[2] micro-district theory: was devised in 1950s to establish self-sufficient urban units that includes mass-produced housing with public amenities (Kim & Jung, 2016)

There has been changes on the structures, use of space, extensions and surroundings of every KTT and the issue behind these changes was also for the reason of the **housing demand through time and with the increase of the population in the urban area.**

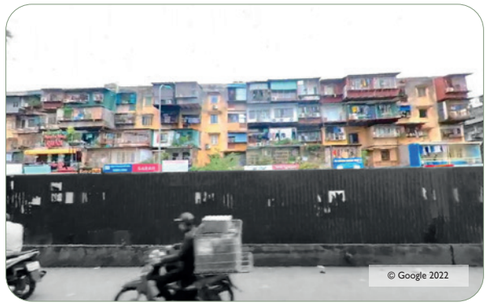
These collective houses **at that time** were created and became **a symbol for modern life** with all facilities needed in one particular area and were part of a larger picture of Hanoi's urban development such as economics, society, political issues, laws, etc (Tat, 2022).

The **developmental pressure on KTTs** and surrounding areas **have increased** since they came **to be in the expanded central area** of Hanoi (Hong & Kim, 2020).

KTT LOCATIONAL TYPOLOGIES

Overview

A KTT Nguyen Cong Tru



B KTT Thanh Cong

C KTT Thanh Xuan Bac

D KTT Mai Dich

E KTT Van Chuong

F KTT Ngoc Khanh

There has been changes on the structures, use of space, extensions and surroundings of every KTT.

The **developmental pressure on KTTs** and surrounding areas **have increased** since they came **to be in the expanded central area** of Hanoi (Hong & Kim, 2020). These collective houses are part of a larger picture of Hanoi's urban development such as economics, society, political issues, laws, etc (Tat, 2022).

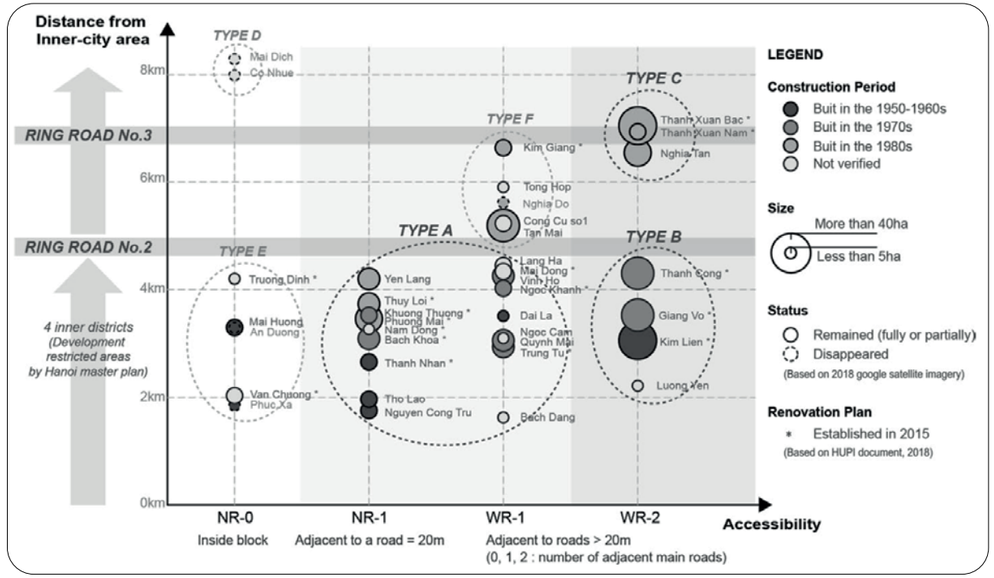


Figure 3: *Locational Types*
Source: *(Hong & Kim, 2020)*

KTT LOCATIONAL TYPOLOGIES
in Hanoi

Figure 4: Spatial pattern of development of KTTs
Source: *(Hong & Kim, 2020)*

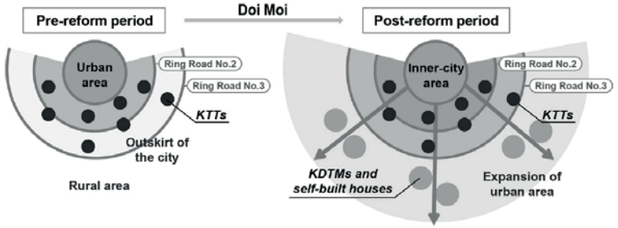
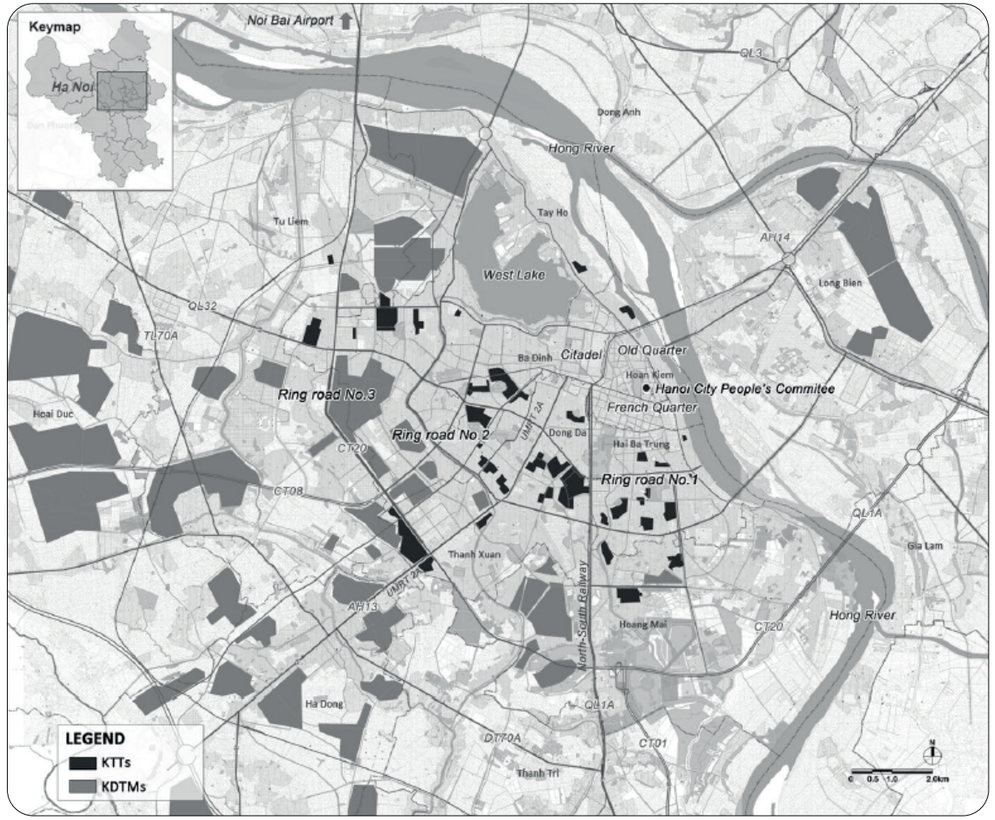


Figure 5: Diagram of KTTs locational shift after privatization
Source: *(Hong & Kim, 2020)*



Khu Tập Thể (abbreviated as **KTT**)
housing model built between
early.1960s-late1980s.

Khu Dô Thị Mới (abbreviated as **KDTM**)
is the new housing model since the 2000s.

Figure 6: Spatial distribution of housing production
Source: *(Hong & Kim, 2020)*

Three types were studied in focus by Hong and Kim (2020) about KTTs changes.

Type A KTT Nguyễn Công Trứ and KTT Quynh Mai

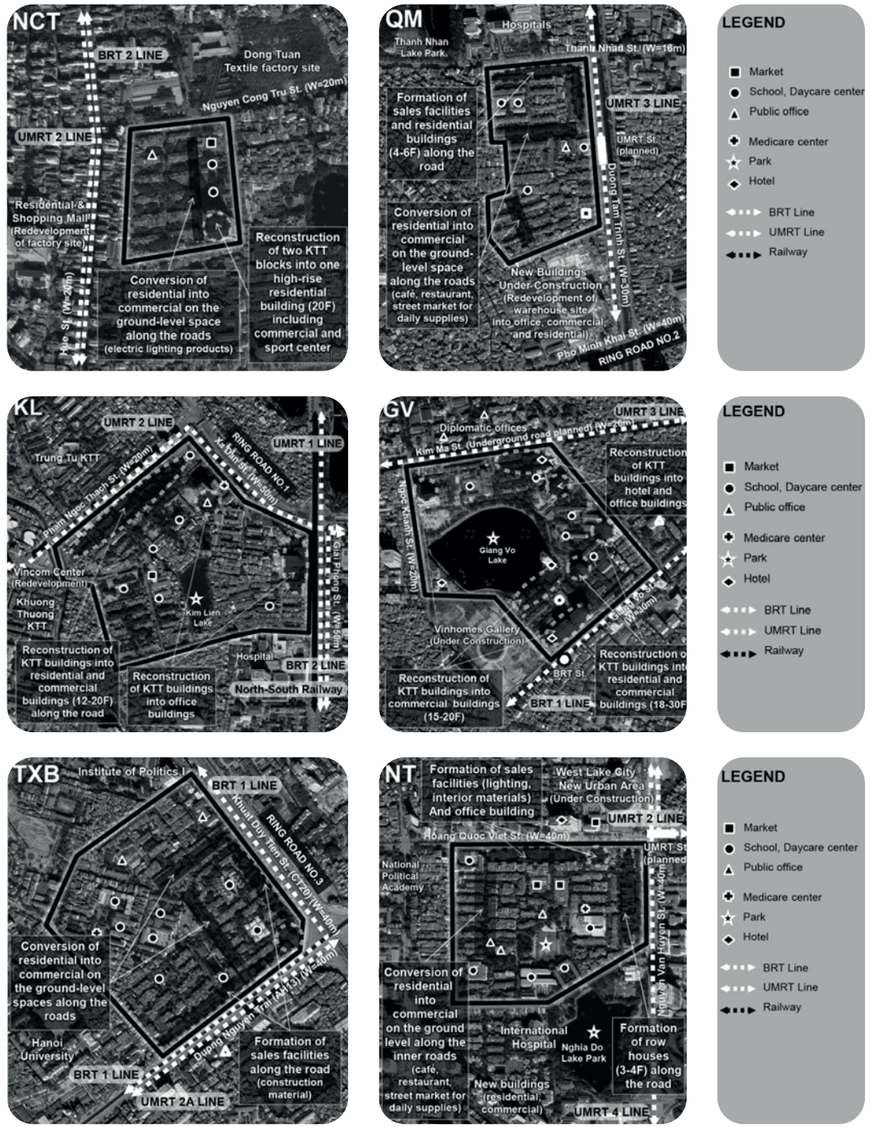
- with a small house unit and a small complex size
- experienced limited physical changes in the housing unit and the complex
- risk of structural collapse of the building

Type B KTT Kim Liên and KTT Giảng Võ

- renovation projects for a numbers of this type have already been partially carried out or atleast renovation plans were established
- changes in the land use of the surrounding areas of this type were particularly remarkable
- roads near the KTTs underwent expansion with new public transportation such as BRT (bus rapid transit) and UMRT (urban mass rapid transit)

Type C KTT Thanh Xuân Bắc and KTT Nghĩa Tân

- better maintained than other types
- showed considerable changes in the housing unit size and surrounding conditions
- KDTMs were developed near TXB



Source: *(Hong & Kim, 2020)*

Type A KTT Nguyễn Công Trứ

Type B KTT Kim Liên

Type C KTT Nghĩa Tân

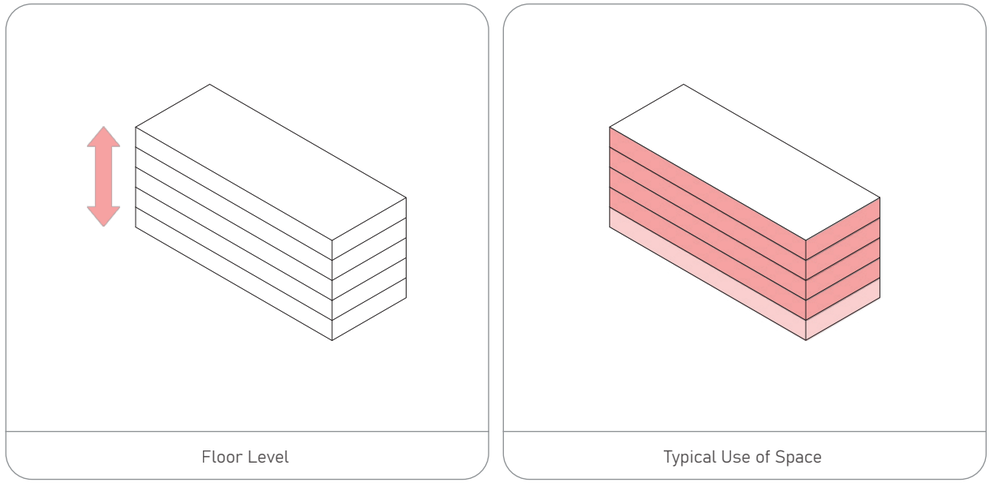
KTT TYPICAL DISTRIBUTIONS

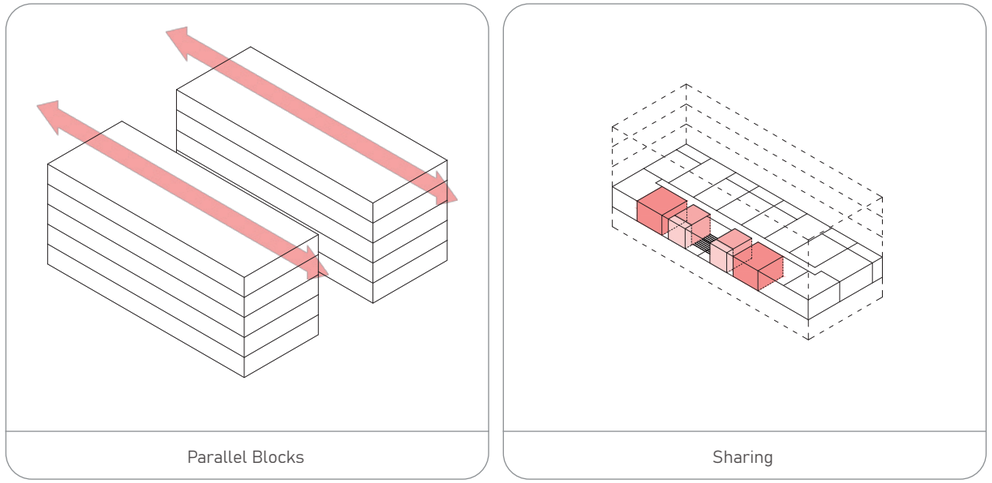
KTTs were originally built for government workers **as dormitories** or for a **nuclear family which is problematic** for the fact that extended family is more evident in Vietnam just like most of the Asian countries. Each KTT were owned by the state that greatly affected the existing use of the the infrastructures that lead to excessive extensions on the main structure.

As mentioned on the introduction, **KTT** is an **old Soviet Style Apartment Estates that represents one important layer of the city's built environment,** this soviet relationship had various major **impacts on the appearance** of Hanoi's architecture, most specifically the **structural design, artistic expressions** (Tat, 2022).

KTTs **were a form of social welfare for people** and **was a priviledge to be allocated in a KTT** apartment and the **technologies** used in the construction of KTTs **were gifts from Vietnam's socialist allies.** KTTs are now old and **regarded as outdated remnants** of the socialits past (Fujita, 2022). **KTT development** (such as Kim Liên, Giảng Võ, Nguyễn Công Trứ, Thành Công etc.) was **based on detailed plans by technical and financial supports** mainly **from Soviet Union, North Korea or China**. Every KTT was a self-contained residential community consisted of number of **4-5 storey apartment blocks**, **parallel arranged** with **monotone architecture** and **were house to civil servants, military or state factory workers.** The **housing standard was very low,** these apartments only have **2-3 m²/person** and **kitchen, toilets were shared** in the same level of the building (Tran, 2017).

These characteristics of the KTTs evidenty shows a **limited program** for the fact that they were not originally built for a private use of **comfort** while meeting the increasing housing demand in those times but they were dedicated for individual workers to be accomodated **that limits flexibility.**

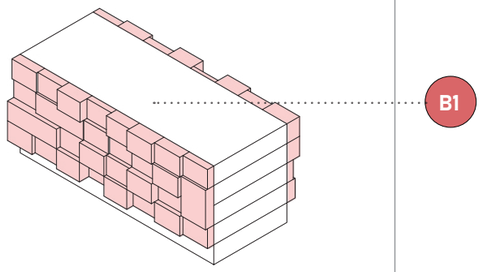




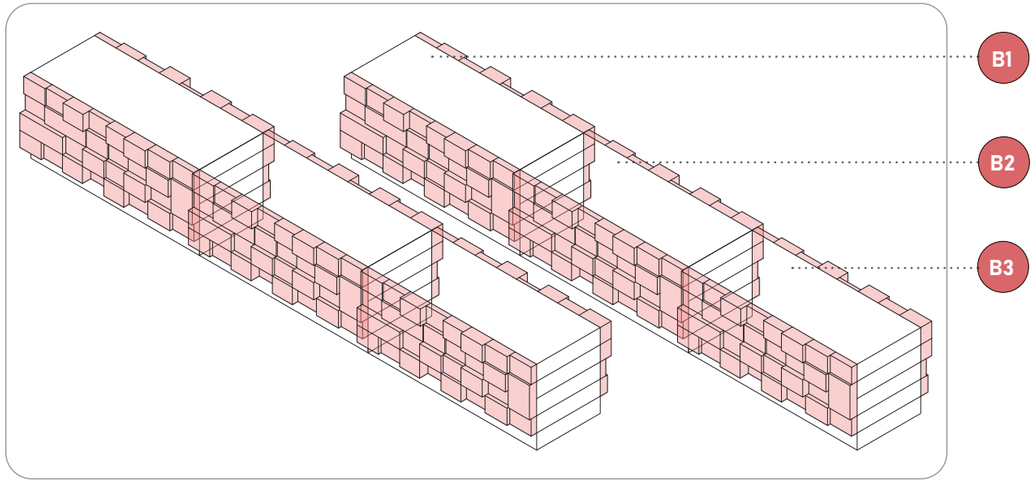
Source: *(Nguyen and Yoshimitsu, 2011)*

KTT'S TIGER CAGE
One of the Main Problems

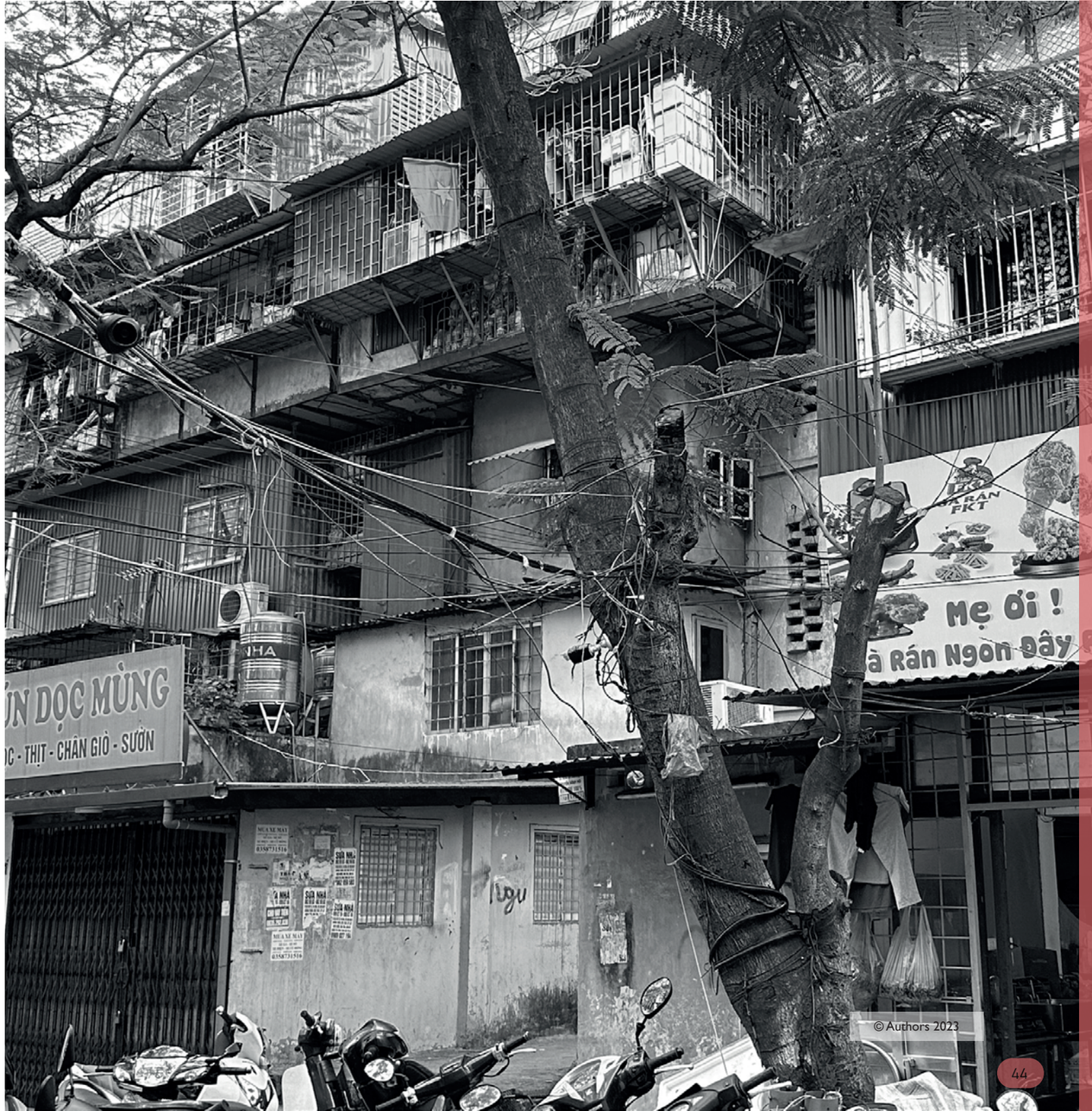
- illegal extensions **(Tiger cage)**
- degraded
- chaotic
- too narrow
- lack of space
- low maintenance
- structurally unstable
- negative image



Illegal Extensions (Tiger Cage)

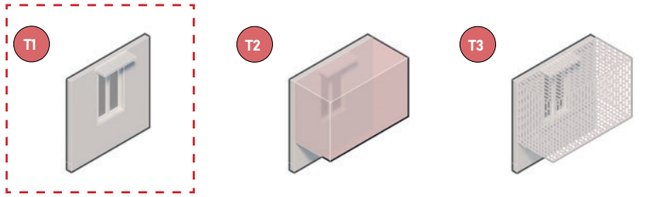


B = Block

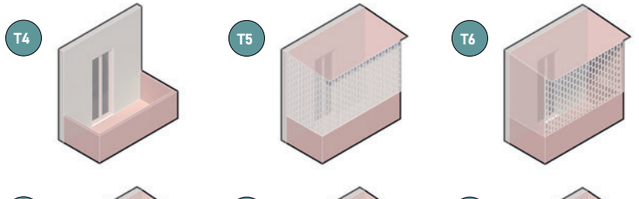


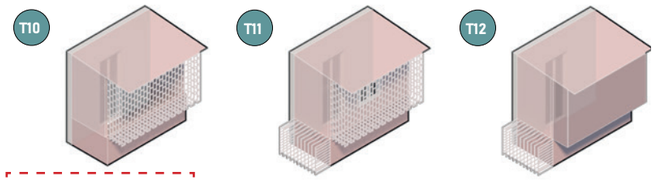
KTT'S TIGER CAGE

without demolition

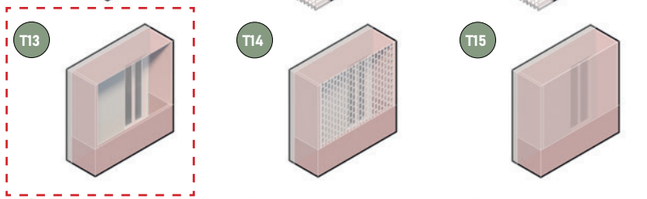


with demolition

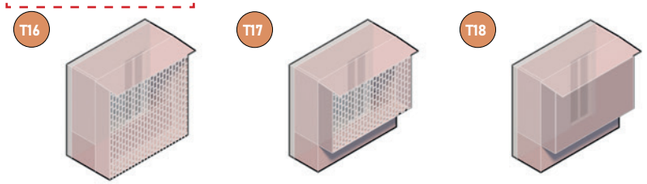




without demolition



with demolition

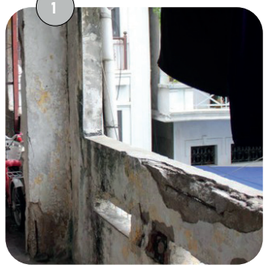


Original Form

According to Fujita (2022), **KTTs have transformed in their material forms through self-built modifications by residents.** KTTs are **all covered by extensions** attached on the building, wherein **ground floor extensions create another "ground" upon which upper-floor residents would build their extensions** or just **hanging structures with thin metal or wood supports that looks like a cage**, for this reason, **it's called "Tiger Cage" or "Chuồng Cọp"**. In older KTTs, bathroom and kitchen were shared and sometimes no kitchen at all.

15 MAIN MATERIALS OF KTT'S TIGER CAGES
in Thành Công Area

Photos taken by: (Authors, 2023)

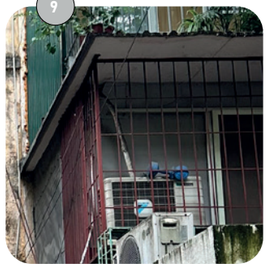

1 Bricks


2 Plaster

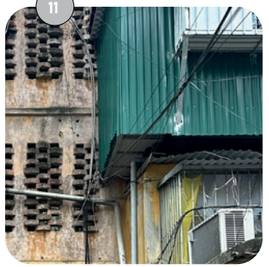

3 Steel, Metal Bars


4 Wooden Window


8 Corrugated Metal Roof


9 Thin Wooden Panels


10 Transparent Corrugated Metal for Side Cover


11 Corrugated Metal for Side Cover


12 Metal Net Front Cover

13 Lightweight PVC Window


14 Bamboo Panel Front Cover


15 Wooden Panels For Flooring

CHAPTER 2: Unlawful But Functional

Since the end of 2015, **public media covered controversies related to the redevelopment of old KTTs** in Hanoi and there are different points of view to discuss the **on-going local struggle** about this. These perspectives are as follows:

Perspectives

- Government and General Public — **very negative** about the current look and living standard of the KTTs
- Developer — usually **want maximisation** of land use with higher density
- Local — decision making process of officials seem to **lack of bottom-up consultation** and relocation plan to the outer suburbs
- Conservationist — suggest to maintain **KTTs as an important layer part of Hanoi's building environment** and as **a living museum** as a reminder on its historical significance

There were also **delays** on the redevelopment **since 2002 due to disagreements between residents and officials**. Redevelopment involves multiple dimensions such as public-private ownership issues, post-war experiences, lack of funds, illegal extensions and many more and this paper concludes that the **"communicative action" is missing** (Phuong, 2019).

According to Nguyen and Yoshimitsu (2011), Hanoi has instituted a program of **urban upgrading** since the end of the 1990s that **aims at improving the living conditions of residents who are living in public housing areas** and was the **first city in Vietnam to implement this housing development program** for the period of 2000-2010. Based on their findings, most residents are positive in support of upgrading projects, the same location of resettlements, they prefer to buy flats rather than renting **but lack of official information about upgrading projects has always been present.** This upgrading has three categories:

- Extension Upgrading — enlarging flats by newly built extensions partly connected to the existing building structure (e.g. Trung Tự)
- Partial Upgrading — demolishing at risk and dangerous apartment blocks then replacing with modern high-rise apartment blocks (e.g. Giảng Võ)
- Complete Upgrading — demolishing the whole and rebuilding new modern urban areas (e.g. Kim Liên)

According to **a policy document, No. 48 of Hanoi PC**, Hanoi Capital Law mentioned **about KTTs redevelopment/renovation in accordance control by Hanoi Capiral Master Plan, Resolution No. 17/2013 by Hanoi PC** followed the capital Law **stipulated measures of renovation, reconstructing old apartment buildings, depilated housing**, renovating and rehabilitant ancient houses, old villas and other arhitecturak works which were **constructed before 1954** and there is **no progress of renovating KTT building in the city after the approval of Hanoi Capital Master Plan to 2030 and vision to 2050** dated Decemver 9, 2009 (Tran, 2017).

CHAPTER 3:

UNCONTROLLABLE BUT LIVABLE

3

A chapter that shows **the analysis of KTT Thành Công.** Typical floorplan distributions, sections, mapping and diagrams are included on this chapter.

Why KTT Thành Công was chosen as the focus of this study? What are the problems?

This specific analysis phase is a general introduction of what are the problems of KTT Thành Công by selecting few buildings with photographs and diagrams.

Negative image is also addressed as a problem aside from structural unstability. **Uncontrollability** of the extensions and routines are always one of the problems but based on the observations of this study, KTT buildings and residents can still **live to carry out their daily basis**. Uncontrollable but livable, until when?

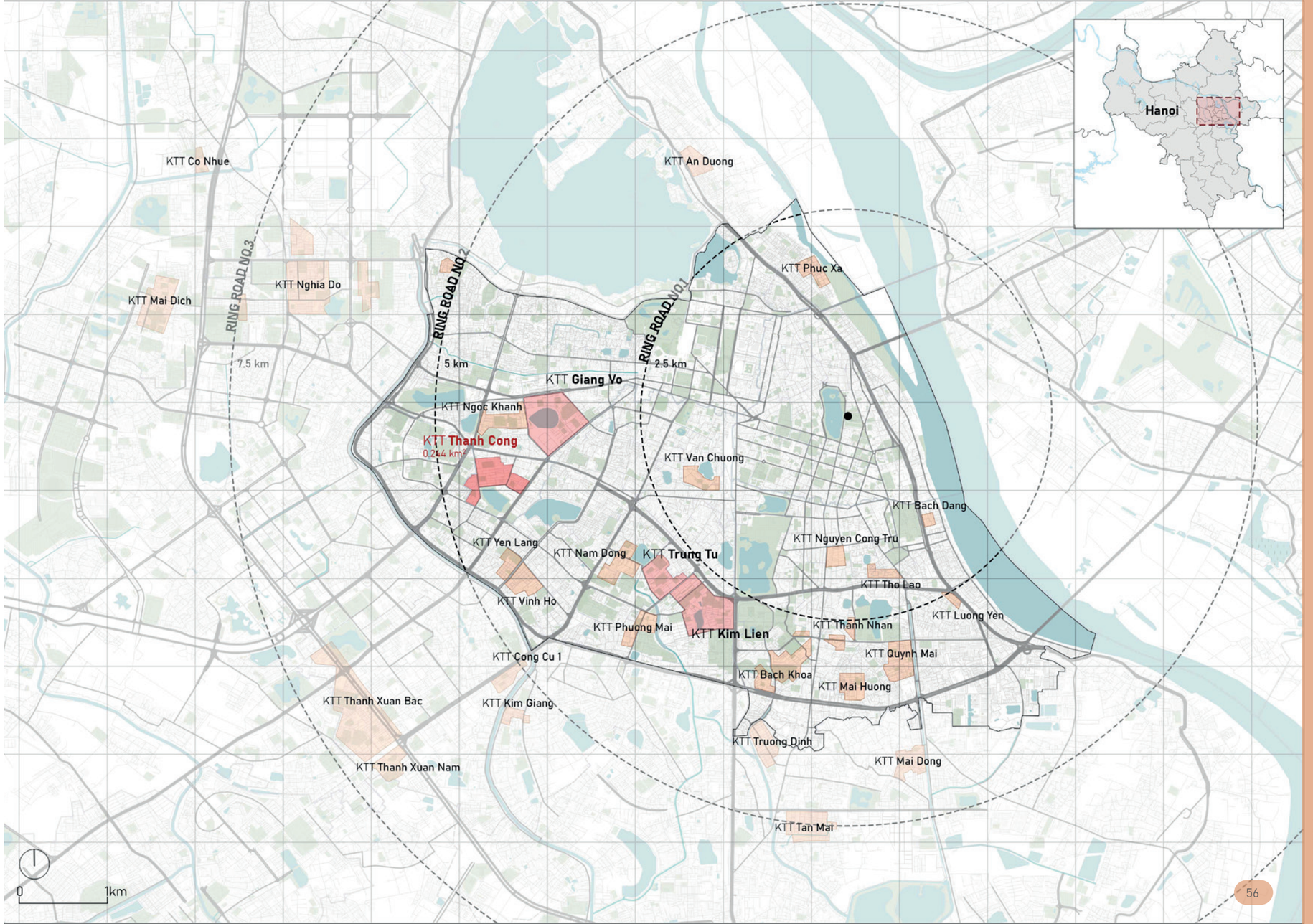
Until when can these buildings be livable upon the uncontrollable oversharing daily basis of resident? The key objective of this chapter is to show an **overview of the building scale problems.**

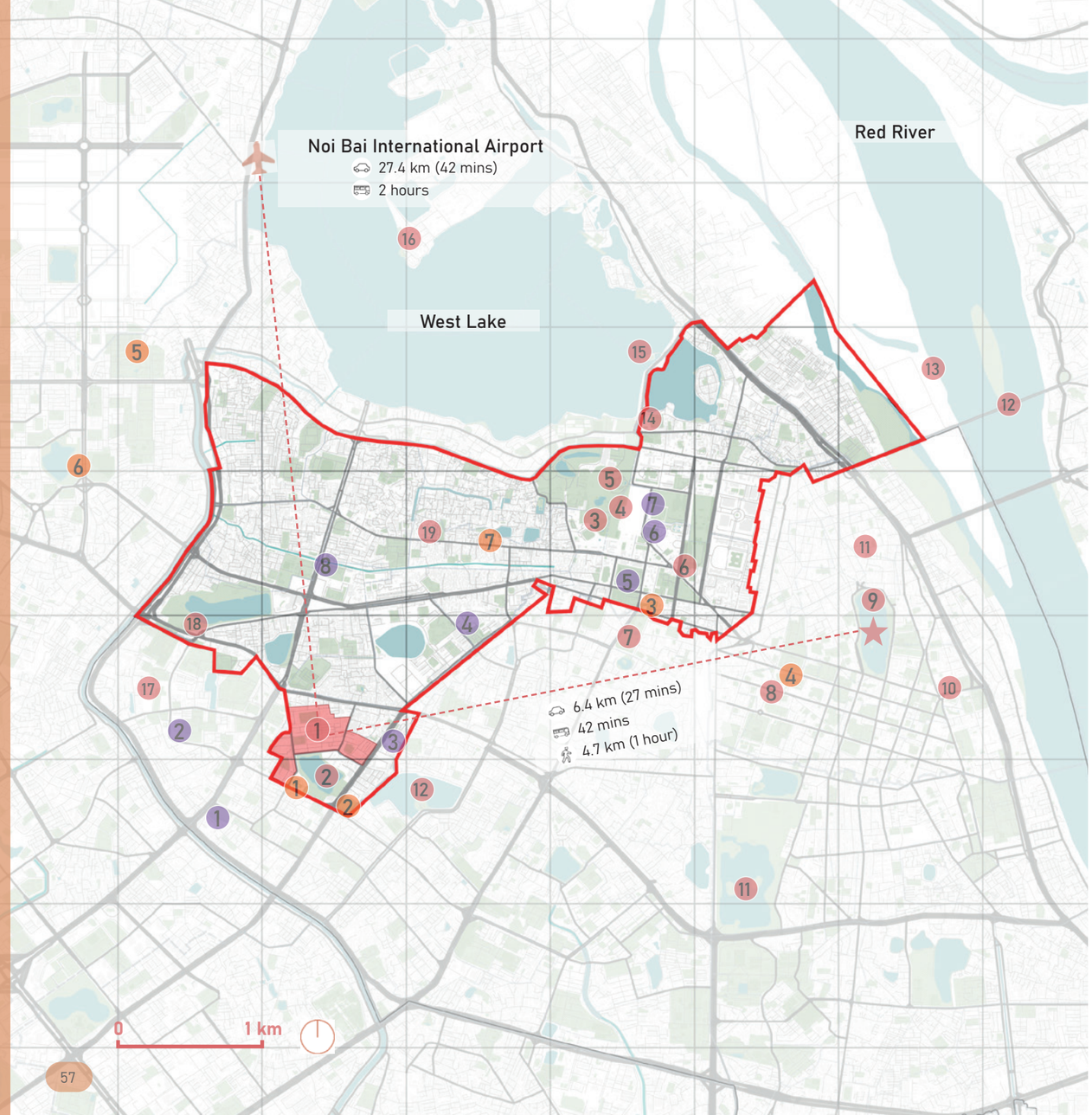
UNCONTROLLABLE BUT LIVABLE

KTT THÀNH CÔNG LOCATION
Overview

This map shows **KTTs locations from the inner city**, highlighting the chosen topic location, KTT Thành Công.

Four main zones that are structurally **in danger**, Thành Công Area, Kim Liên, Nguyễn Công Trứ and Giảng Võ.





BA ĐÌNH DISTRICT
Master Plan: Mental Map

LEGEND AND SYMBOL

- Historical Center of Hanoi, Hoan Kiem
- Noi Bai International Airport
- Ba Dinh District
- KTT Thành Công

SOCIAL HUBS

1. Au Co Art Center
2. National Cinema Center
3. Vietnam National Fine Arts Museum
4. Di tích Nhà tù Hỏa Lò
5. Vietnam National Museum of Nature
6. Vietnam Museum of Ethnology
7. B52 Victory Museum

GOVERNMENT OFFICES

1. Ban cơ yếu chính phủ Government
2. Justice Palace
3. USA Embass
4. Ministry of Health
5. Ministry of Justice
6. Ministry of Foreign Affairs (MOFA)
7. Vietnam National Assembly
8. Japan Embassy

HISTORICAL

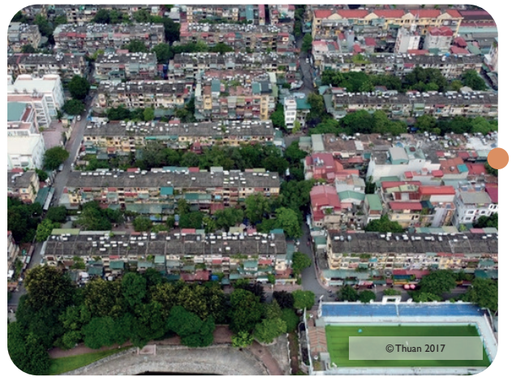
1. Thành Công Area
2. Thành Công Lake
3. One Pillar Pagoda
4. Ho Chi Minh Mausoleum
5. Presidential Palace
6. Imperial Citadel of Thanh Long
7. Quoc Tu Giam Temple
8. Buddhist Temple
9. Ngoc Son Temple
10. Hanoi Opera House
11. Bach Ma Temple
12. Long Bien Bridge
13. Place of Worship
14. Quan Thanh Temple
15. Tran Quoc Pagoda
16. Housing Complex
17. Buddhist Temple
18. Sanctuary
19. Buddhist Temple

CHAPTER 3: Uncontrollable But Livable

D. LA THANH
P.NGUYEN HONG
P. THANH CONG
P. THANH CONG
P. LANG HA
Thành Công Lake
P.HUYNH THUC KHANG
Dong Da Lake
Khu Tập Thể
Thành Công Area
© Google Earth 2023


© Gia 2021


© Thuan 2017



WHERE?

Khu Tập Thê, Ba Đình, Hanoi, Vietnam

WHAT?

KTT is a **collective housing** for a long time and most of them are degraded in the actual condition.

WHY?

To address issues about lack of maintenance, illegal extensions, oversharing of public space and danger to collapsing.

WHEN?

To offer **timely and flexible proposals** that **can send word to decision-makers.**

WHO?

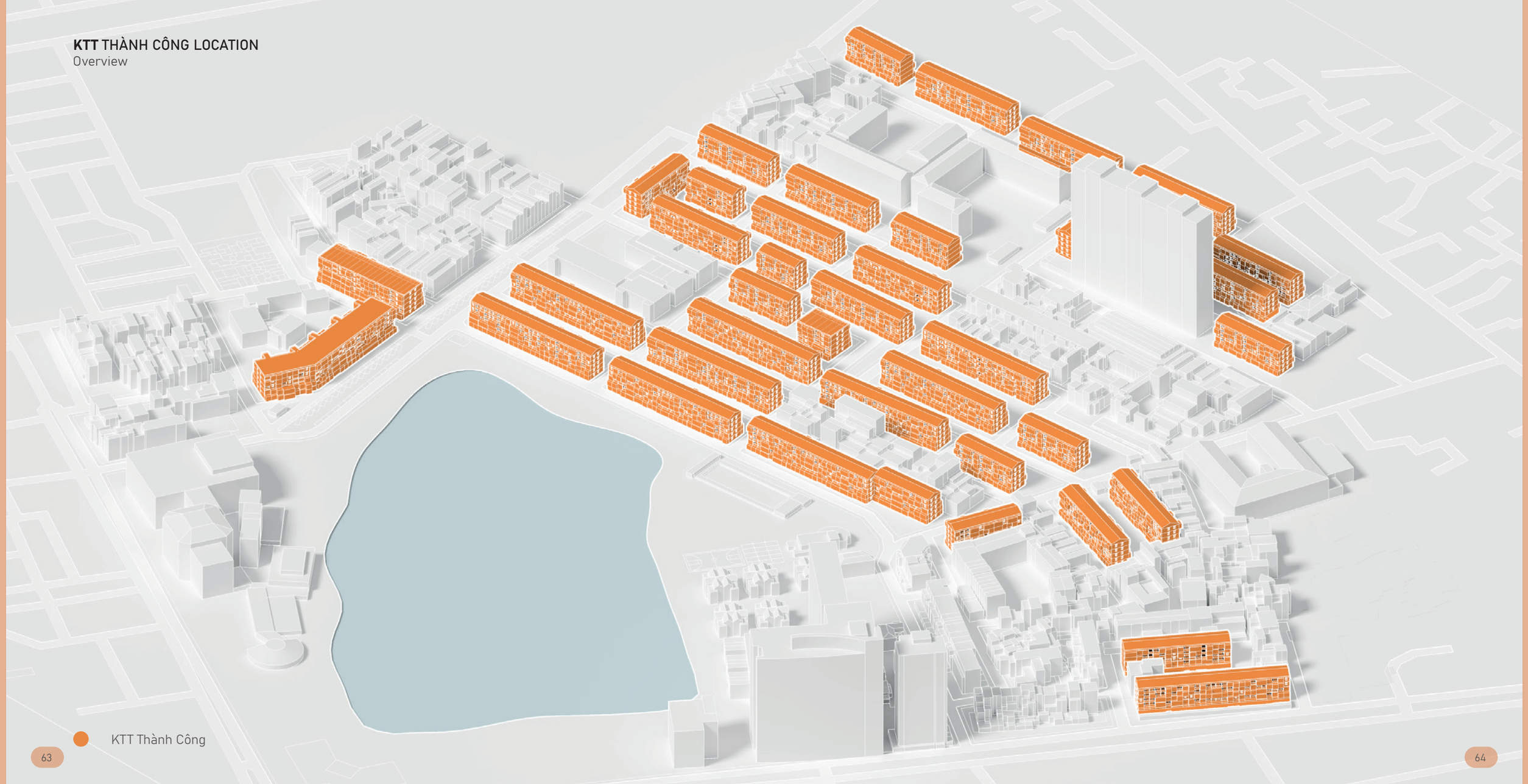
The main **targets** are the **residents of KTT** and the **decision-makeres.**

HOW?

Analysis of functions, problems, advantages/disadvantages, needs, users of KTT that **adapts to existing extensions and use of space and to provide manual of design choices that can somehow avoid to directly jump to skyscrapers as the only solution to**

KTT THÀNH CÔNG LOCATION

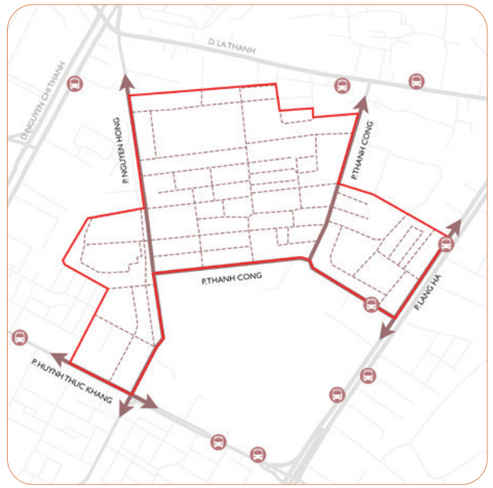
Overview



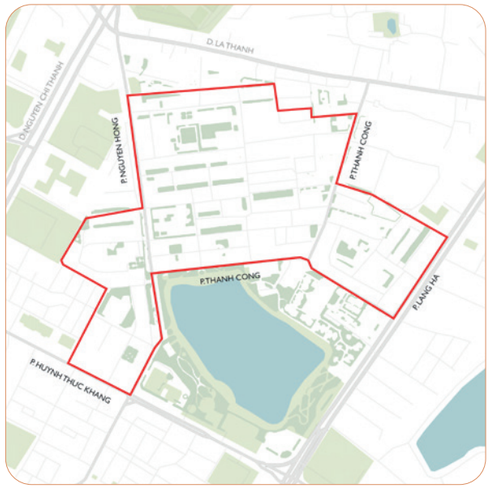
KTT Thành Công

CHAPTER 3: Uncontrollable But Livable

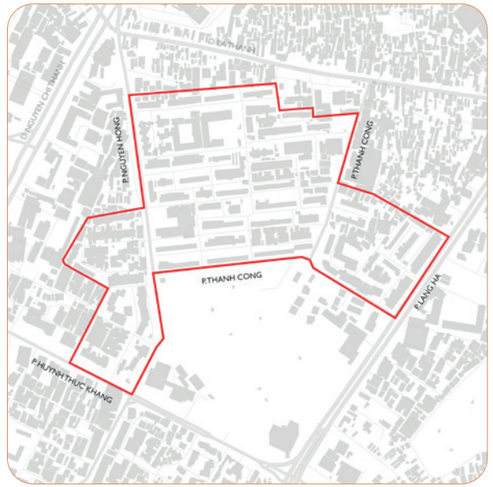
KTT Thành Công



Mobility



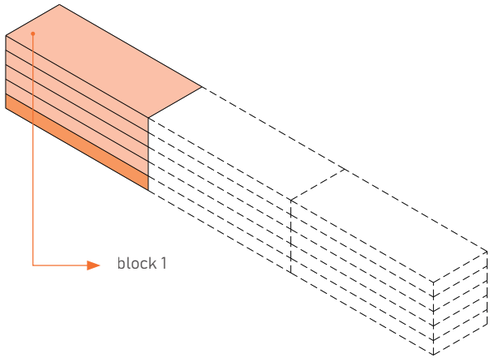
Green Space



Built

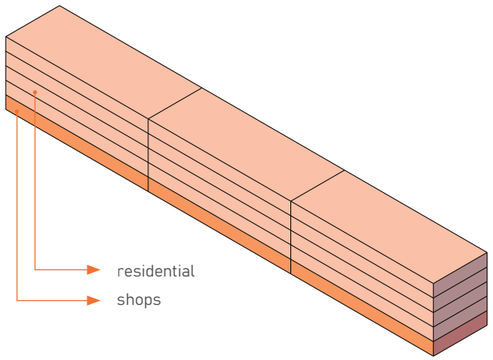
Void

KTT THÀNH CÔNG COMPOSITION
Main Problems



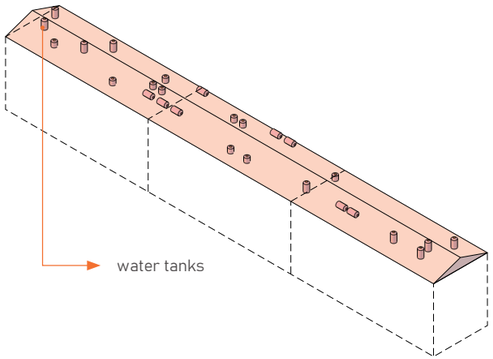
Block

an apartment is usually composed of 3-4 blocks



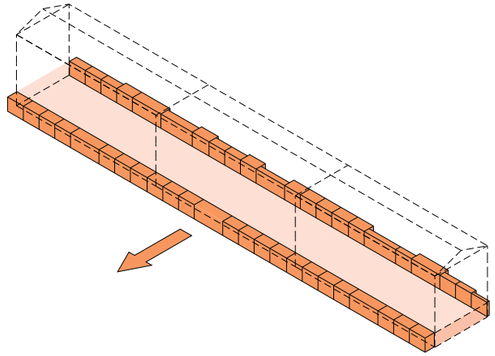
Use of Volume

every block of KTT has the ground floor as shops and the upper floors as residential



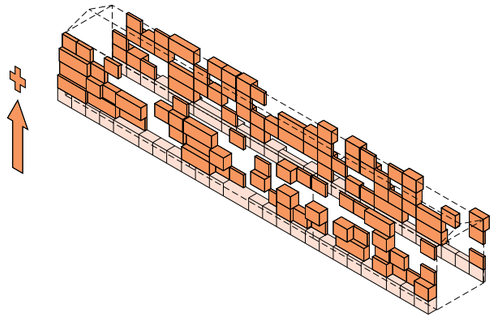
Roof

every roof of KTT has water tanks and chimneys



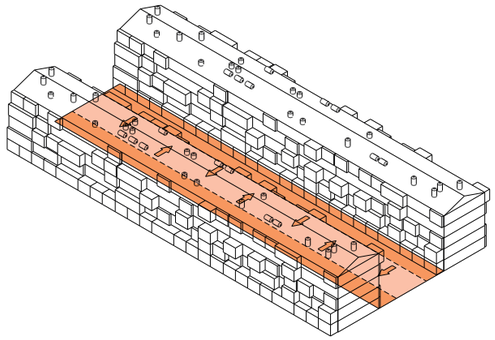
Ground Floor Extensions

another "ground" is provided from the ground floor extensions which upper floors would use to build their own extensions (Fujita, 2022)



Upper Extensions

upper floors havemassive extensions stuck out from apartment walls and enlarge their living spaces inside (Fujita, 2022)

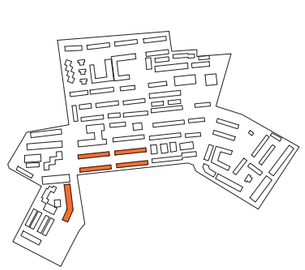


Oversharing

public space has been overshared due to excessive extensions;

new building emerege on lands between KTT (Fujita, 2022)

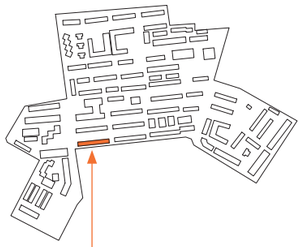
Master Plan: Five Selected KTT (Existing)



Legend and Symbol

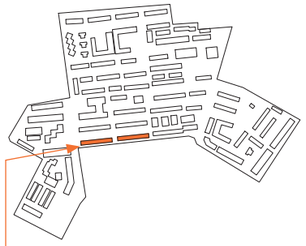
- selected KTT
- other buildings
- lake
- green area
- car road
- car road project area
- parking
- existing trees
- car road direction
- entrance

CHAPTER 3: Uncontrollable But Livable



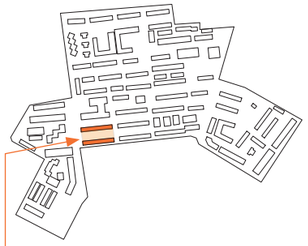
KTT **Thành Công**

- Ba Đình District, Hanoi
- social housing (5 levels)
- 1974
- (now) workers, family, business
- 23 ha
- originally: workers, military, etc.
- with the technique of assembling large panels manufactured at the construction site (Nguyen and Yoshimitsu, 2011)



Main Problems

1. degraded original facade
2. excessive illegal extensions/tiger age
3. chaotic/unprotective hanging clothes
4. oversharing of sidewalks - shops tuff
5. oversharing of sidewalks - motorbike



Main Problems

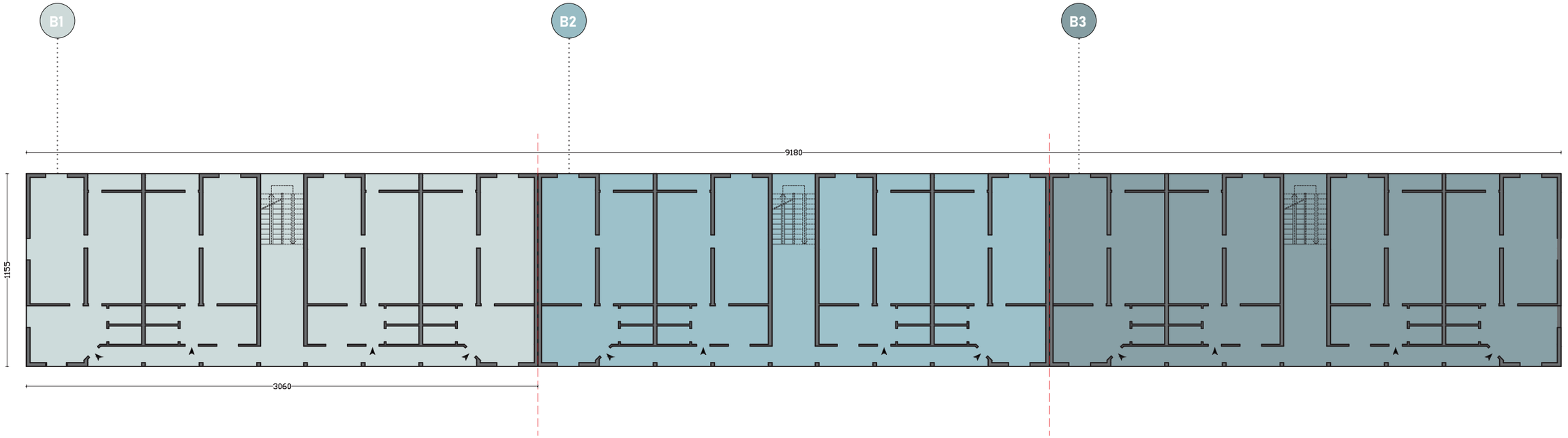
6. oversharing of playground - parking
7. oversharing of playground - clothes
8. abusive use of trees - hanging clothes
9. lack of safety for kids - motorbikes
10. visual - unpleasant

CHAPTER 3: Uncontrollable But Livable

KTT: WHOLE BUILDING

Typically Divided in Three Main Blocks

built 1950s



scale 1:250

0 2 5 10 20 m

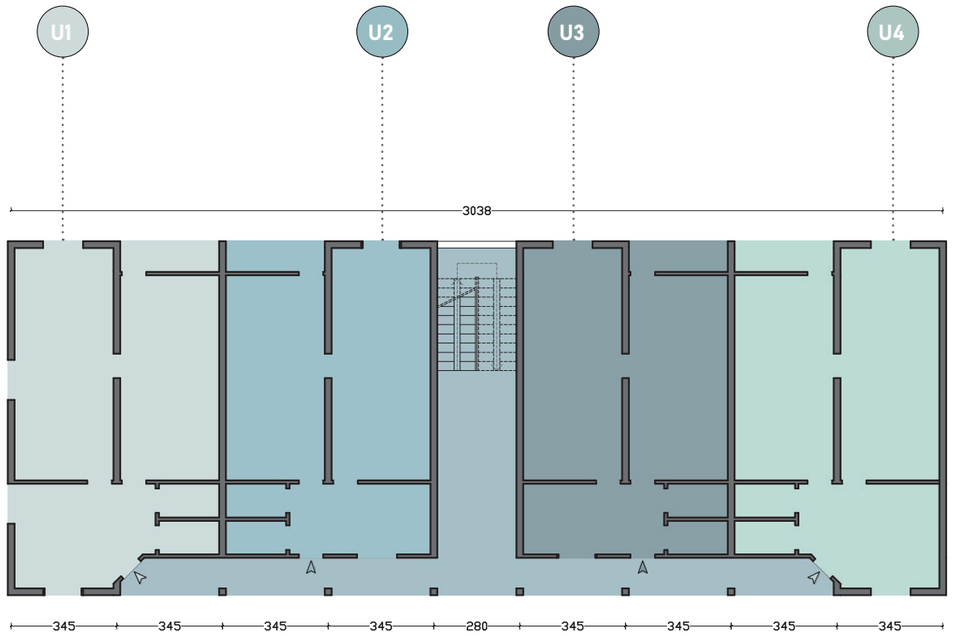
B = block

Drawn by: *the Authors based on Bui (2017), Cerrone (2014), Hong & Kim (2020), Ngoc (2017),*

KTT: TYPICAL FLOOR PLAN - NO PRIVATIZATION

Typical Area, Distribution and Use

built 1950s

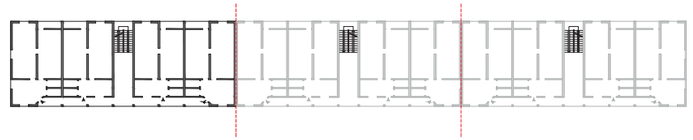


scale 1:200

0 2 5 10 20 m

U = unit

Key Plan



Number of Tenants per Unit

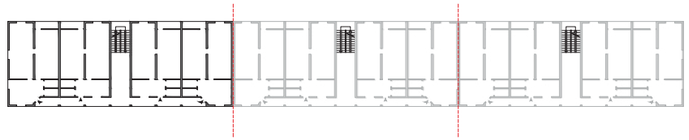
As mentioned in the previous chapters, KTT buildings were originally built for civil servants. state-owned company workers, military personnel and were designed for a nuclear family. But many residents have extended families, **a family of three generations, 6-8 people** share a space of 35m²

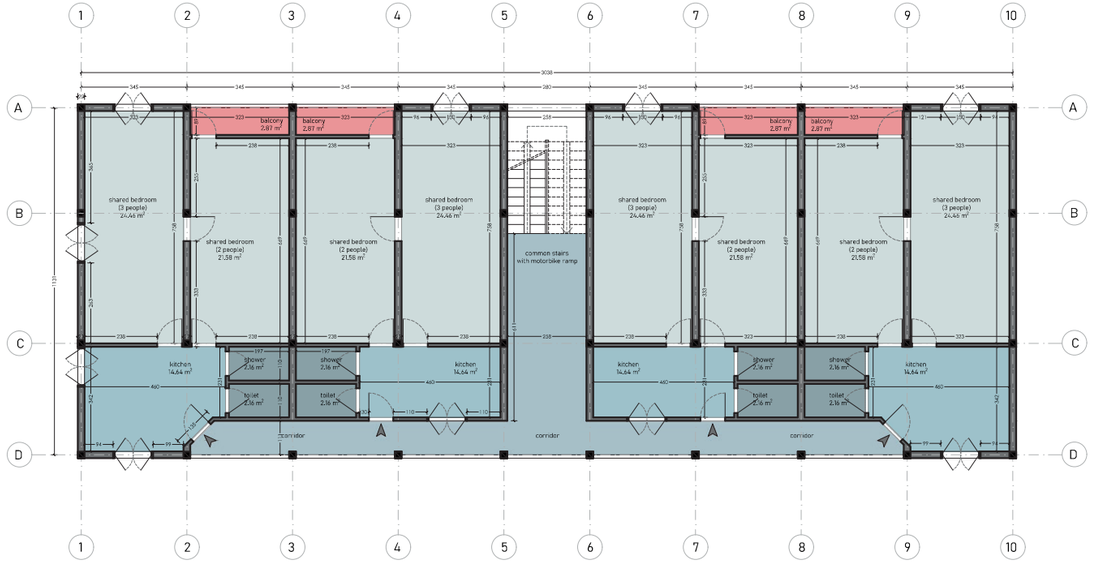
Floor plans were drawn using existing studies about KTT and an interview from a two-unit shop owner in the building of KTT Thành Công.
Drawn by: *Authors*

KTT: TYPICAL FLOOR PLAN - NO PRIVATIZATION

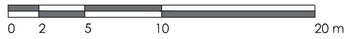
Typical Area, Distribution and Use

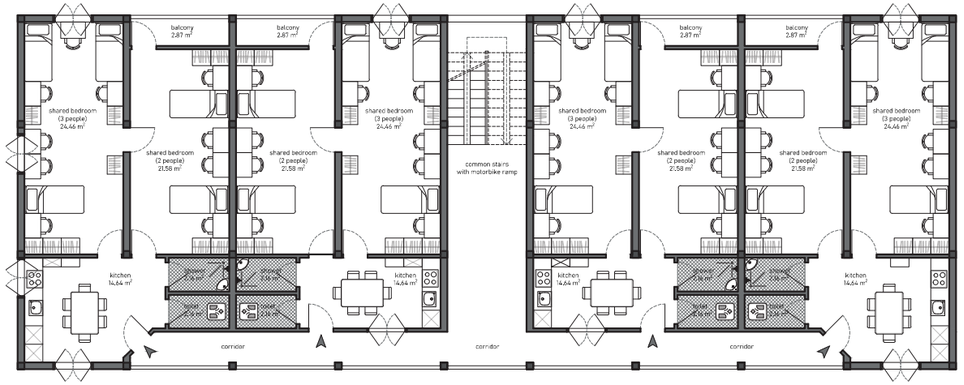
Key Plan





scale 1:200





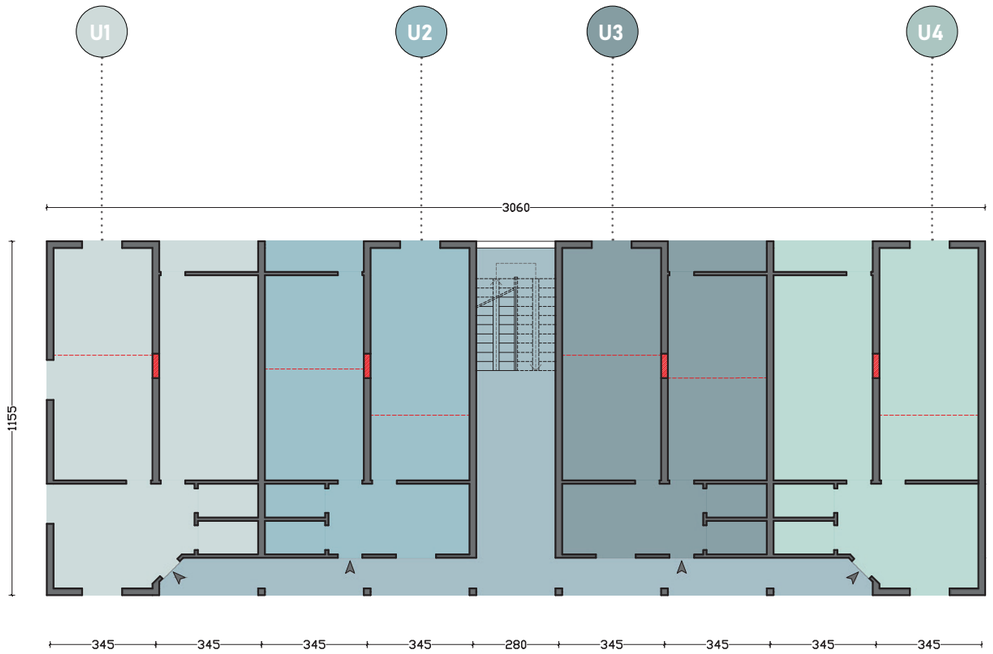
Drawn by: *the Authors based on Bui (2017), Cerrone (2014), Hong & Kim (2020), Ngoc (2017),*

KTT: ADAPTATION FLOOR PLAN - WITH PRIVATIZATION

during 90s

Typical Initial Adaptation - Construction and Demolition through time

Block 1

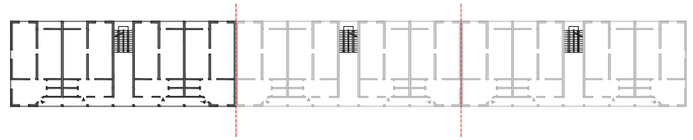


scale 1:200

0 2 5 10 20 m

U = unit

Key Plan

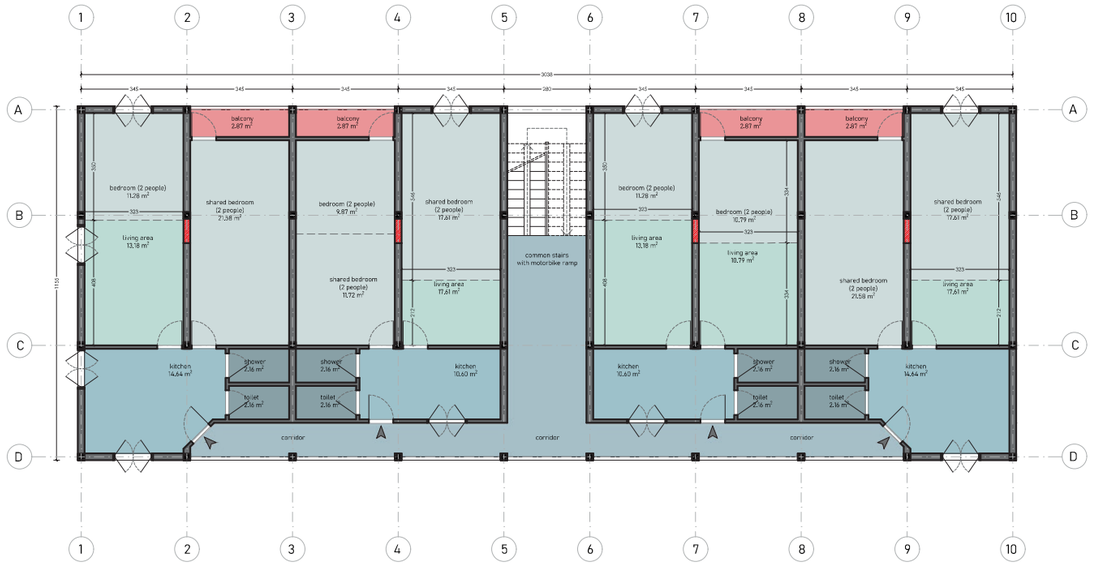


Residents started to divide their own spaces, **initially by closing few apertures** to privatize the areas. Other trnasformations of ther KTT's residential space was initiated due to **privatization policy.**

Drawn by: *the Authors based on Bui (2017), Cerrone (2014), Hong & Kim (2020), Ngoc (2017),*

KTT: ADAPTATION FLOOR PLAN - WITH PRIVATIZATION

Typical Initial Adaptation - Construction and Demolition through time

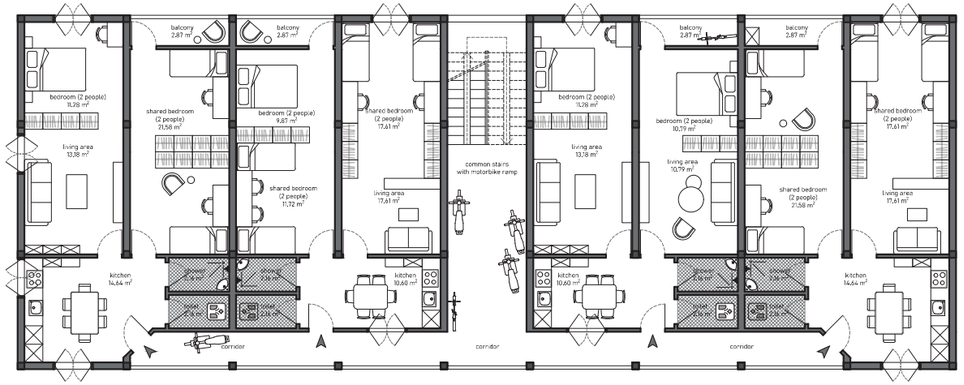


scale 1:200

0 2 5 10 20 m

KTT: ADAPTATION FLOOR PLAN - FURNISHINGS

Typical Initial Adaptation - Construction and Demolition through time during 90s



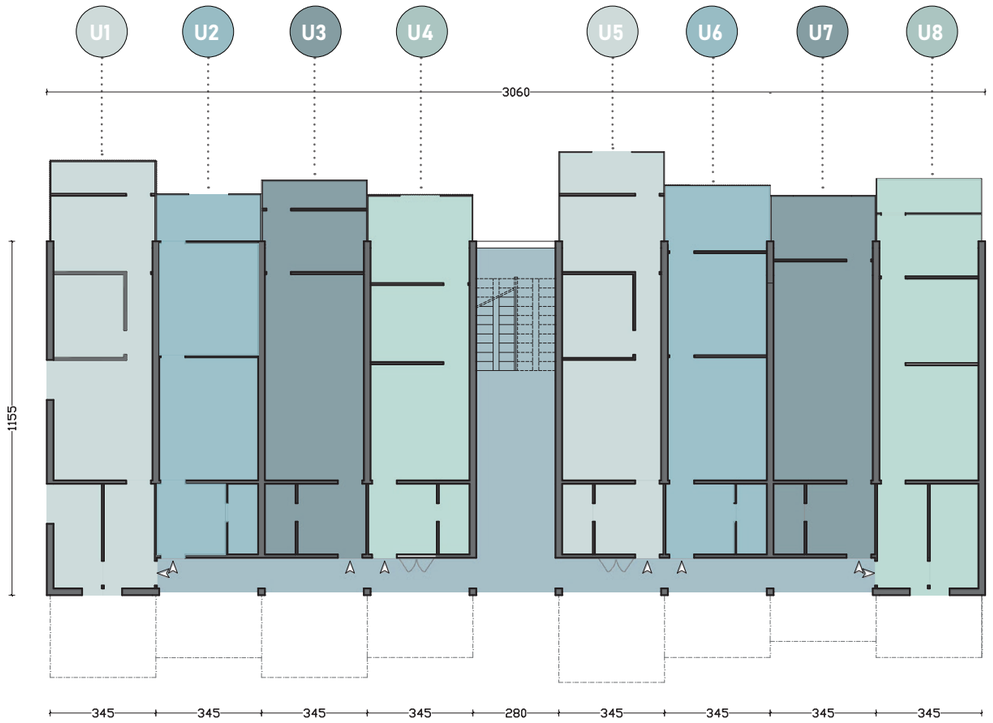
Drawn by: *the Authors based on Bui (2017), Cerrone (2014), Hong & Kim (2020), Ngoc (2017),*

KTT: EXTENSION FLOOR PLAN - EXISTING CONDITION

present

Typical Initial Adaptation - Construction and Demolition through time

Block 1

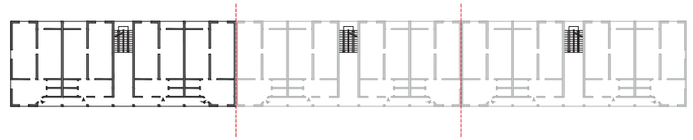


scale 1:200

0 2 5 10 20 m

U = unit

Key Plan



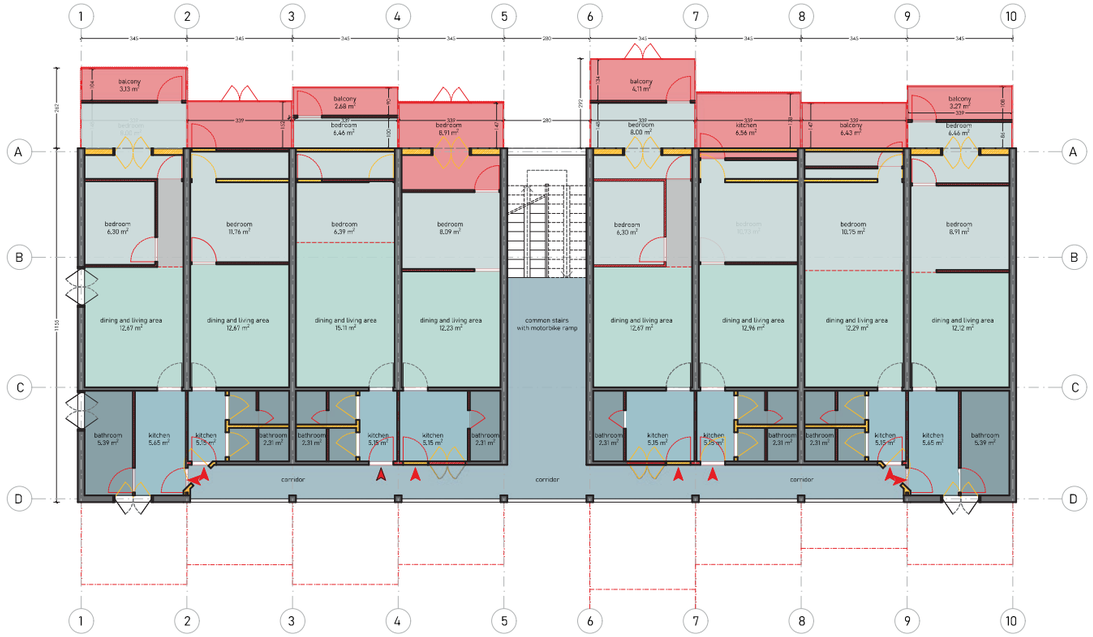
The most recent divisions of the apartments and units can be seen very different from the 50s, wherein **extensions were done horizontally by each household**.

According to Hong and Kim (2020), transformations of KTTs includes **merging adjacent houses between owners**, **intallation of separate toilets and kitchens and construction of additional rooms and verandas** and these seem to have **adapted to local traditional lifestyles and routines.**

Drawn by: *the Authors based on Bui (2017), Cerrone (2014), Hong & Kim (2020), Ngoc (2017),*

KTT: EXTENSION FLOOR PLAN - EXISTING CONDITION

Typical Extension - Construction and Demolition



scale 1:200

0 2 5 10 20 m

KTT: EXTENSION FLOOR PLAN - FURNISHINGS

Typical Extension - Construction and Demolition

Nowadays (2023)

Drawn by: *the Authors based on Bui (2017), Cerrone (2014), Hong & Kim (2020), Ngoc (2017),*











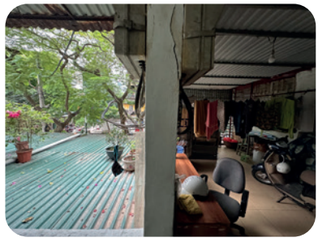




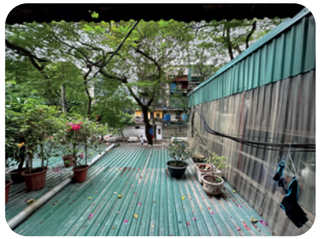



Photographs were taken in **KTT Thành Công Area**,

Photographs: *Authors 2023*




















Photographs: *Authors 2023*

CHAPTER 4:

NEEDS HAVE CHOICES

4

INTRODUCTION

A chapter illustrating **the Hanoi new KTT proposal.** *What impact may architectural design have on KTT users' current way of life? Is it possible to reinvent KTT without turning it into a skyscraper? How can the revised plan accommodate the user of KTT's illegal tiger cage?*

This project is an example of how KTT can change while maintaining its conventional architectural features. To be new is not to discard the past; rather, it is to build upon it in order to achieve something better.

The project's main concept revolves around **flexibility and adaptability**. This plan can be expanded to other KTT-equipped zones in addition to the Thanh Cong area.

Is it possible to reorganize KTT in a different dimension without having to expand the facade? The main goals of this chapter are to **establish the idea of flexibility and adaptability that can be used to Hanoi's social housing and investigate potential options for the new KTT's architectural design.**

MASTER PLAN
Axonometric

BUILDING SCALE

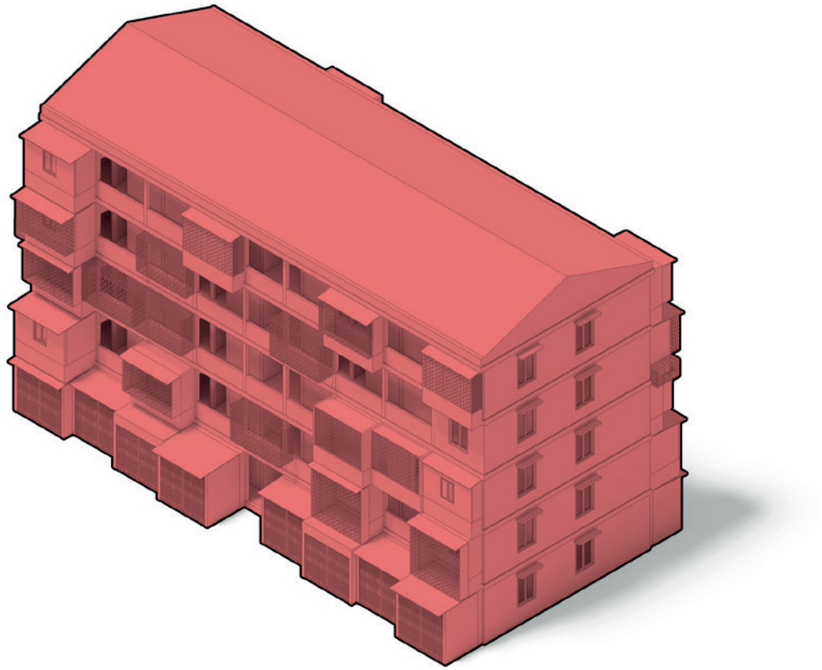
The current state of KTT is concerning; all residents are at risk of collapse due to the possibility of the structure collapsing. After a lengthy year without administration, the building's structure and amenities are no longer able to survive.

To get out of this scenario, a new building is required. This section will demonstrate how the new KTT may be developed without destroying the traditional way of life for the locals, which is important because the area has been inhabited since the 1960s.

The main concept of the project is module building, which means that it may be implemented not only in the Thanh Cong region but also in other Hanoi zones having KTT. The goal is to apply the same concept to other parts of the city rather than just restricting the design to a specific location.

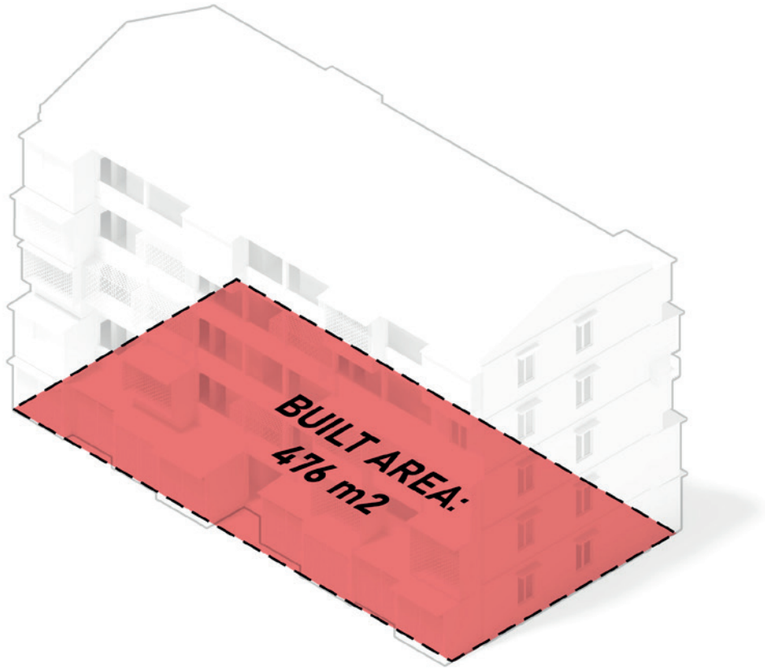
EXISTING

PROPOSAL



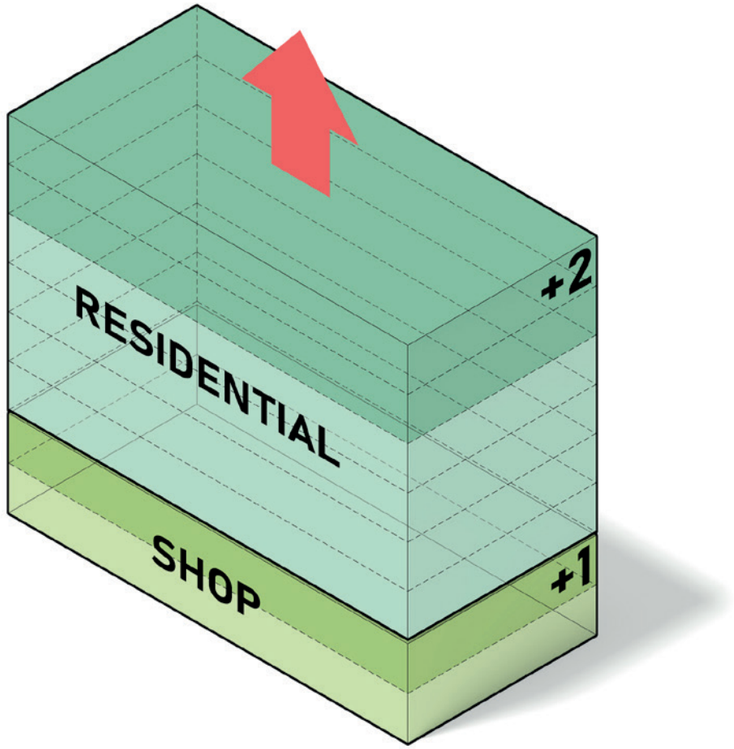
DEMOLITION

KTT's current state is so dire that it could collapse at any time. In order to construct a brand-new KTT, the entire building must be demolished.



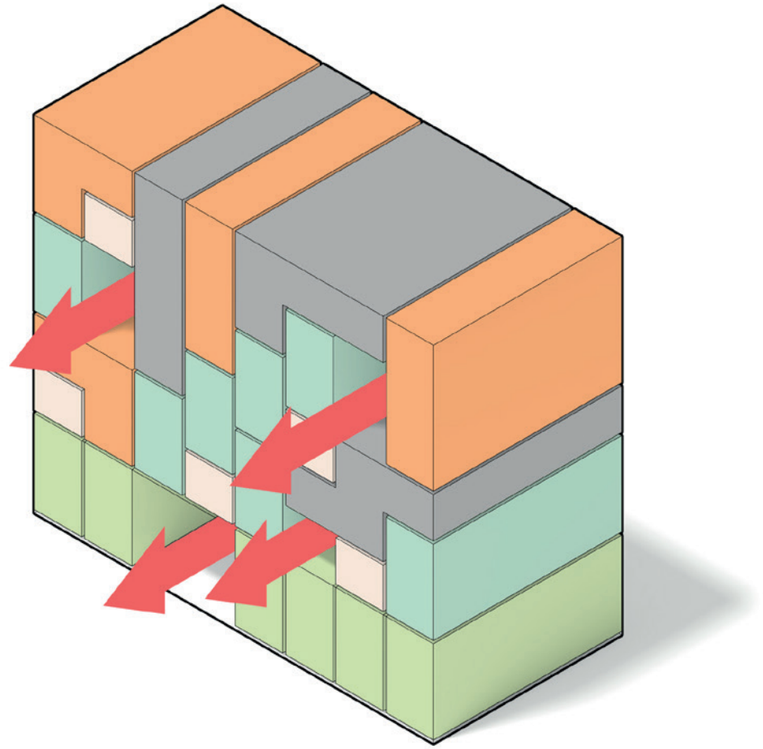
BUILT AREA

The average built area is computed with the extension of the previous KTT taken into account. This is the mean area of KTT original area combined with the current extension.



NEW VOLUME

To provide the user with greater room, a new volume is generated. Compared to the existing KTT, the store area now has two floors instead of one, while the residential area has six floors instead of four. This proposal centers on the vertical axis rather than expanding the facade horizontally.

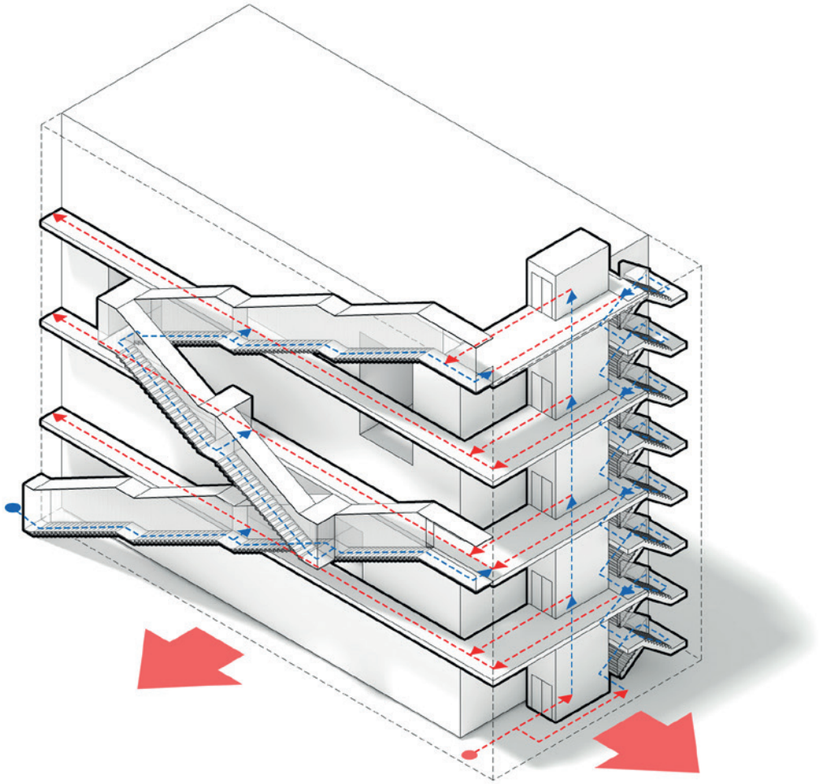


VERTICAL PROGRAM

The building's program is mostly divided into vertical sections, much like a traditional Hanoi tube house. There will be tunnel holes used as common areas for tenants' public activities spaced a few units apart.

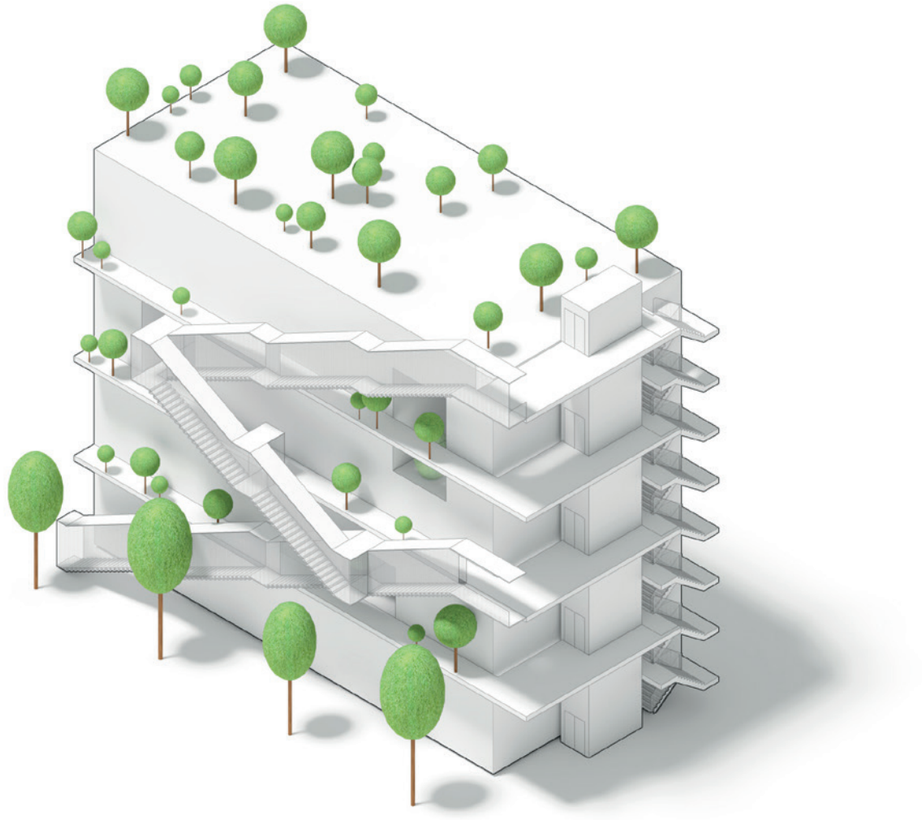
CONCEPT SCHEME

Design process



CIRCULATION

The building's two faces are expanded to form the circulation. Because most of the units inside are arranged vertically, only one corridor is required for every two floors. As a result, create a double-height corridor to give each unit more natural light and to minimize the overall number of corridors that are required.

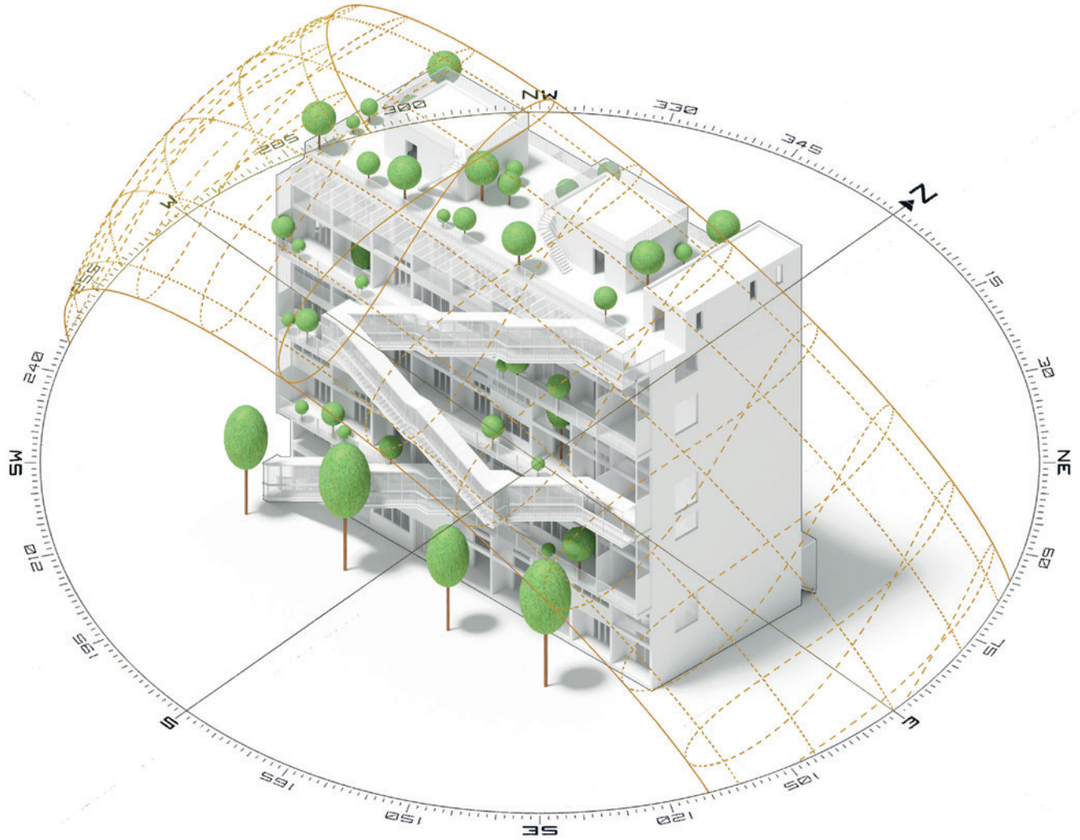


THREE DIMENSION PARK

When pot plants surround a structure, it transforms into a park that spans both horizontal and vertical axes, improving user comfort and improving the city's environmental friendliness.

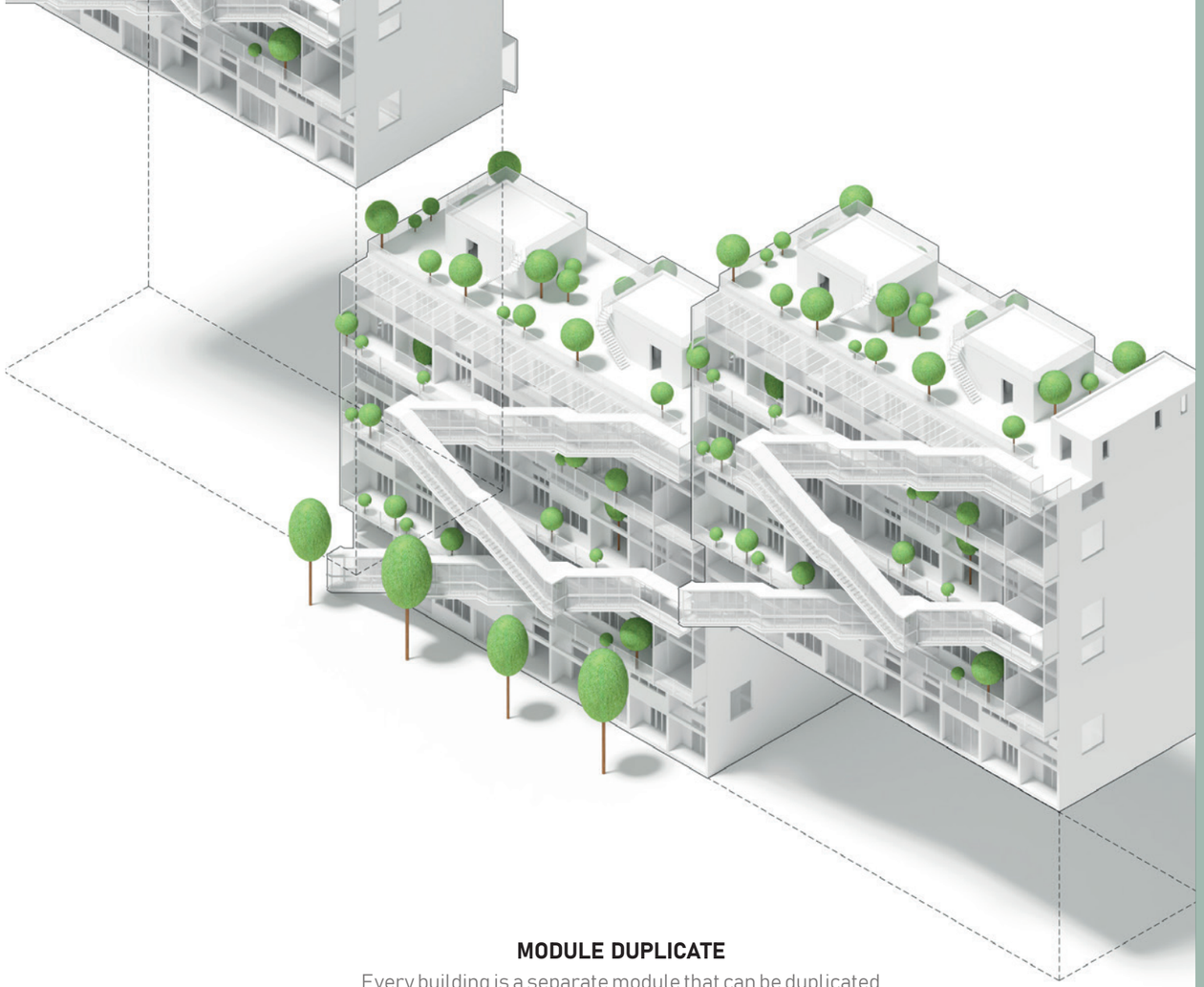
CONCEPT SCHEME

Design process



ADAPTIVE FACADE

Different types of facades are introduced to the building's front and rear. For tenants' comfort, every facade must maximize its ability to let in natural light and ventilation. Every facade has a unique purpose that has been researched in relation to the user's particular activities.

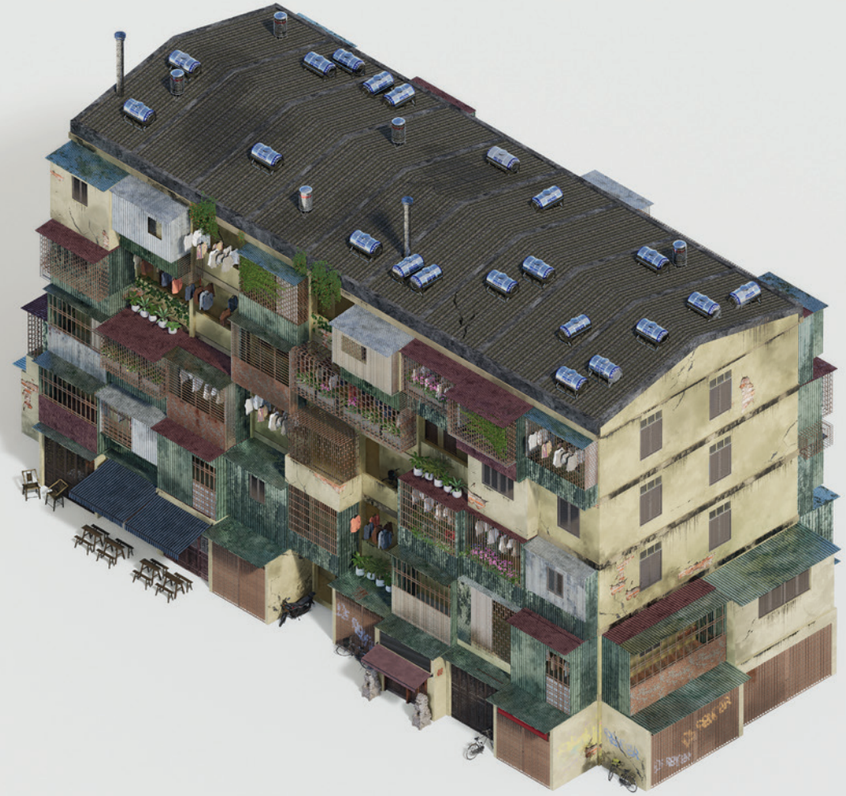


MODULE DUPLICATE

Every building is a separate module that can be duplicated and positioned adjacent to one another. This approach addresses the demand for new, useful buildings that are easily adaptable to every available KTT slot.

EXISTING CONDITION

Based on 2023 and 2024 site visits

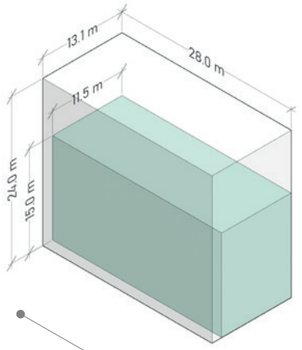


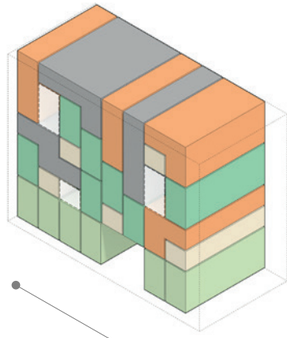
Drawn by: Authors

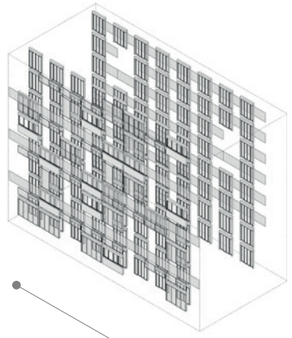
PROPOSAL

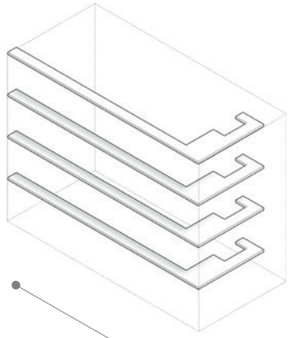
CONCEPT SCHEME

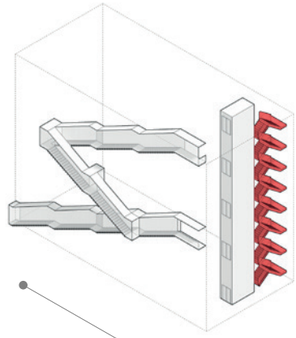
Building elements

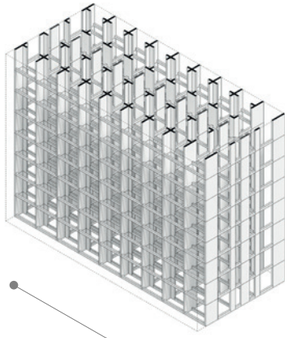


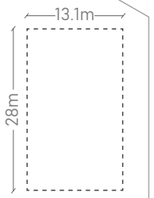










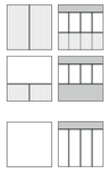


Volume

Starting with relatively identical length as the **original KTT (cyan block),** however increase the width and the number of floors within 1 block of building, the volume itself **increase 45%** comparing to existing one, allow more spaces for tenant.

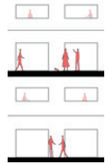
Space & Function

Space planning in a **modular cross pillar** structure creates many variations of architectural spaces, **the lime green and white** representing shop and public activity spaces, while **the other colors** representing living space.



Elevation

The variations of windows on the facade allow people to **adapt to their needs** while also creating a new face for urban areas that will **improve both the life quality** of tenants and the city's image.



Horizontal movement

As the program is relatively vertical placement, the horizontal transportation has reduced, from 1 public corridor in every floor to 1 in every 2 floors, **creating a double height** in every 2 floors for the public corridor space.

Vertical movement

Vertical transportation is composed of **3 elements**: an elevator, an external staircase, and an emergency staircase (red staircase) for every block of building.

Modular Structure

The whole building is planned by a **cross pillar structure** which has all the technical supply go up in the **vertical axis**, leave all the in between wall empty, allow flexibility that can easily adapt to different user.

PROGRAM

The structure is divided into **three primary sections: open space, residential, and shop**. While residential space spans from the second to the seventh level and the tenant's open space is located on the roof, the shop occupies the ground and first floors.

ROOFTOP: OPEN SPACE

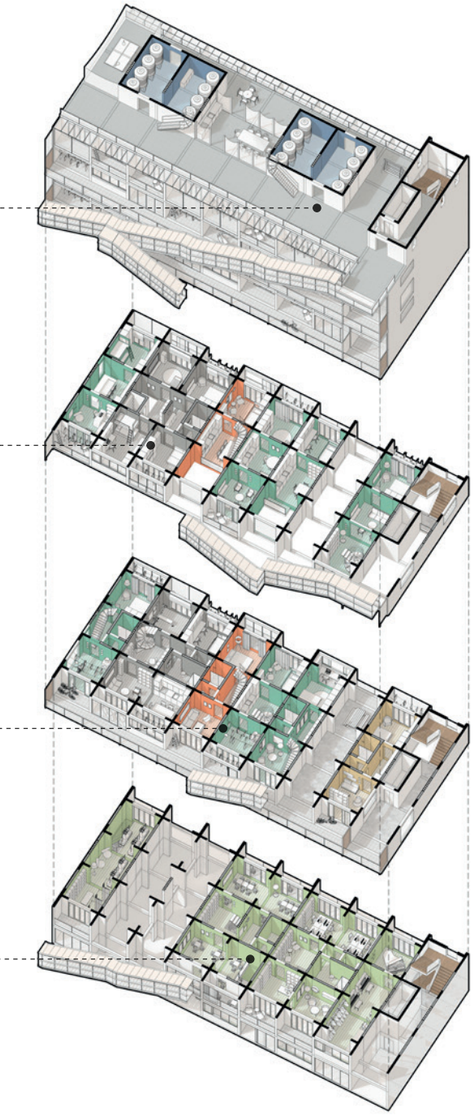
- Technical room

2ND-7TH FLOOR: RESIDENTIAL

- Studio Flat
- Duplex
- Triplex
- Quadruplex

GROUND FLOOR-1ST FLOOR: SHOP

- Shop



SHOP

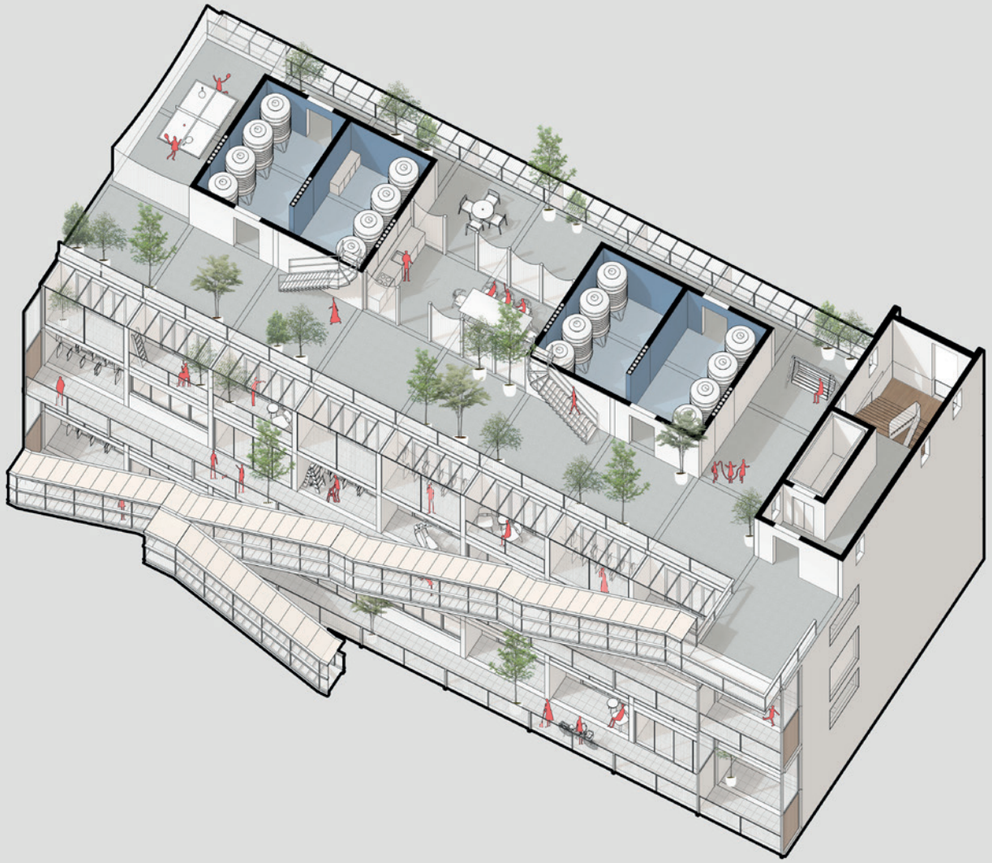
Every store and service is housed on the building's first two floors. Recognize the necessity of increasing the area for this purpose; the extension follows a vertical axis rather than a horizontal one, and a floor is added rather than the facade being extruded as in the case of KTT.

RESIDENTIAL

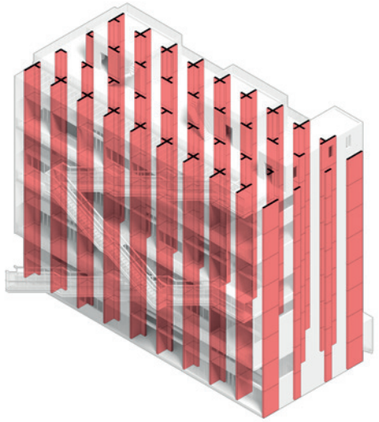
Since all of the residential units are arranged mostly along a vertical axis and span from the second to the seventh floors, one public corridor per every two floors suffices.

OPEN SPACE

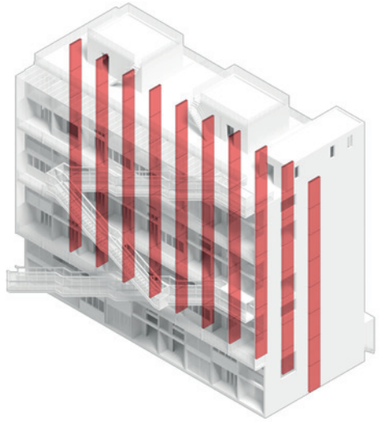
Situated on the roof, the open space serves as a communal area for building tenants. tenents can engage in any recreational and social activities here.



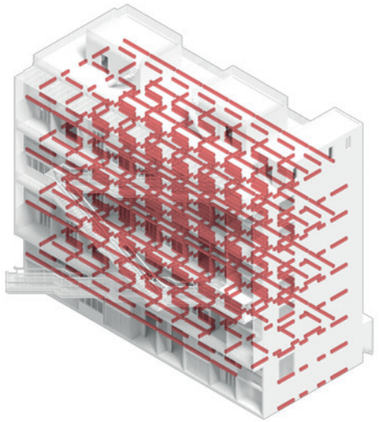
BUILDING STRUCTURE



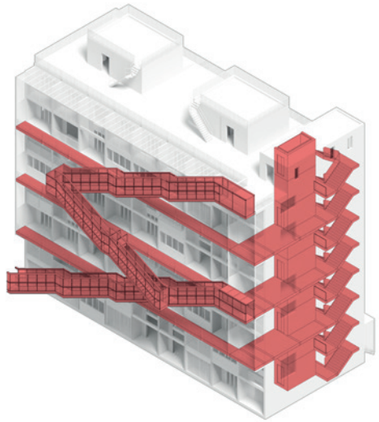
Cross pillar



Wet wall

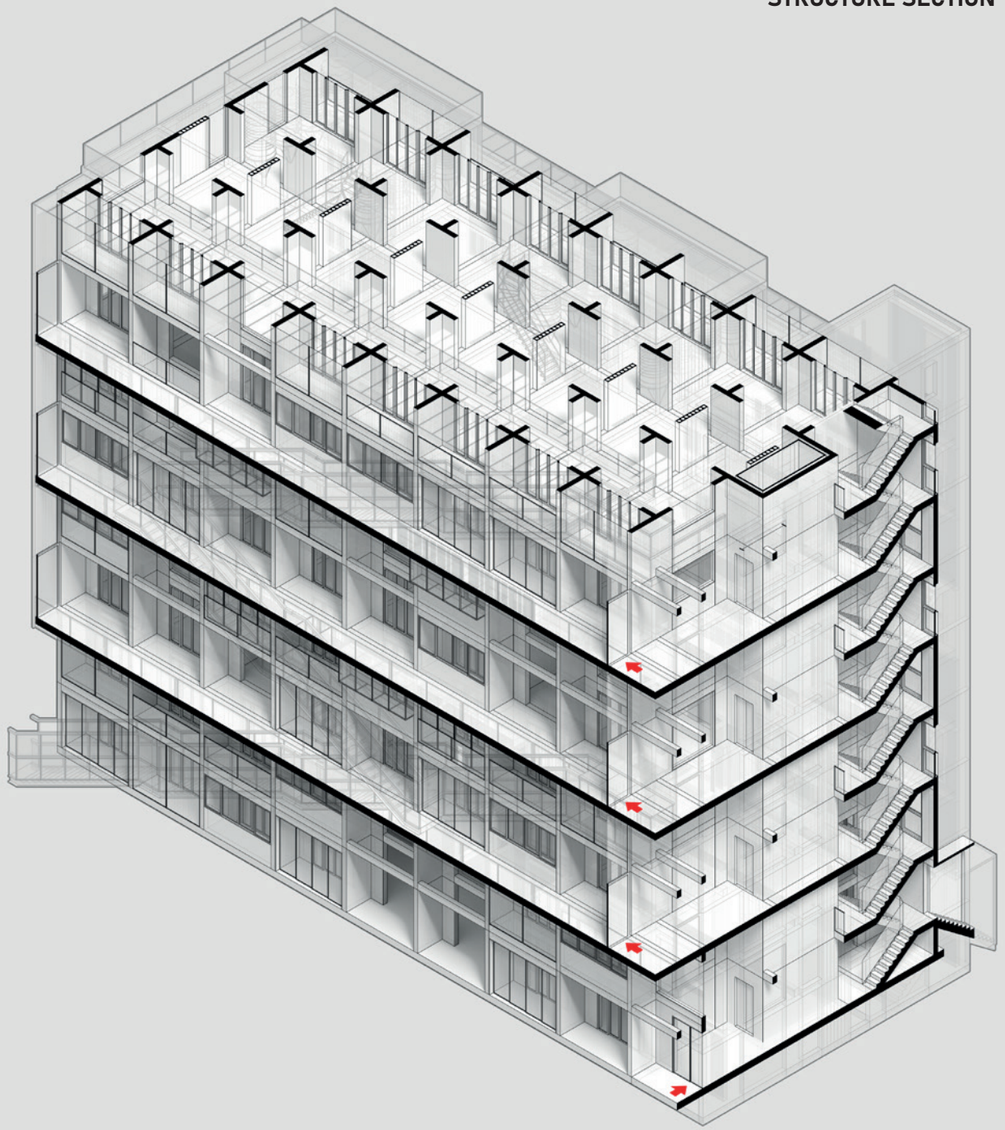


Beam

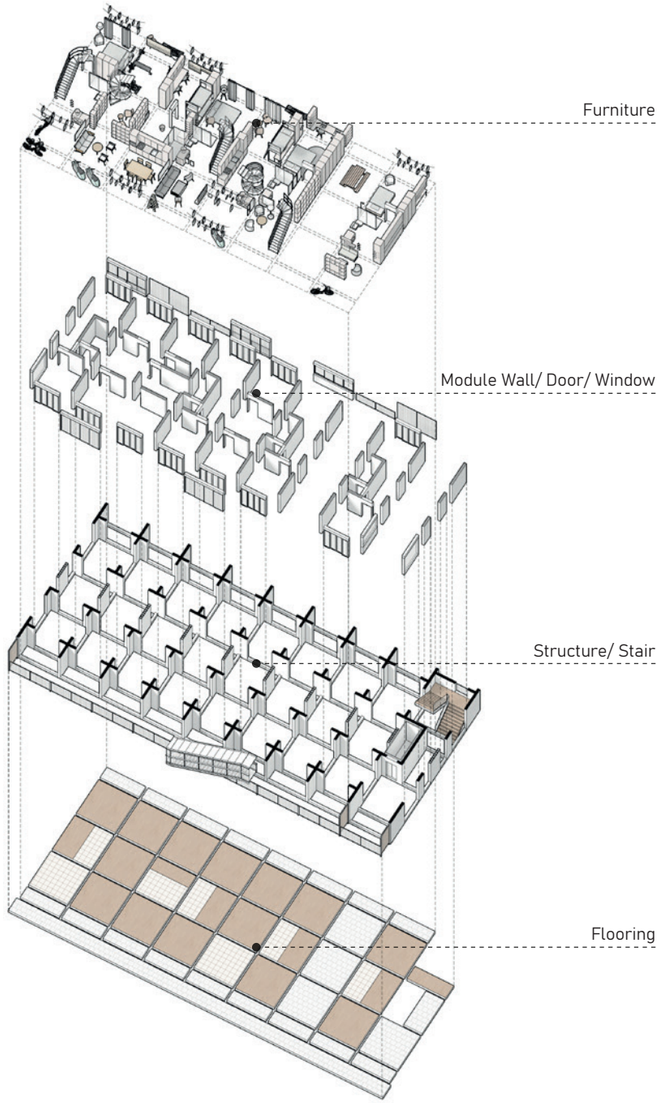


Movement

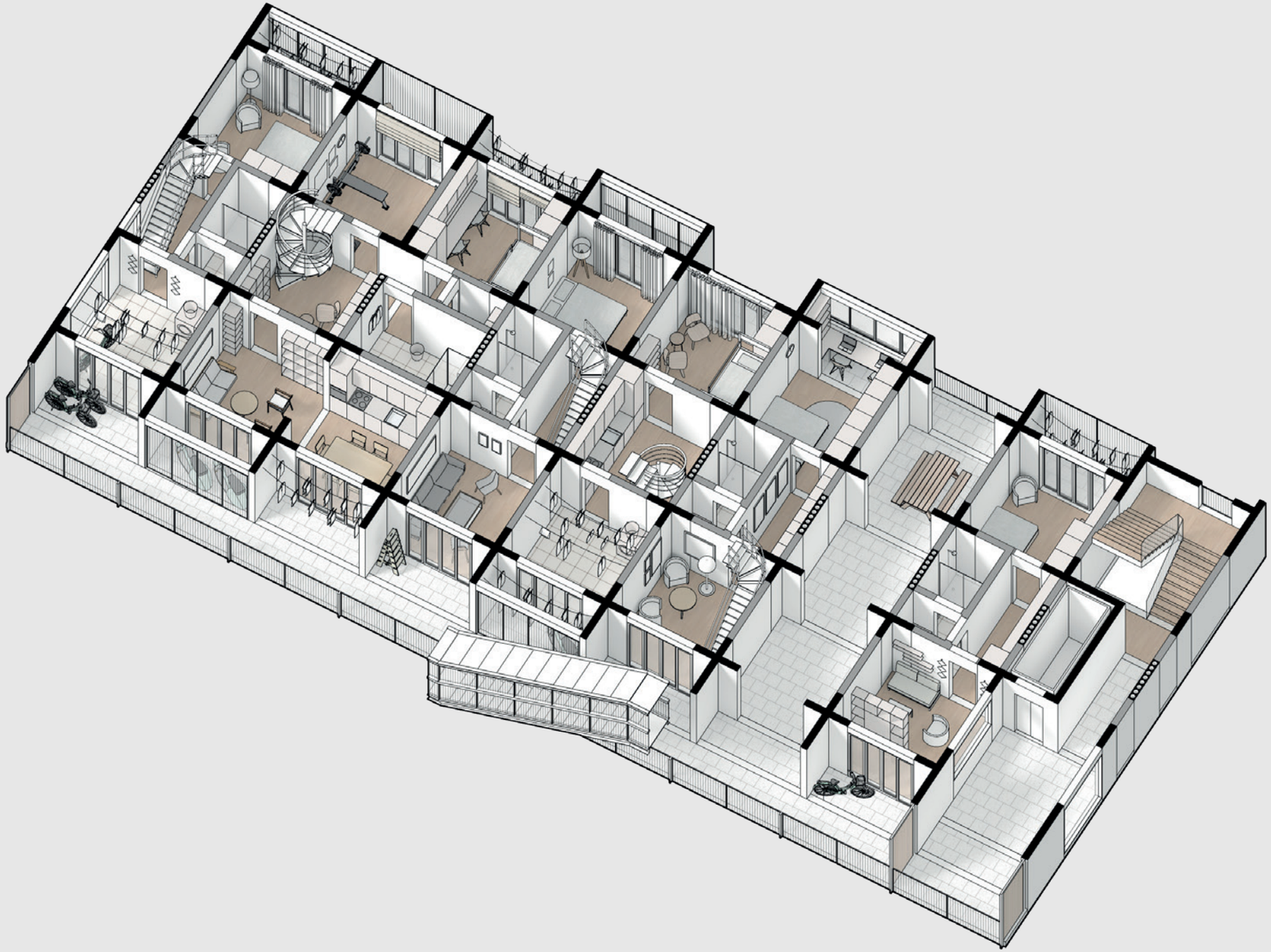
STRUCTURE SECTION



BUILDING STRUCTURE



TYPICAL FLOOR



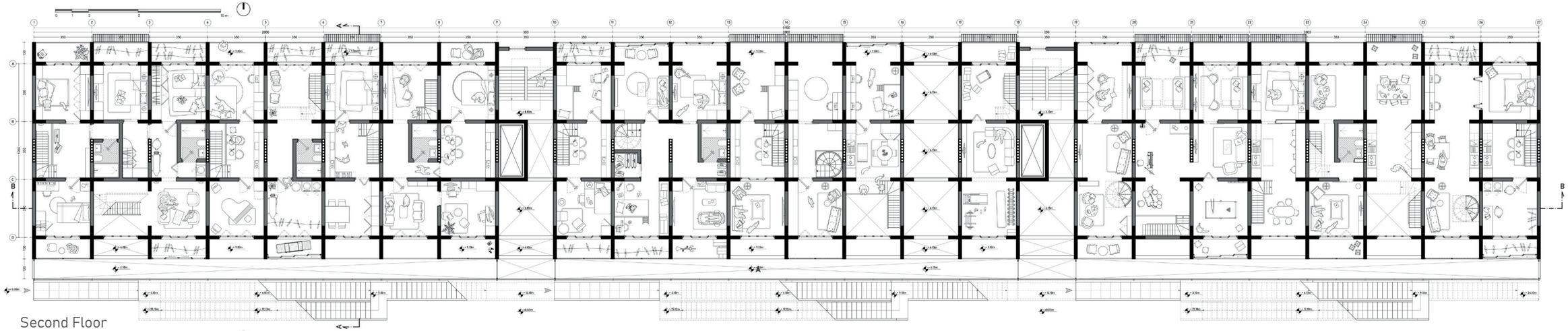
FLOOR PLAN
Second Floor
Scale 1:100

Studio Flat Duplex Triplex Quadruplex Common Space

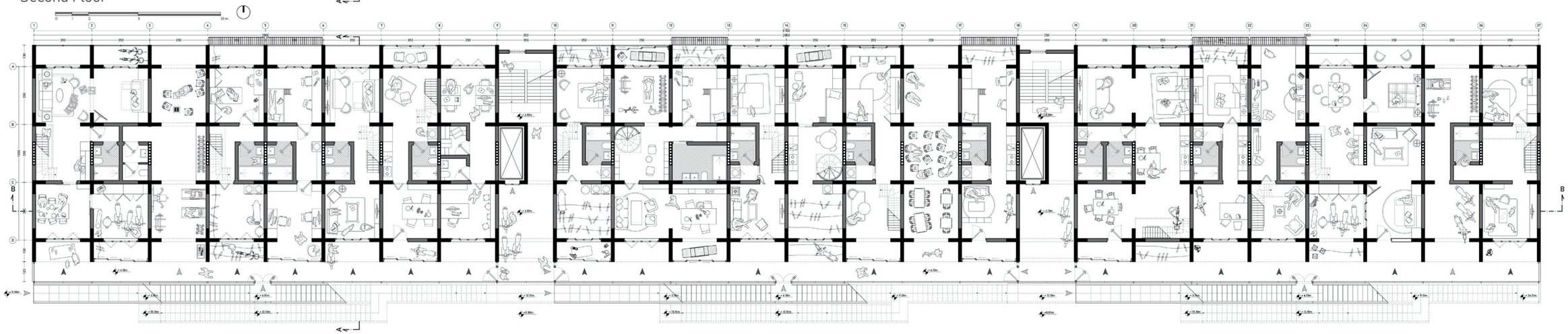
FLOOR PLAN

Typically Divided in Three Main Blocks
Scale 1:250

Third Floor



Second Floor



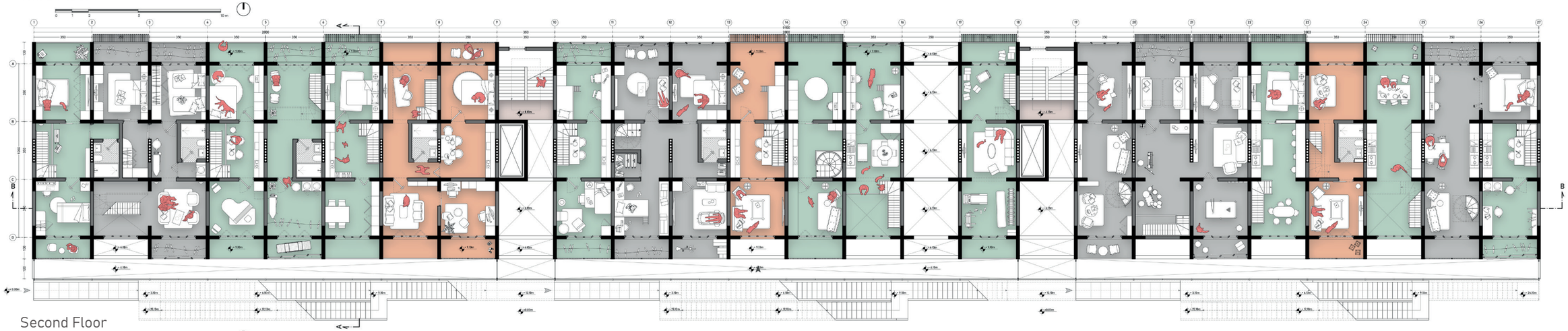
FLOOR PLAN

Typically Divided in Three Main Blocks (Units)
Scale 1:250

KTT: WHOLE BUILDING

Studio Flat Duplex Triplex Quadruplex Common Space

Third Floor

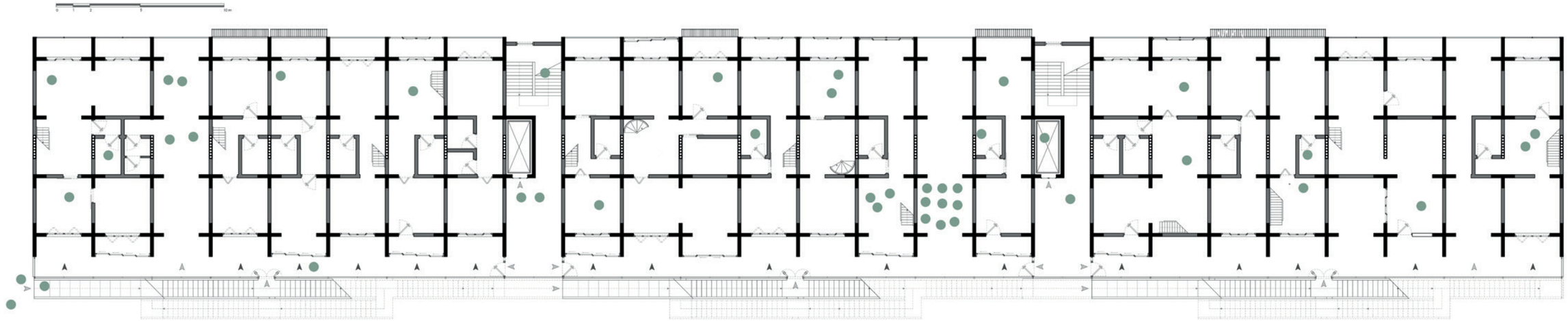


Second Floor

FLOOR PLAN

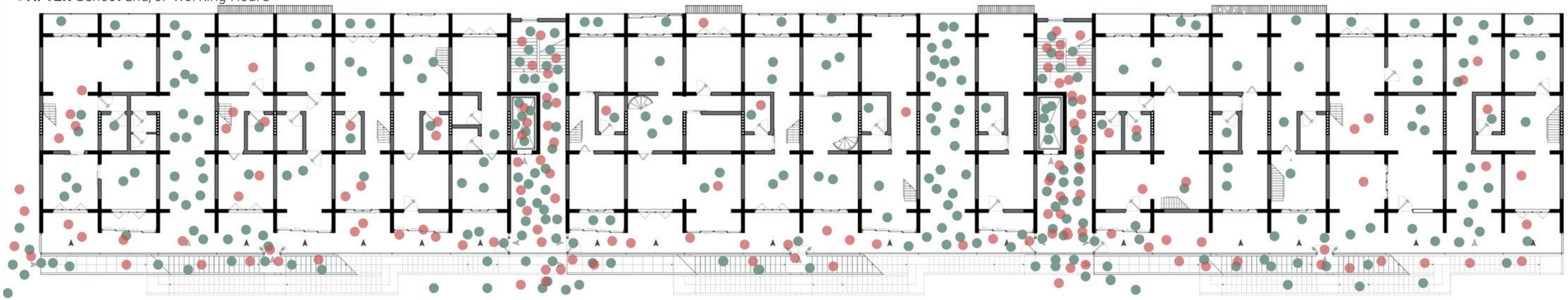
Residential: **Second** Floor

● **DURING** School and/or Working Hours



● **BEFORE** School and/or Working Hours

● **AFTER** School and/or Working Hours



Scale 1:250

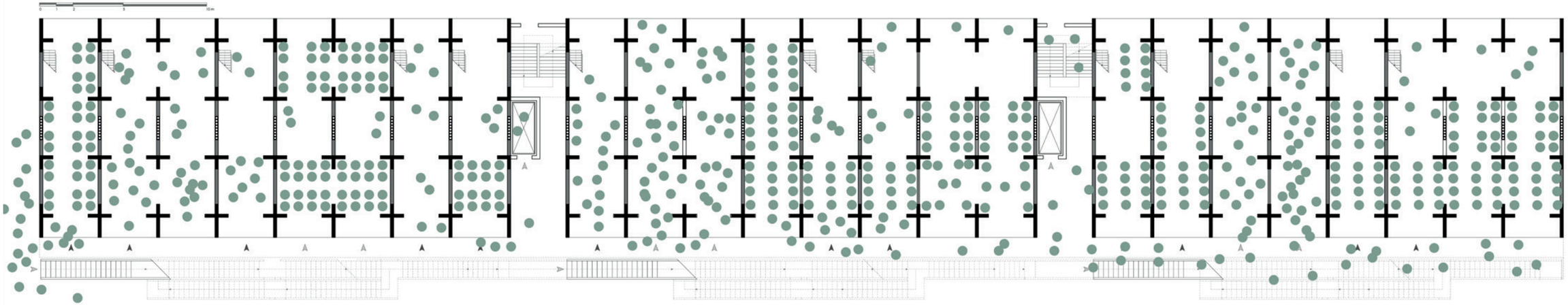
DURING, BEFORE, AFTER WORKING HOURS

Fewer individuals utilize the building during working hours, but tenants use and share common areas like parking, staircases, and hallways more frequently before and after work.

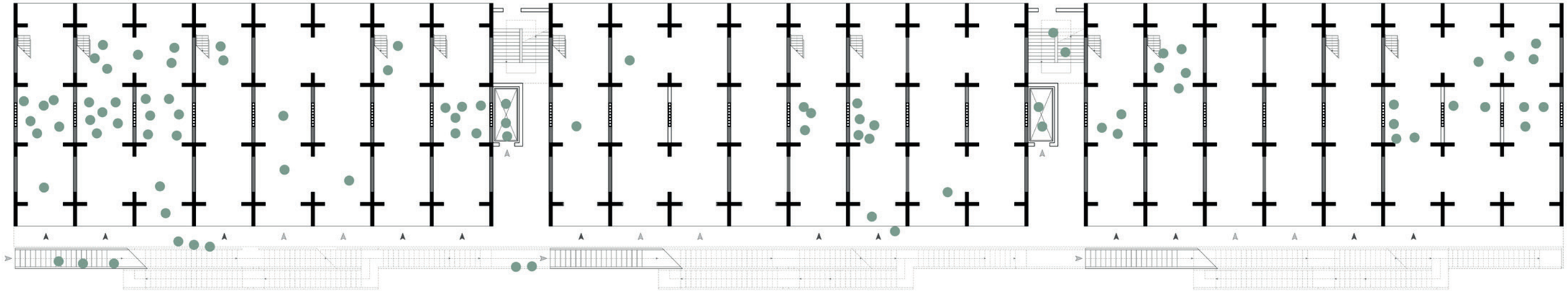
FLOOR PLAN

Commercial: **Ground** Floor

● **DURING** Working Hours (Shops)



● **BEFORE** and **AFTER** Working Hours (Shops)



Scale 1:250

DURING, BEFORE, AFTER WORKING HOURS

The ground floor is utilized by customers during working hours and sees fewer occupants before and after busy hours, unlike the upper residential floors.

SECTION

Section A-A

Scale 1:200

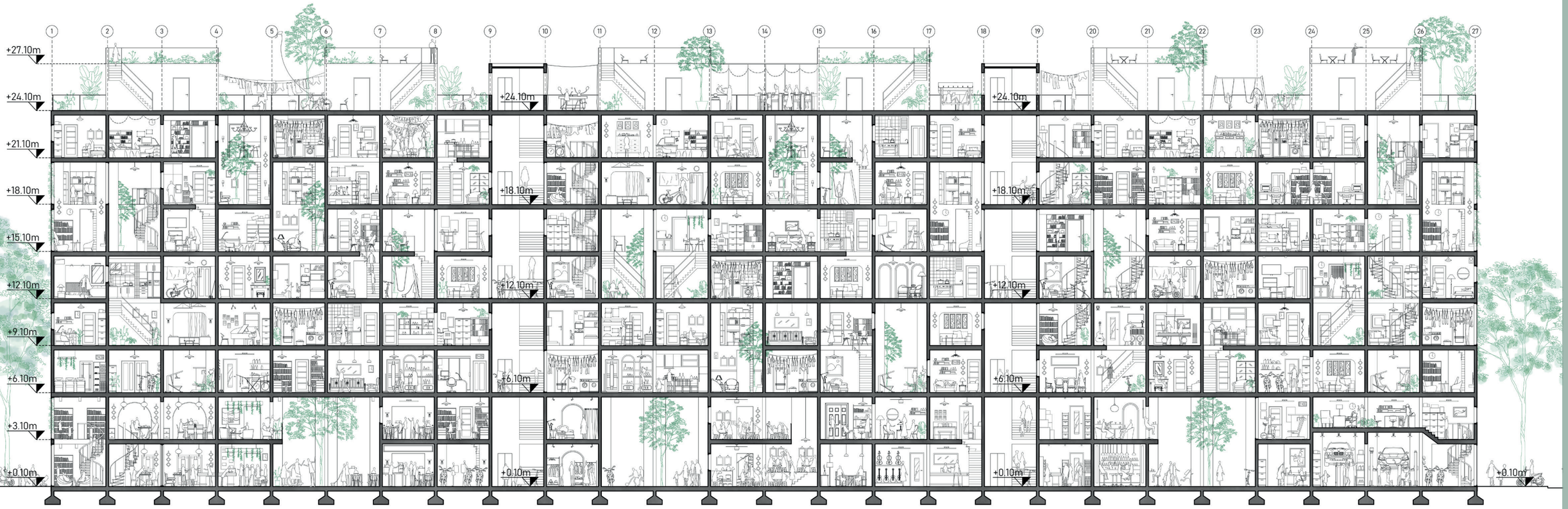
KTT: WHOLE BUILDING

Corridor Porch Room Facility core Balcony

SECTION

Section B-B

Scale 1:250



SECTION
Section B-B (Units)
Scale 1:250

KTT: WHOLE BUILDING

Studio Flat Duplex Triplex Quadruplex Shop

UNIT SCALE

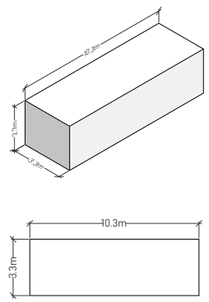
The project's main concept is adaptation and flexibility, which give tenants the freedom to use and expand their space within the building allowance.

In the case of the old KTT, users often build their own "tiger cages" that protrude from the existing façade in order to increase the amount of room they live in. This is not only illegal and violates the urban facade, but it is also risky because the structure is unstable.

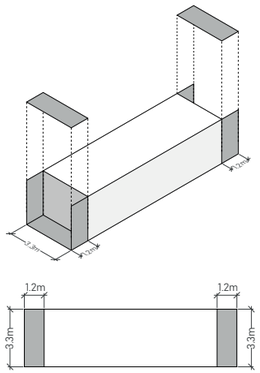
This section will demonstrate a range of potential solutions to address the issue of illegal extension by using an alternative extend dimension, all based on the concept of flexible extending.

CONCEPT SCHEME

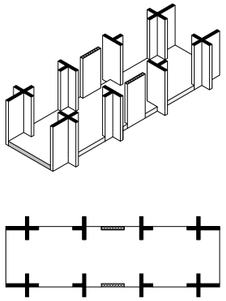
Single module



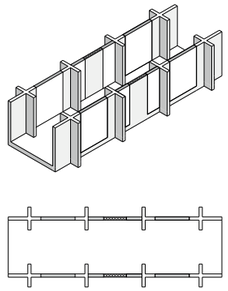
Base volume



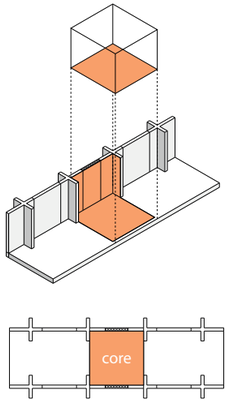
Porch and balcony addition



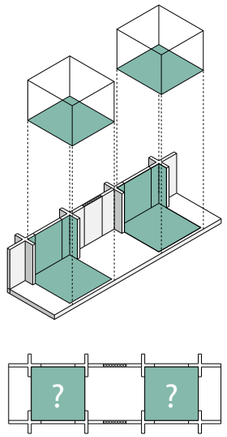
Fixed structure



Wall module



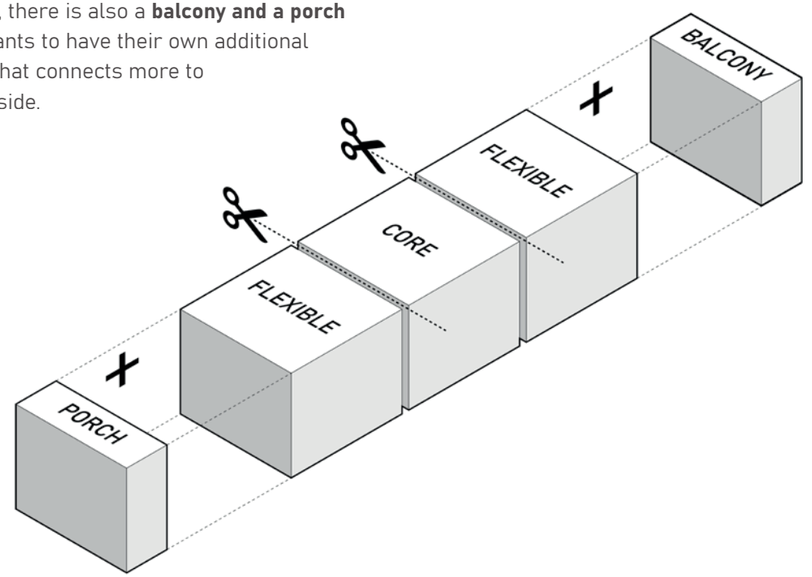
Main core (facility)



Additional spaces (flexible)

IDEA

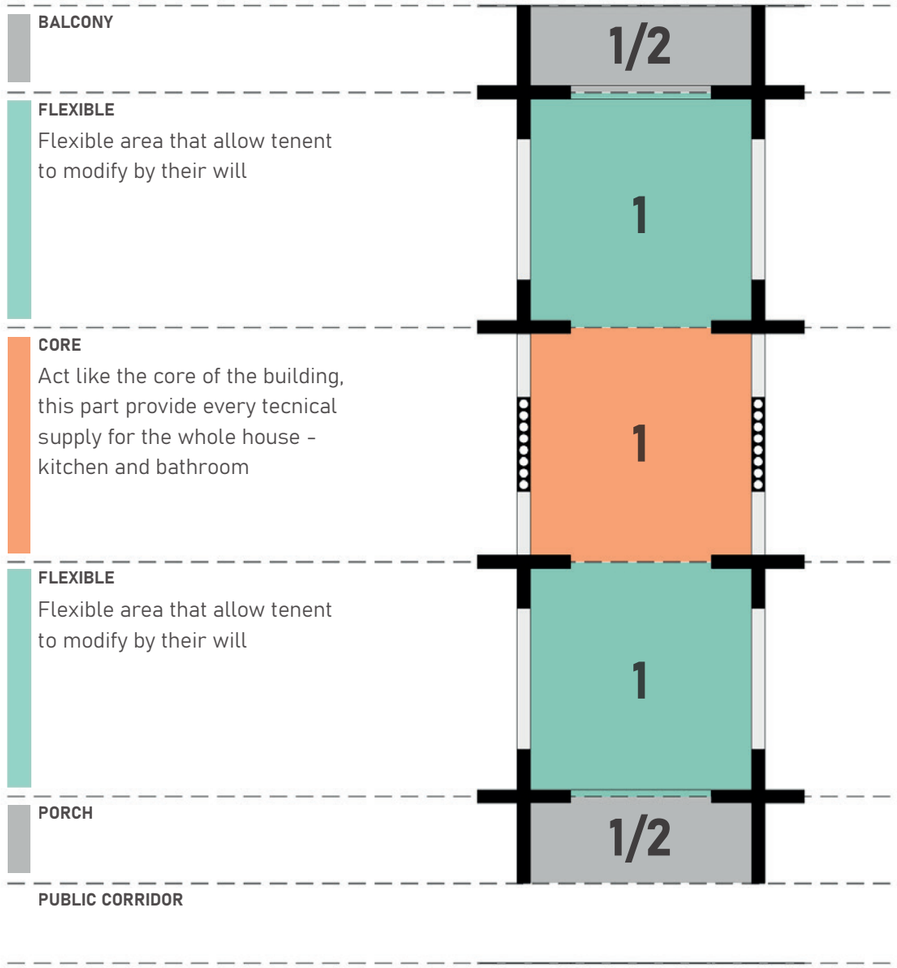
The base idea of the project starts with a unit as a **module** itself, it is separated into **3 equal squares**, in which the **middle square is the core** - all the pipe, tecnical suplly, and electricity wire will be placed in this area whereas the **2 squares beside can be flexible area** that will allow the tenant to modify according to their preference. Beside the 2 flexible spaces, there is also a **balcony and a porch** for tenants to have their own additional space that connects more to the outside.



Additional space

CONCEPT SCHEME

Unit spaces



GENERAL ACTIVITIES OF DIFFERENT USERS

Based on Investigation

MAIN USERS

student/worker

group of students/workers

young couple without children

old couple without children

couple with 1-2 children

couple with married children and with in-laws

MAIN ACTIVITIES

to sleep

to cook

to eat

to relax

to cleanse

to do laundry

to work

to study

to garden

to standby

to smoke

to dry clothes

to park

to entertain

to play

to exercise

to host

to walk

MAIN NEEDS OF SPACE

Bedroom

Living room

Studio

Storage

Office

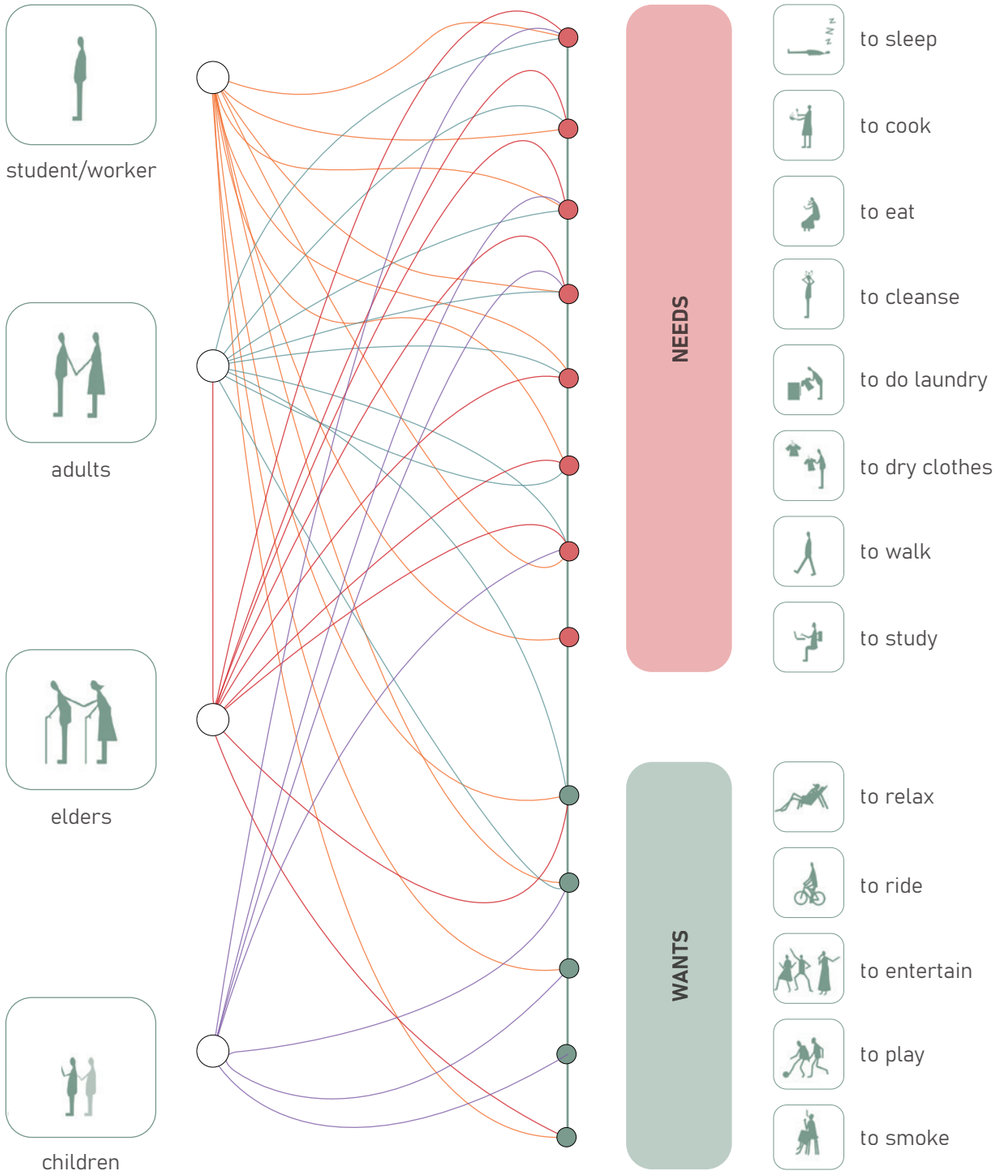
Gym

Open space

Bathroom

Kitchen

Balcony



NEEDS AND WANTS

The extensive design, creation, and completion process of the redesigned KTT **takes into account the varied activities carried out by different users**. This study outlines how **individuals daily routines influence spatial organization, particularly in instances of unanticipated events like the COVID-19 pandemic**. Due to the rising frequency of **online activities** such as office employment, online schooling, and business transactions, during this event, **the shift to remote work and study required considerable modifications to daily routines**. For people of all ages, basic functions including eating, sleeping, and maintaining personal hygiene are extremely important. **Most users have similar needs yet different wants; the sole factor that separates them is how much each user requires or desires, which varies based on their age, status, personality, and other factors.**

UNIT TYPOLOGIES

Proposal: Quick Information

UNIT Studio Flat

1-2

minimum 32.70 m²

2nd, 4th, 6th

student, worker, young couple

UNIT Duplex

3-4

minimum 54.50 m²

2nd, 3rd, 4th, 5th, 6th, 7th

young/old couple with/ without children, students, workers

UNIT Triplex

5-6

minimum 76.30 m²

2nd, 3rd, 4th, 5th, 6th, 7th

student, worker, young couple

UNIT Quadruplex

7-8

minimum 98.10 m²

2nd, 3rd, 4th, 5th, 6th, 7th

student, worker, young couple

UNIT Common Space

all residents/visitors

-

2nd, 3rd, 4th, 5th, 6th, 7th

all residents/visitors

Other Amenities

Corridor: 2nd, 4th, 6th

Balcony: 1st, 2nd, 3rd, 4th, 5th, 6th, 7th

Rooftop: Technical Supplies, Open Space

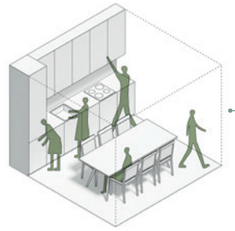
Elevator: Ground Floor, 2nd, 4th, 6th, Rooftop

Needs = Activities: Typical Daily Routine

Bathroom

walking
sitting
standing/showering
standing/washing
bowing

Kitchen/Dining

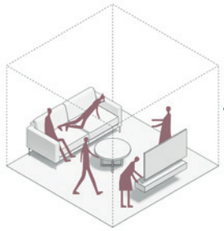


walking
sitting/eating
standing/reaching
standing/washing/ cooking
bowing

Bedroom

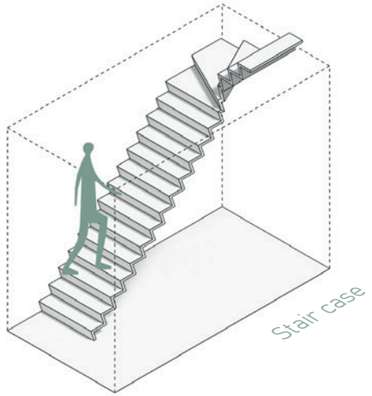
walking
sitting
lying down
standing/washing
bowing

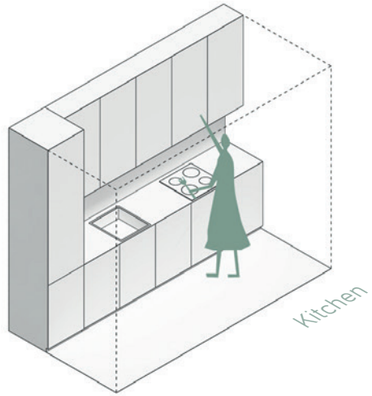
Living Room

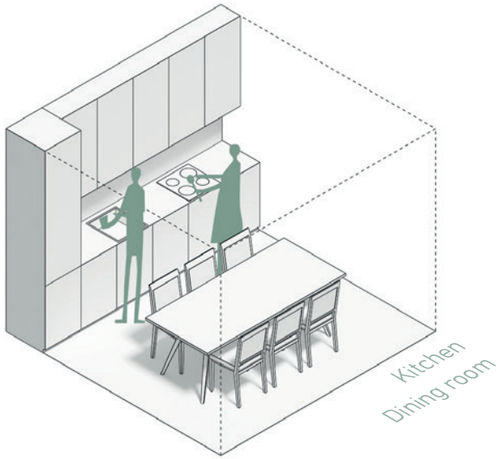


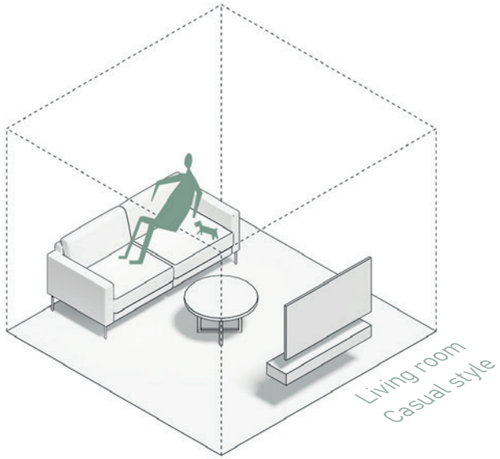
walking
sitting
lying down
standing
bowing

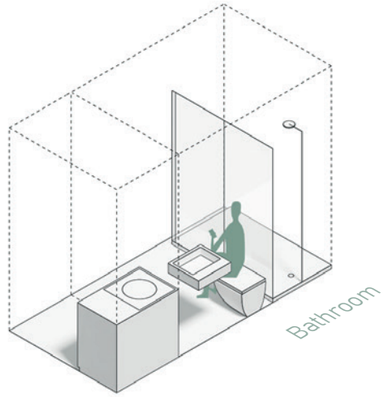
UNIT TYPOLOGIES
Proposal: Typical Rooms

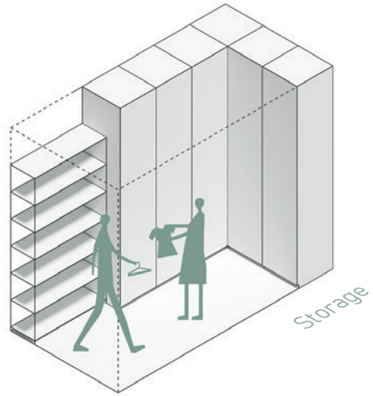


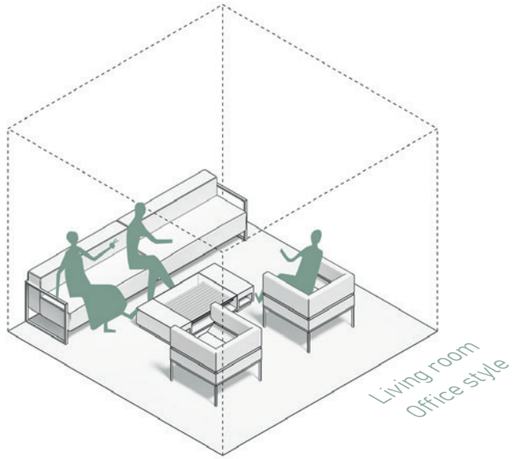


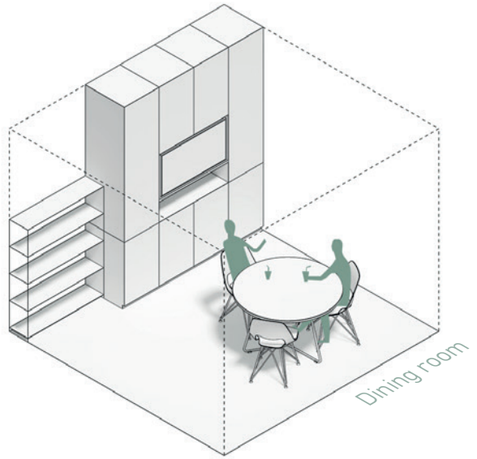






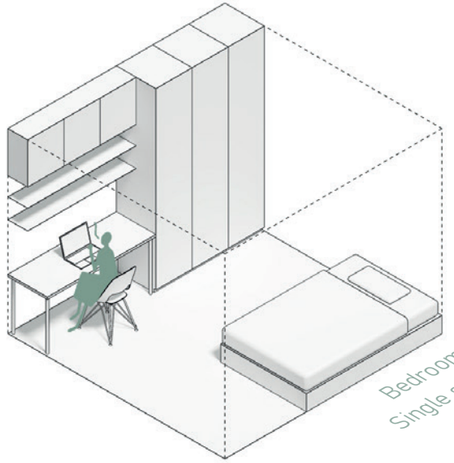


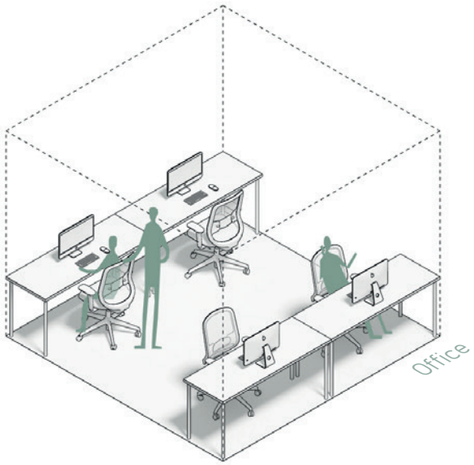


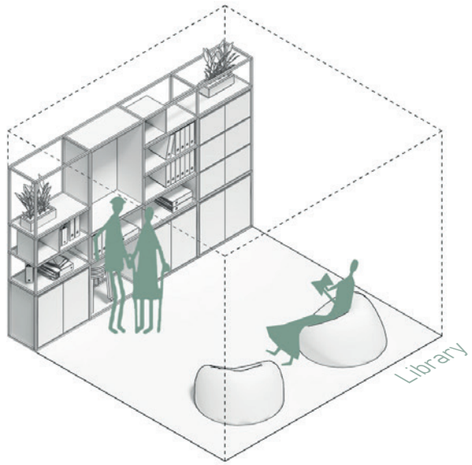


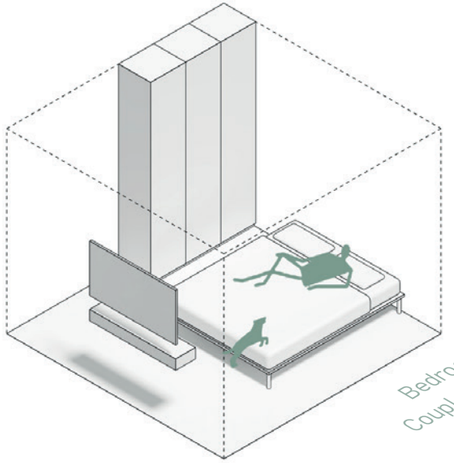
UNIT TYPOLOGIES
Proposal: Typical Rooms

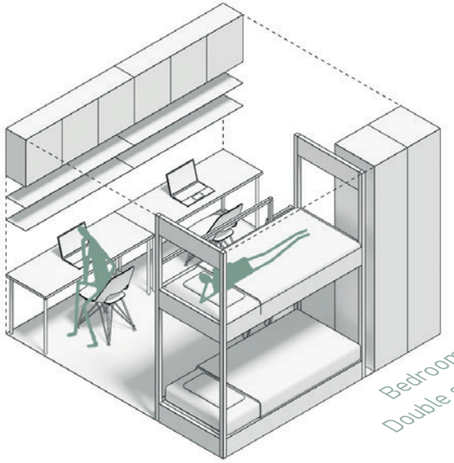

Bedroom
Studio style

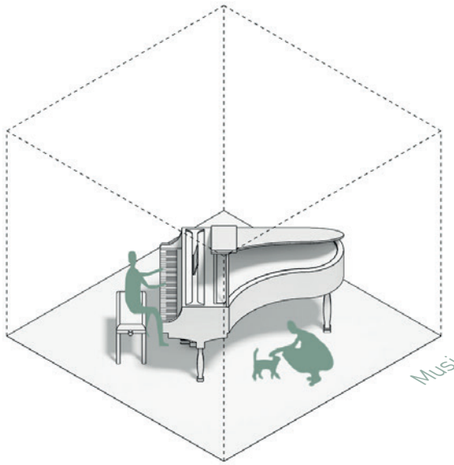

Bedroom
Single style

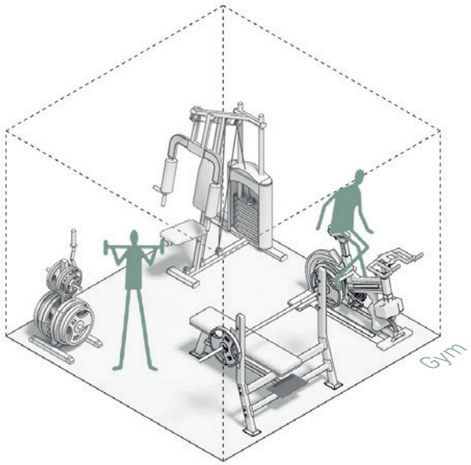

Office

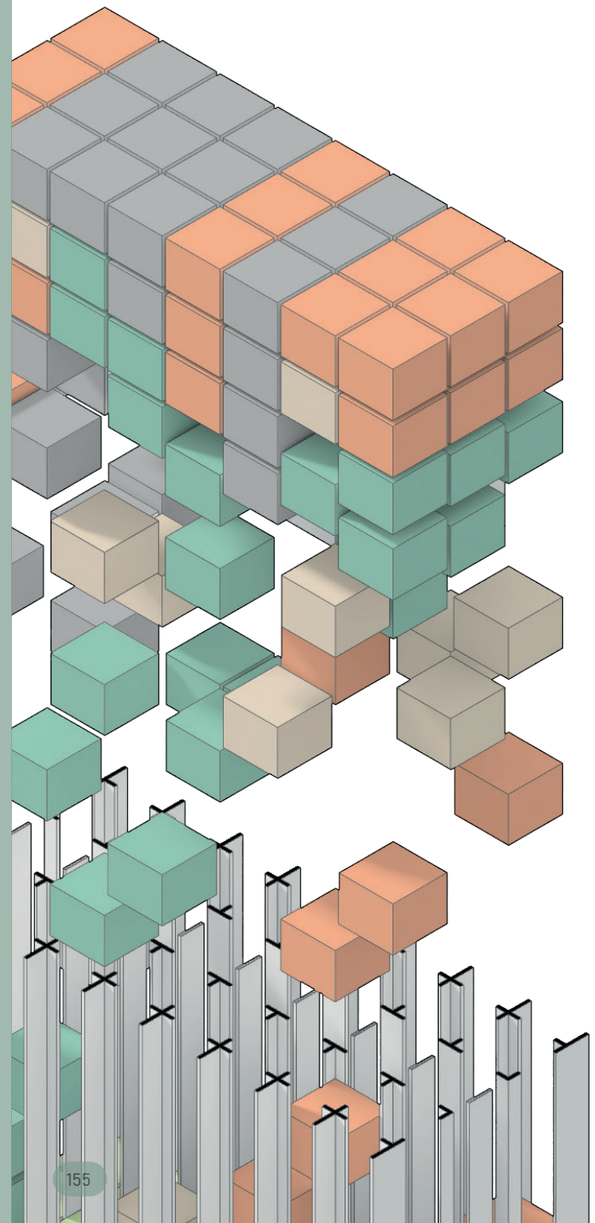

Library


Bedroom
Couple style


Bedroom
Double style


Musical


Gym



VOLUME ADAPTIBILITY

The amount of space required by each unit owner varies depending on their occupation or the number of occupants.

Given that extended families, which typically consist of parents, grandparents, and children, are the most prevalent family structure in Vietnam, it is necessary to find a lot of large units that can accommodate five or more people.

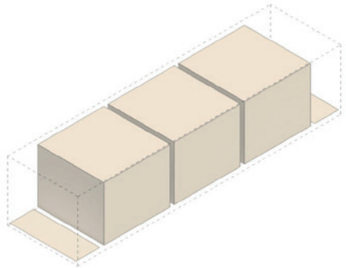
However, Vietnamese people are becoming more accustomed to living in the modern world. As a result, they are more likely to live alone or as a couple without children. To accommodate this new reality, single-unit and duplex unit has been created.

If they ever need to grow, there is always a means to do so. A new volume that adjusts to the needs of the user is formed by taking down the module wall that sits between the cross pillar structure.

Volume adapt to user need

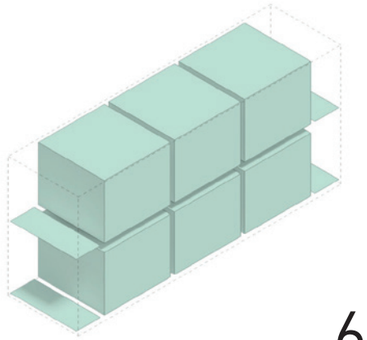
UNIT VOLUME

Single unit



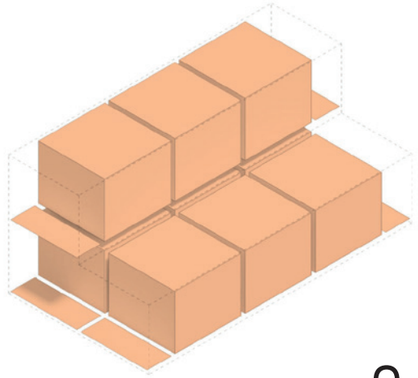
3
blocks

Duplex unit



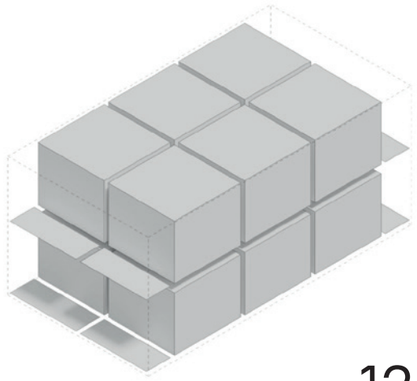
6
blocks

Triplex unit



9
blocks

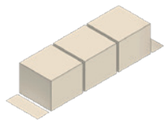
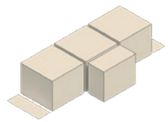
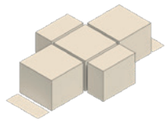
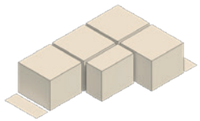
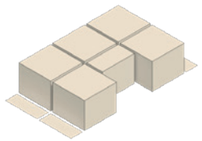
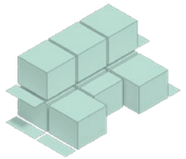
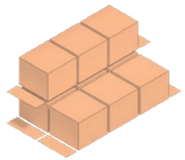
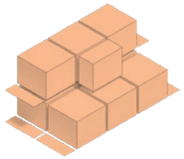
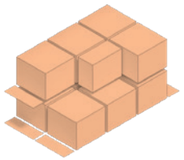
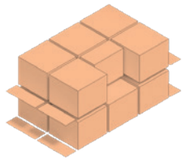
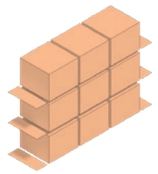
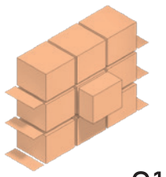
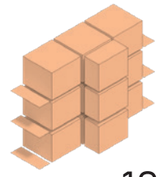
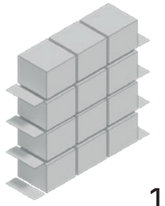
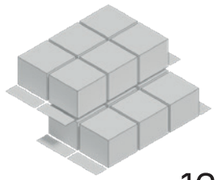
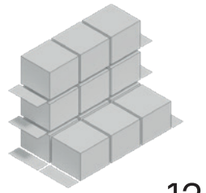
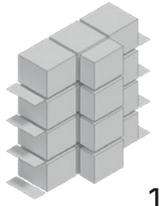
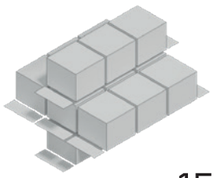
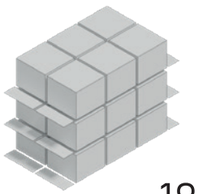
Quadruplex unit



12
blocks

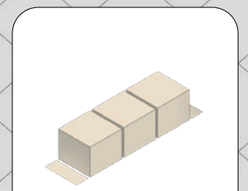
UNIT TYPOLOGIES

Proposal: Model Variation

	Type 0	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
Single unit	 3	 3½	 4	 4½	 5½			
Duplex unit	 6	 6	 7	 8	 8	 8½		
Triplex unit	 9	 9½	 10½	 11½	 9	 9½	 10½	
Quadruplex unit	 12	 12	 12	 12	 13	 14	 15	 18

UNIT TYPOLOGIES

Single unit type 0



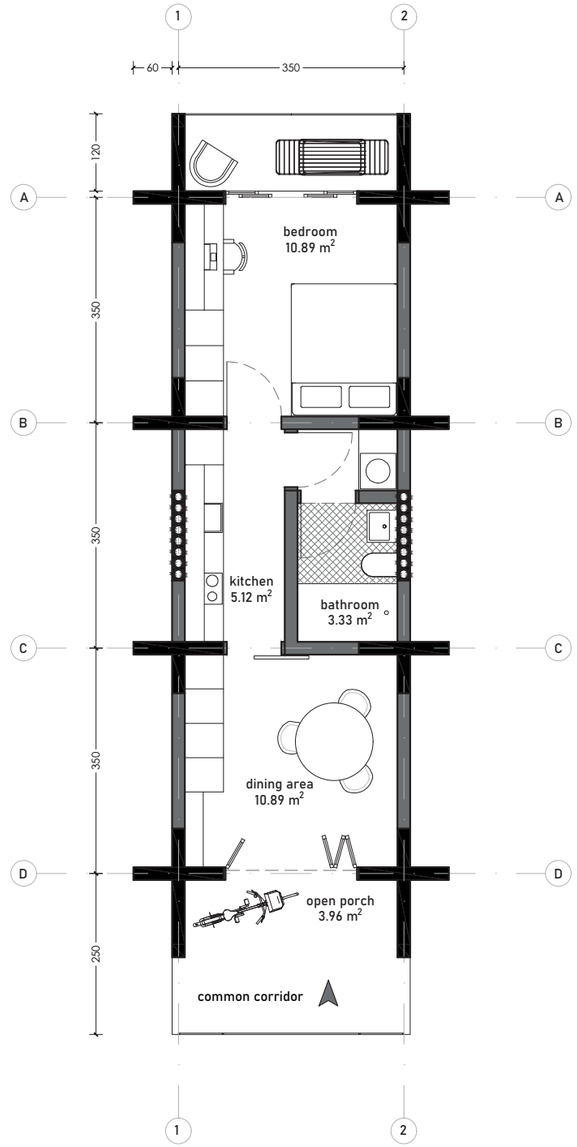
1-2

32.70 m²

student, worker, young couple

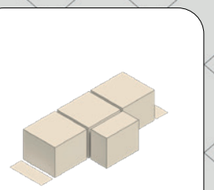
FLOOR PLAN

Scale 1:100



CHAPTER 4: Needs Have Choices

UNIT TYPOLOGIES
Single unit type 1

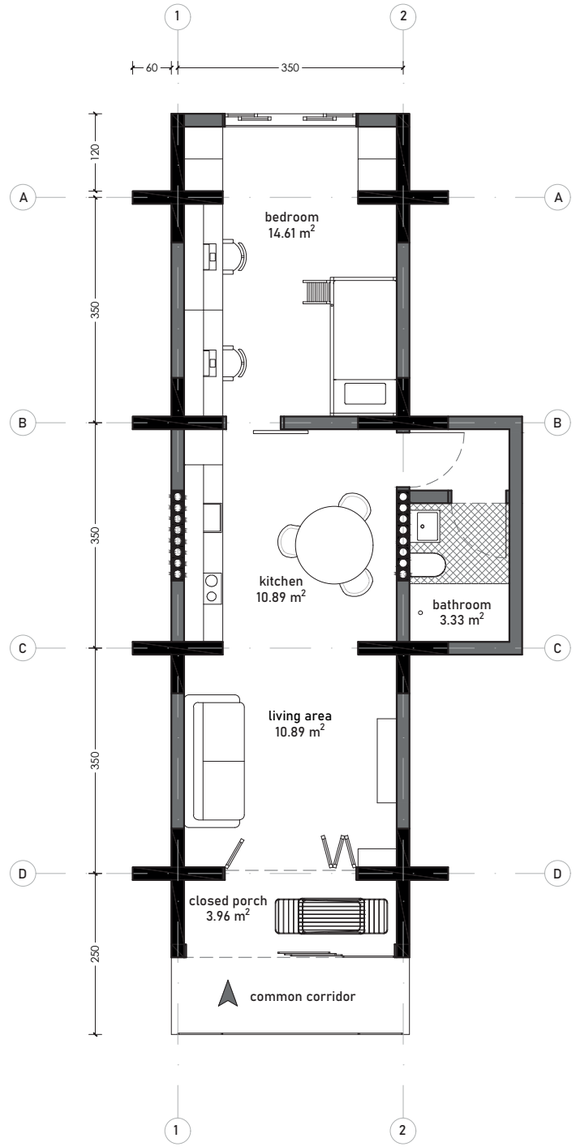


1–2

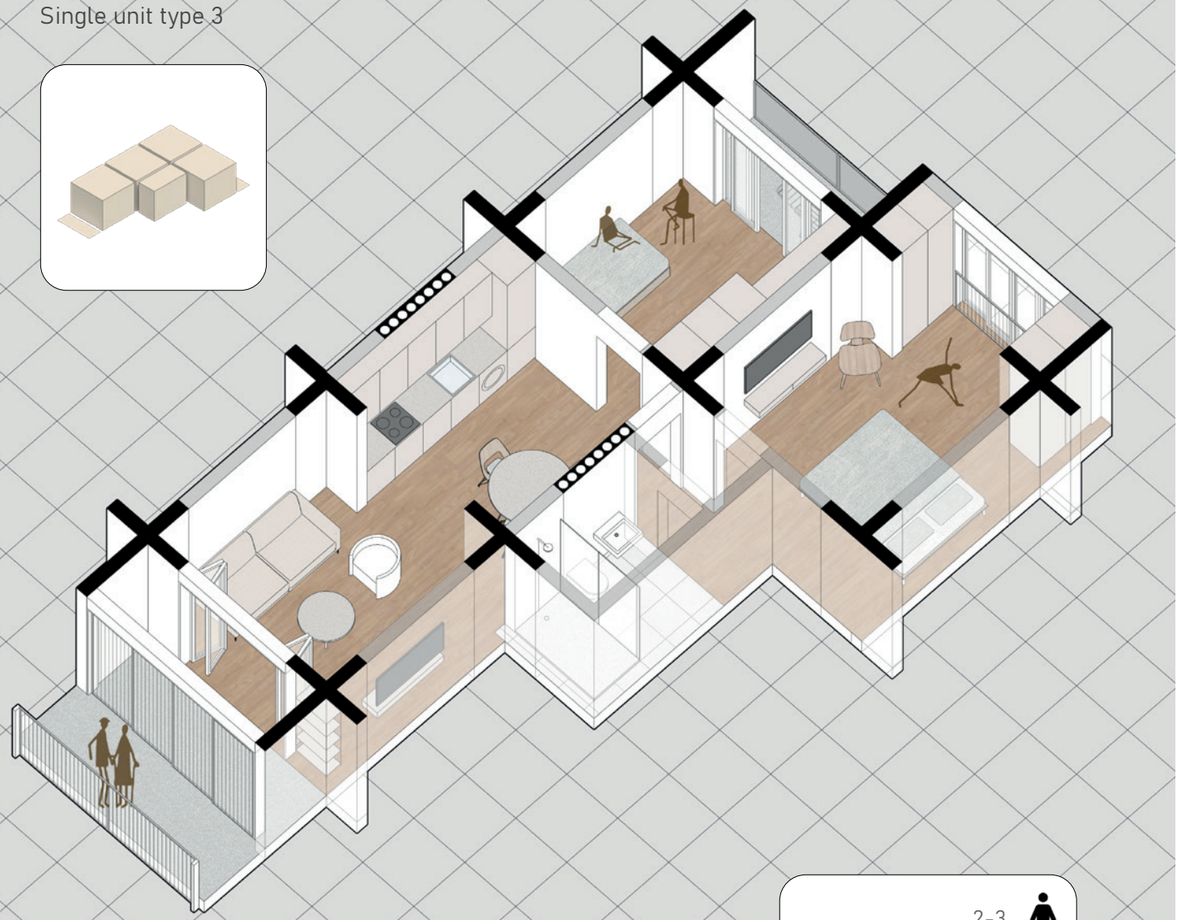
37.90 m²

student, worker, young couple

FLOOR PLAN
Scale 1:100



UNIT TYPOLOGIES
Single unit type 3

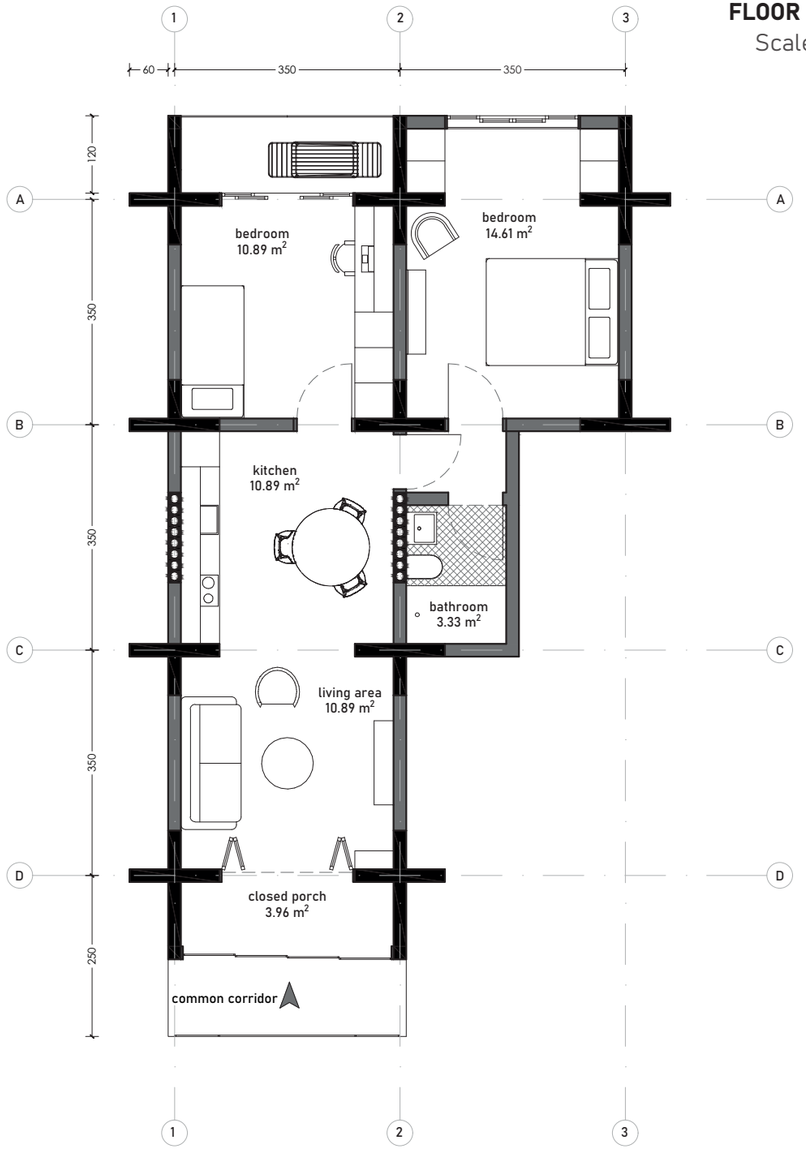


2-3

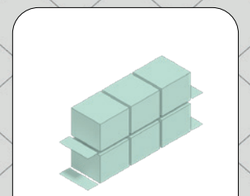
48.80 m²

young/old couple
with/without children,
students, workers

FLOOR PLAN
Scale 1:100



UNIT TYPOLOGIES
Duplex unit type 0

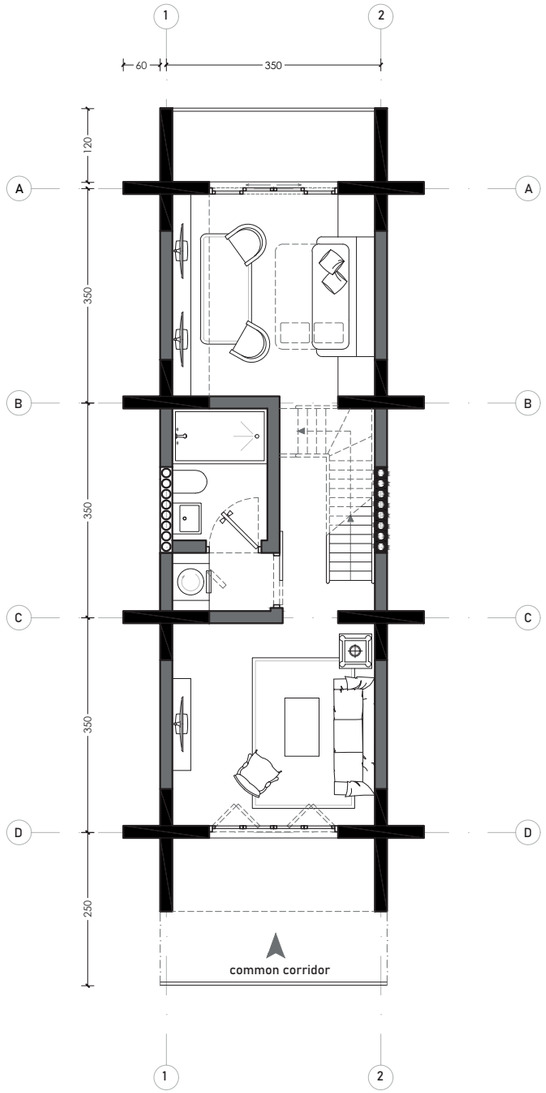


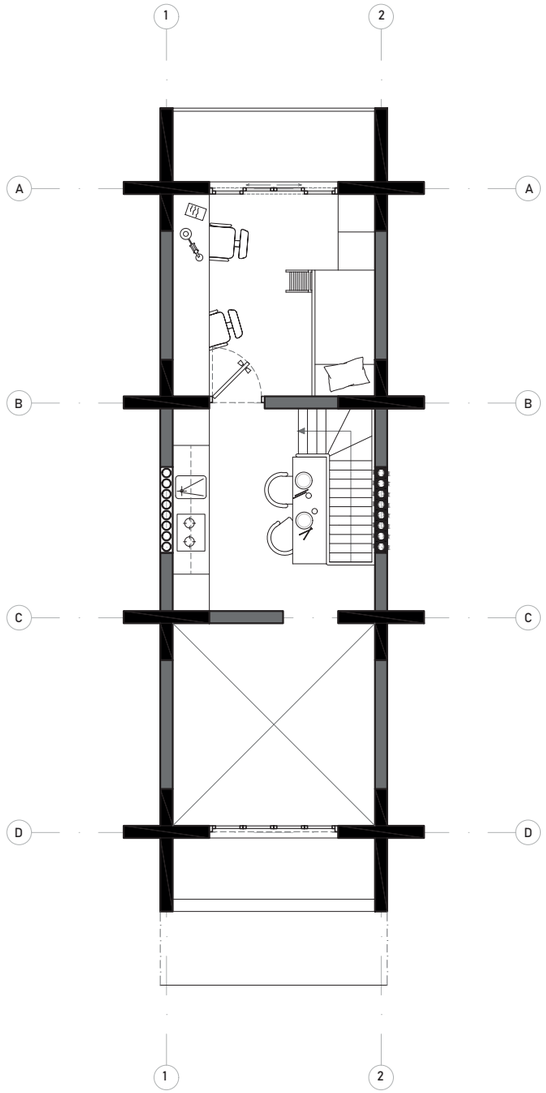
3-4

51.40 m²

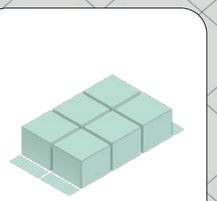
young/old couple
with/without children,
students, workers

FLOOR PLAN
Scale 1:100





UNIT TYPOLOGIES
Duplex unit type 1

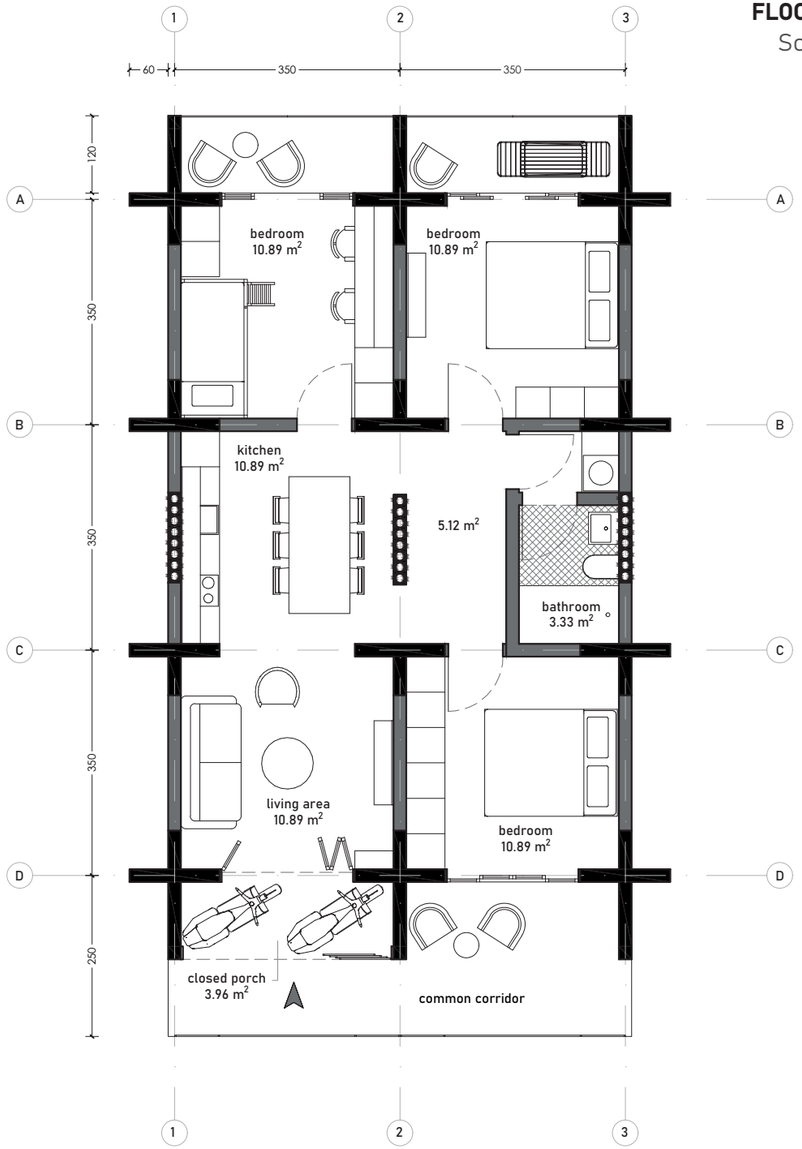


4–5

65.50 m²

young/old couple
with/without children,
students, workers

FLOOR PLAN
Scale 1:100



ELEVATIONS

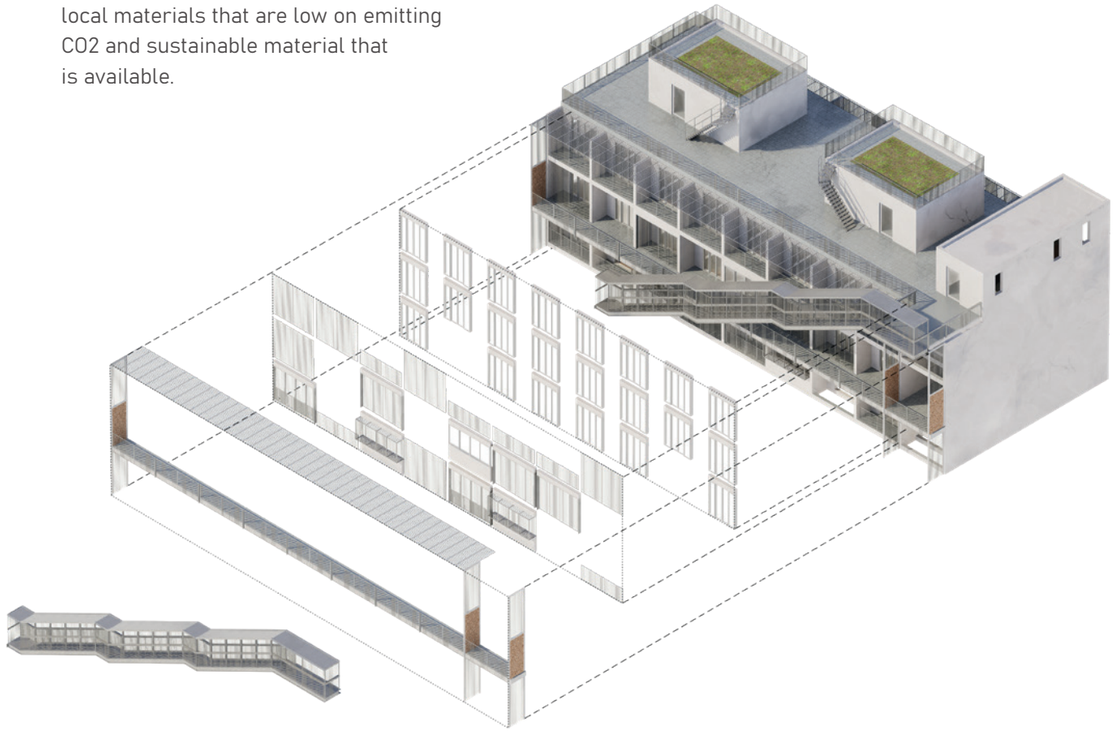
By reducing uncomfortable elements like direct sunlight, high temperatures, and inadequate ventilation and enhancing natural light, good ventilation, and user comfort within the area, the design improves the user's quality of life. These elements have the potential to improve the tenant's overall experience and motivate them to lead a healthier and more fruitful life; as a result, the tenant will gradually and unconsciously start to live a better life.

SUSTAINABLE URBAN FACADE

Hanoi is a busy city with a high number of motorbikes that causes a lot of CO2 emissions. Besides being one of the greatest points of attraction in Southeast Asia, 24 million visited Hanoi in 2023, which is equal to the number of visitors Tokyo had.

The lifestyle in Hanoi causes a lot of pollution issues with its very busy traffic and the continuous gas emission from vehicles.

Therefore, designing an environmentally friendly project was the priority, using economical and local materials that are low on emitting CO2 and sustainable material that is available.

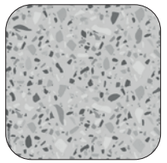


MATERIALS USED

Green concrete
Concrete with high performance and sustainable life cycle, or whose production process does not harm the environment, or both, must contain at least one component made of waste material.

E-low glass
Is a glass that has been coated, significantly increasing the energy efficiency of windows and doors.

Terrazzo
Is a recycle materials to the aggregated. Terrazzo can be on-site manufacturing and minimize the post-commercial waste and transportation costs.



Timber wood
Is a wood that has been processed into planks, a stage in the process of wood production. The primary use of lumber are in finishing (floors, wall panels, window frames).

Metal net
Utilizing it to prevent warmth within the structure and to create shade that doesn't obstruct the view outside

Planting
Reduces noise pollution, blocks out direct sunlight, offers natural ventilation and shading, and absorbs CO2.

FACADE VARIATIONS

Facades, as the face of buildings, serve as a canvas for expression, blending functionality with aesthetics to create a harmonious urban landscape.

Since each tenant in KTT comes from a different background and therefore has a different need for the facade's function for their own home, the adaptive solution for various facades is crucial in this case, not only for the urban landscape but also for the differences between tenants.

Every building has two primary facades. There are two types of facades: one with a public corridor and exterior stair case that is fully accessible, and another with just a balcony. The one with the balcony faces south, and the one with accessibility faces north.

CHAPTER 4: Needs Have Choices

NORTH ELEVATION
Scale 1:200

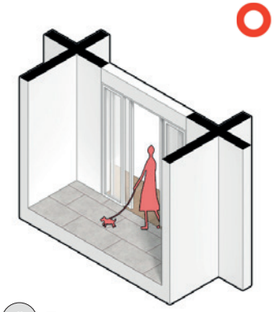
SOUTH ELEVATION
Scale 1:200

FACADE VARIATIONS

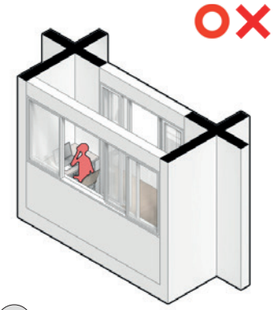
Every user has a unique set of requirements for their utilities, and each utility is unique. Consequently, each user's facade design must be modified to best serve their needs.
Variations in facade have been made to accommodate the majority of common tasks while taking into account the various daily activities of users.

O Apply to facade with corridor

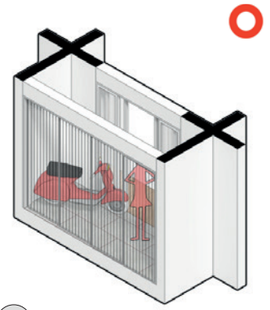
X Apply to facade without corridor



0 Empty

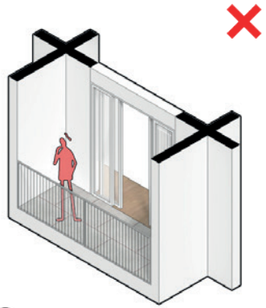


1 Window

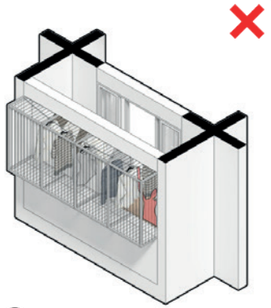


2 Gate

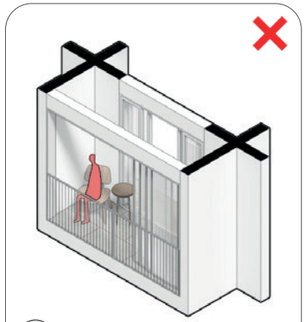
3 Cage



4 Balcony



5 Extended cage



6 Balcony window

CHAPTER 4: Needs Have Choices

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CHAPTER 4: Needs Have Choices

CHAPTER 5:

ALWAYS SEEK KNOWLEDGE

5

This chapter is **an addition** to the study that sums up the investigation and exploration of the **architectural references** as **background information** that has influenced the thesis proposal significantly. It has been shown that prominent elements of numerous architectural designs serve as **significant sources of inspiration for the projected KTT.** These aspects, which embody outstanding **craftsmanship** and significantly influence the methodology used in this research, include imaginative **architectural spatial configurations** and an in-depth **investigation of current housing situations**. **Images, illustrations, and sketches serve as visual aids, assisting in the communication of transforming components that guide the creative vision and facilitate the development of a thoroughly thought-out design concept.**

The **mindset of "Always seek attention"** has been adopted by this study **from its beginning to its conclusion**, where the latter is viewed merely as a momentary pause in the process of writing. This study maintains that **there is no definitive endpoint in architecture**; rather, it perceives the discipline as a **continuous investigation characterized by an abundance of ongoing sources and knowledge.**

ALWAYS SEEK KNOWLEDGE

Architectural Inspiration Gallery: A Timeless Wisdom

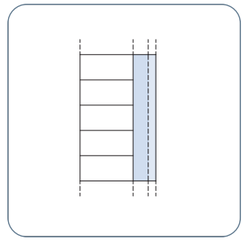
OVERVIEW
Final Result of the project proposal with Architectural Insights

North Facade of the redefined KTT

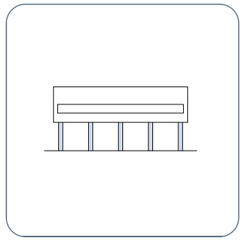
South Facade of the redefined KTT

MAIN INSPIRATIONAL DESIGNS

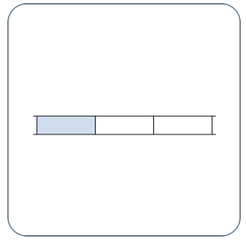
Exploring Architectural Works and Highlighting Inspirational Features



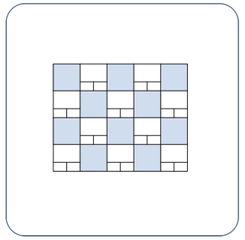
Lacaton & Vassal: double balcony



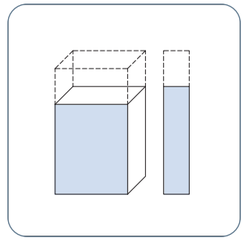
Villa Savoye Private Residence: structural pillars



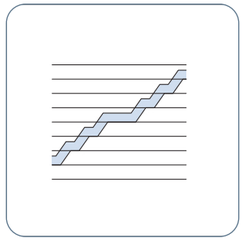
Nuovo Corviale Residential: horizontality and block division



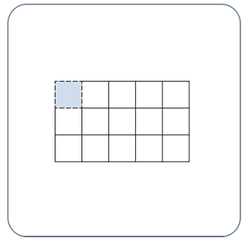
Social Housing: facade and balcony



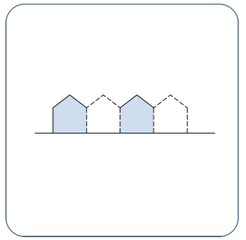
Tube House: narrow and long



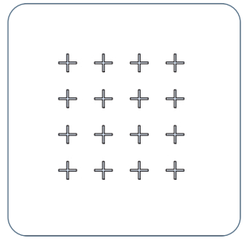
Gifu Kitagata Apartment Building: external staircase



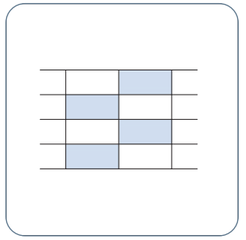
Unite D'Habitation: repetitiveness of the facade and duplex



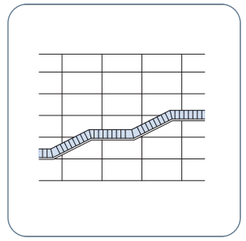
Elemental Housing: empty space to fulfill



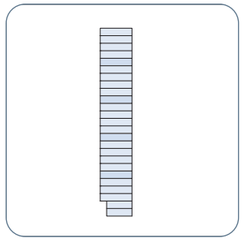
85 Social Housing Units in Cornellà de Llobregat : cross stucture



IKEA Store: non-fixed plant balcony



Pompidou: covered external staircase



People's Park Complex: dynamic relationship between spaces in all levels

STANDOUT ELEMENTS, PROS AND CONS

Background Knowledge

Standout Elements

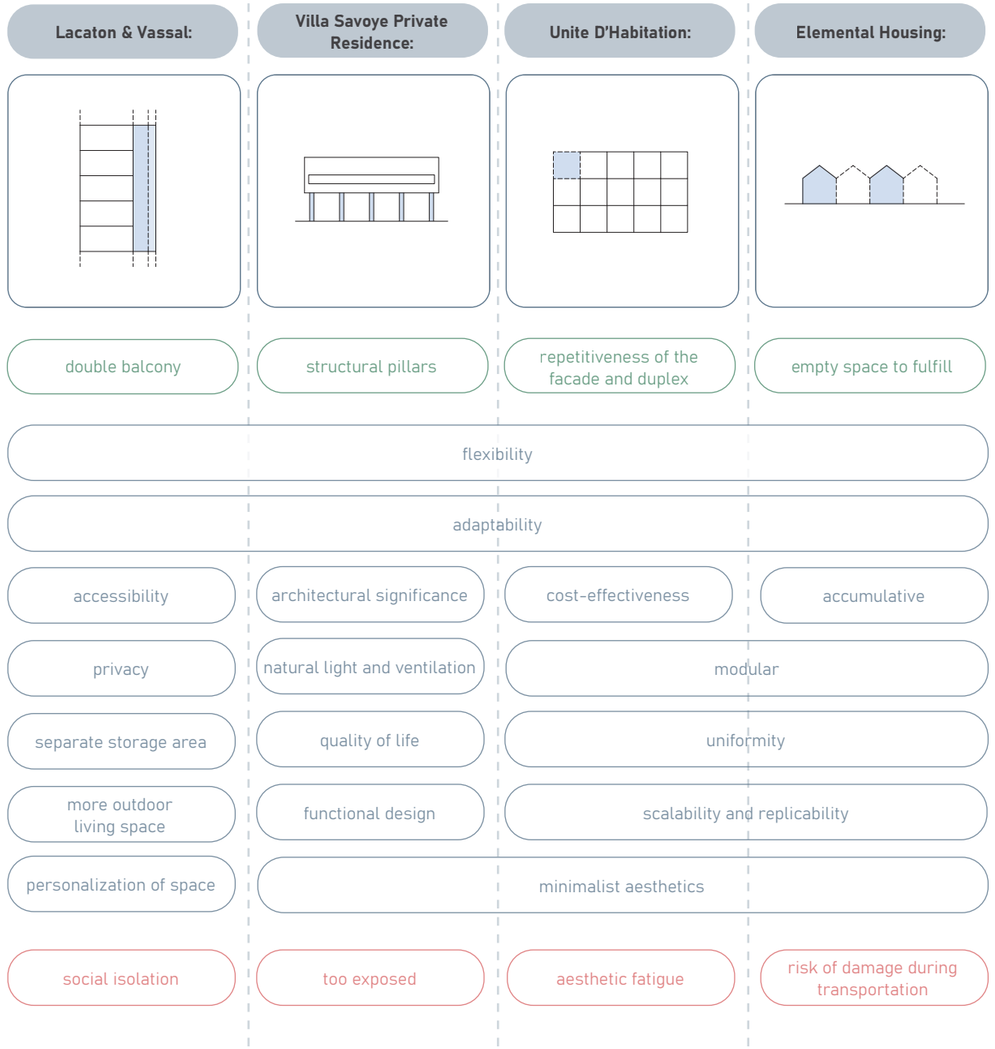
After carefully examining a number of architectural projects, this study identified a few standout elements that will act as **major sources of inspiration** for the proposed KTT. These elements, which include creative spatial configurations and creative structural solutions, perfectly capture the spirit of great design. Every carefully selected quality stands for a transforming component that directs the creative process and shapes the new KTT design concept. **This investigation incorporate these influenced elements into this project proposal with the utmost respect for the past and an unrelenting eye toward the future, hoping to honor their legacy while also pushing the envelope of architectural expression.** Acknowledging the noteworthy impact of these characteristics on the creative investigation and developmental procedure of this study, their priceless insights are applied to mold the architectural trajectory of this investigation via meticulous investigation and reflective analysis.

Pros

The **positive aspects** noted during the investigation are referred to **as the pros** in this study. These benefits include priceless perceptions, teachings, and ideas gleaned from the examination of completed architectural projects. This research obtains a greater grasp of design concepts, materials, spatial arrangements, and structural solutions via the rigorous examination of various projects. This thorough analysis highlights **effective tactics** and creative solutions. Making use of previous precedents, this study incorporates **tried-and-true ideas** and modifies them to fit the particular needs of its proposal. These pros elements also stimulates creativity and critical thinking, which leads to the discovery of novel concepts. The research process ultimately enables this study **to develop a well-informed suggestion based on theoretical understandings and practical concerns.**

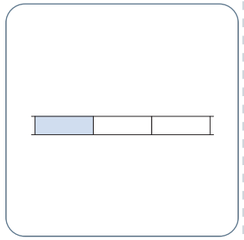
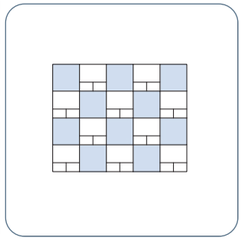
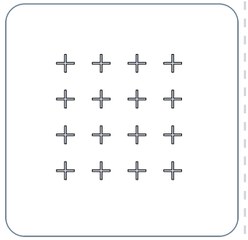
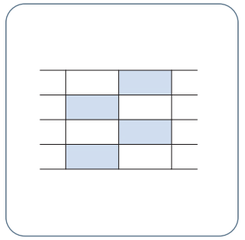
Cons

The **risks and difficulties** seen during the investigation are represented **by the cons** in this study. These include **possible drawbacks and restrictions found** by examining existing architectural projects. **This study,** which looks at a variety of projects, **recognizes the complexity of design processes** and aims to reduce risks by using creative thinking and meticulous planning.

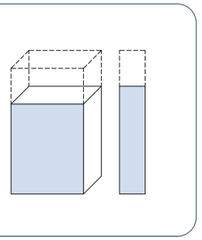
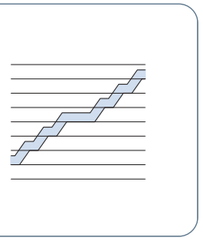
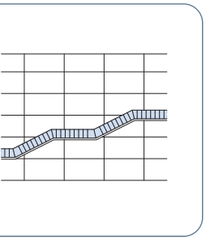


authors personal observations and comments

STANDOUT ELEMENTS, PROS AND CONS
Background Knowledge

Nuovo Corviale Residential	Social Housing:	85 Social Housing Units	Store
			
horizontality and block division	facade	cross structure	facade non fixed plant balcony
flexibility			
adaptability			
public-private space	public-private space	cost-effectiveness	accumulative
urban regeneration	urban regeneration	modular	
community revitalization	community revitalization	uniformity	
urban connectivity	community revitalization	spatial efficiency	simplicity
architectural significance	personalization of space	architectural aesthetic	
scale, complexity, governance and accountability	governance and accountability	cost	preference

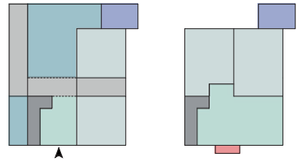
authors personal observations and comments

Tube House	Gifu Kitagata Apartment Building	Pompidou	People's Park Complex
			
narrow and long	external stairs	cpvered external staircase	dynamic relationship between spaces in all levels
flexibility			
adaptability			
accessibility			
architectural significance			
quality of life	functional design		quality of life
fits extended families	iconic design element		accumulative
personalization of space	emergency egress		scale and complexity
social implications	weather exposure	perception and reception	governance and accountability

authors personal observations and comments

HOUSING LAYOUTS

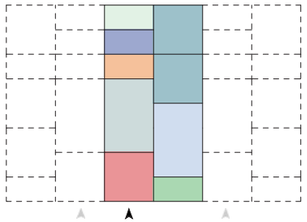
Some Housing Unit Arrangements in some countries



author's family house

Philippines: one family house

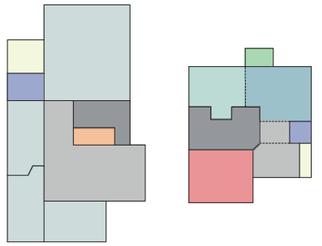
Originally built for a small family with two kids, this four-bedroom single-family home could accommodate extended family members in response to unforeseen demands.



author's uncle's family house

Philippines: one family apartment

An apartment suitable for a single occupant or a young/elderly couple.

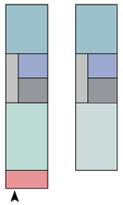


author's uncle's family house

Canada: one family house

A four-member family lives in a home with separate bedrooms and a large common area to be utilized comfortably.

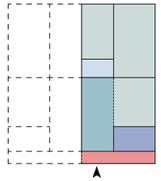
- living area
- bedroom
- bathroom
- kitchen and dining
- stairs
- common area
- storage
- closet
- garden
- balcony/porch/garage



author's family house

Vietnam: tube house

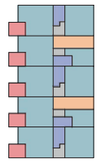
An extended family can stay in this four-story classic tube house. As the family occupies every level, its versatility is maximized despite its small footprint.



authors domitory in Turin

Italy: dormitory (with balcony = corridor)

An apartment with a balcony and a hallway that was originally intended to be a family home has been converted into a three-bedroom dormitory.

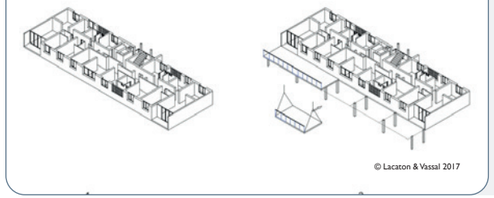


Spain: social housing

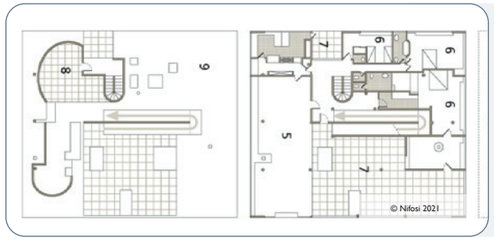
A modular feature and a compact, flexible space distribution characterize this type of shared dwelling.

This mostly illustrates how, even in cases when there are spatial constraints in what was originally meant to be a single-family home, the original plan is frequently overlooked and **practicality always takes priority over aesthetics in the layout of homes** over the long term.

OTHER INFORMATIONS
Floorplans, Sections, Elevations

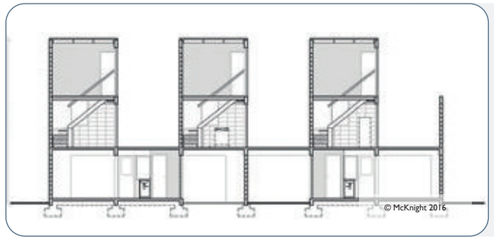


Where: Bordeaux, France
When: 2017
Who: Lacaton & Vassal
What: Transformation of 530 dwellings

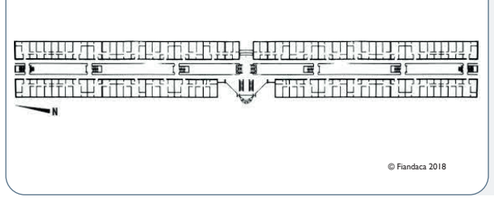


Where: Poissy
When: 1931
Who: Le Corbusier & Pierre Jeanneret
What: Villa Savoye Private Residence

Where: Marsiglia, France
When: 1947 – 1952
Who: Le Corbusier
What: Unite D'Habitation - commercial and residential

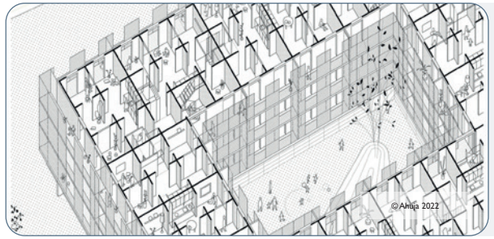


Where: Mexico, Chile, Constitucion
When: 2016 Pritzker Prize
Who: Alejandro Aravena
What: Elemental Housing



Where: Rome
When: 1975 - 1984
Who: Mario Fiorentino
What: Nuovo Corviale

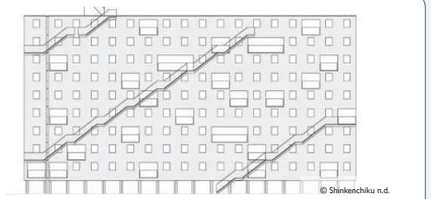
Where: Barcelona, Spain
When: 2020
Who: Arquitectura Produccions, Pau Vidal, Vivas Arquitectos
What: Social Housing



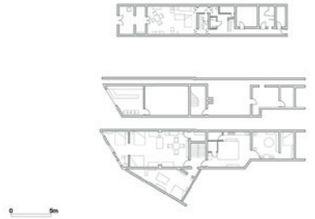
Where: Barcelona
When: 2022 (finalist for the Mies van der
Who: Rohe Award)
What: Peris + Toral Arquitectes
85 Social Housing Units in Cornellà de Llobregat

Where: AUT
When: 2021
Who: client IKEA
What: store

OTHER INFORMATIONS
Floorplans, Sections, Elevations

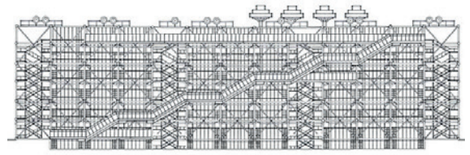


Where: Gifu, Japan
When: 1994-1998
Who: SANAA
What: Gifu Kitagata Apartment Building



Where: Vietnam
When: since 11th century
Who: -
What: Tube Houses

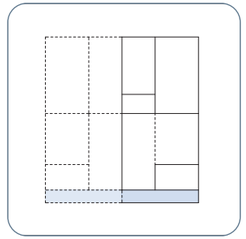
Where: Thanh Cong, Hanoi, Vietnam
When: Published on 2019/2020
Who: Vihajico (client)
What: Redevelopment of KTT Housing in Thanh Cong



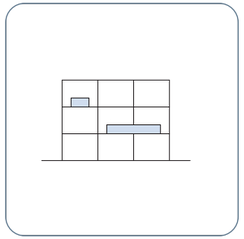
Where: Paris, France
When: 1977
Who: Renzo Piano Building Workshop, Richard Rogers
What: multifunctional cultural center

OTHER INFORMATIONS
Housing Facade Balconies in different Italy, Philippines, Vietnam and Dubai

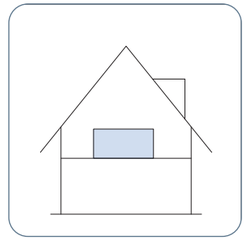
authors personal experiences and observations in Various Balconies



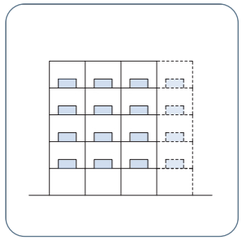
Italy: balcony = corridor



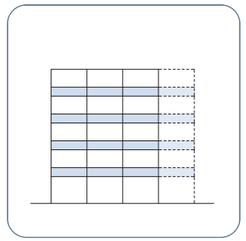
Italy: private balconies



Philippines: single and narrow balcony



Philippines: repetetive and same balconies of a condominium

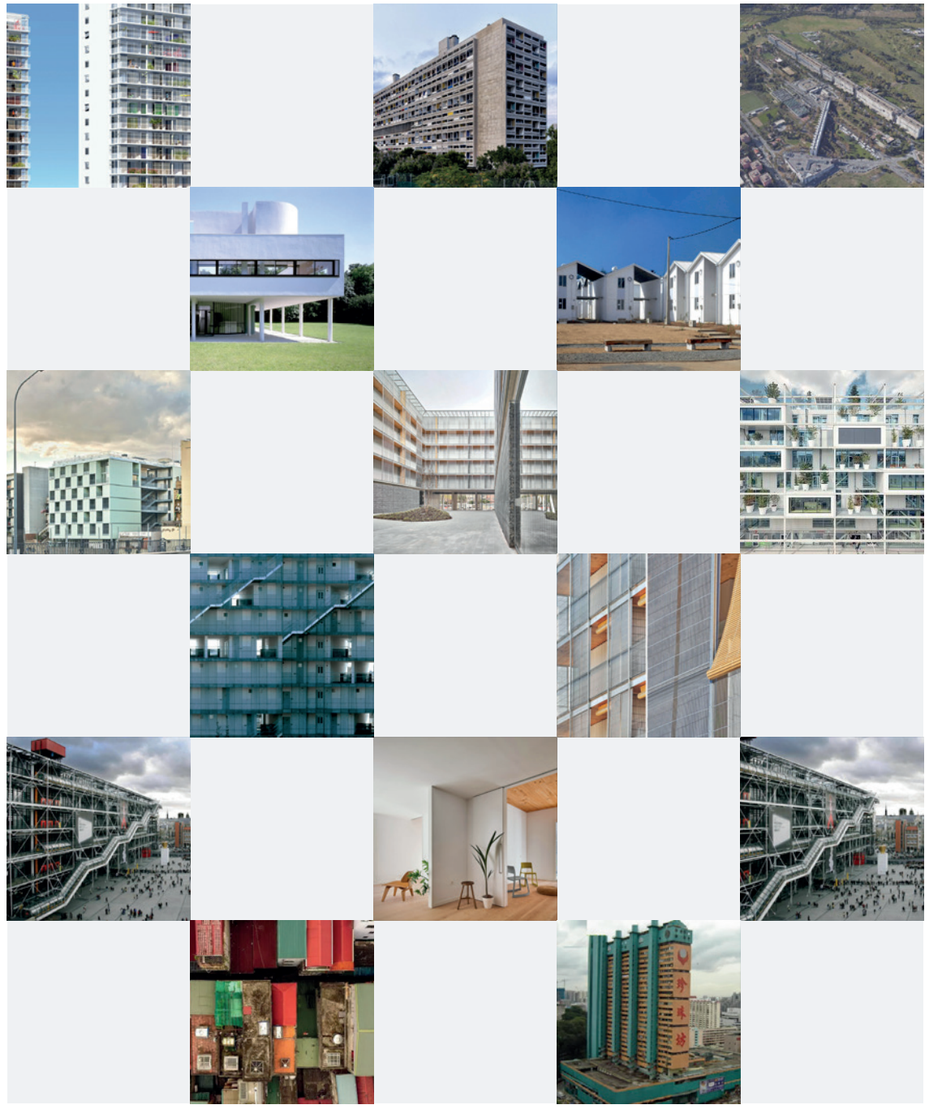


Vietnam: fixed closure of balconies

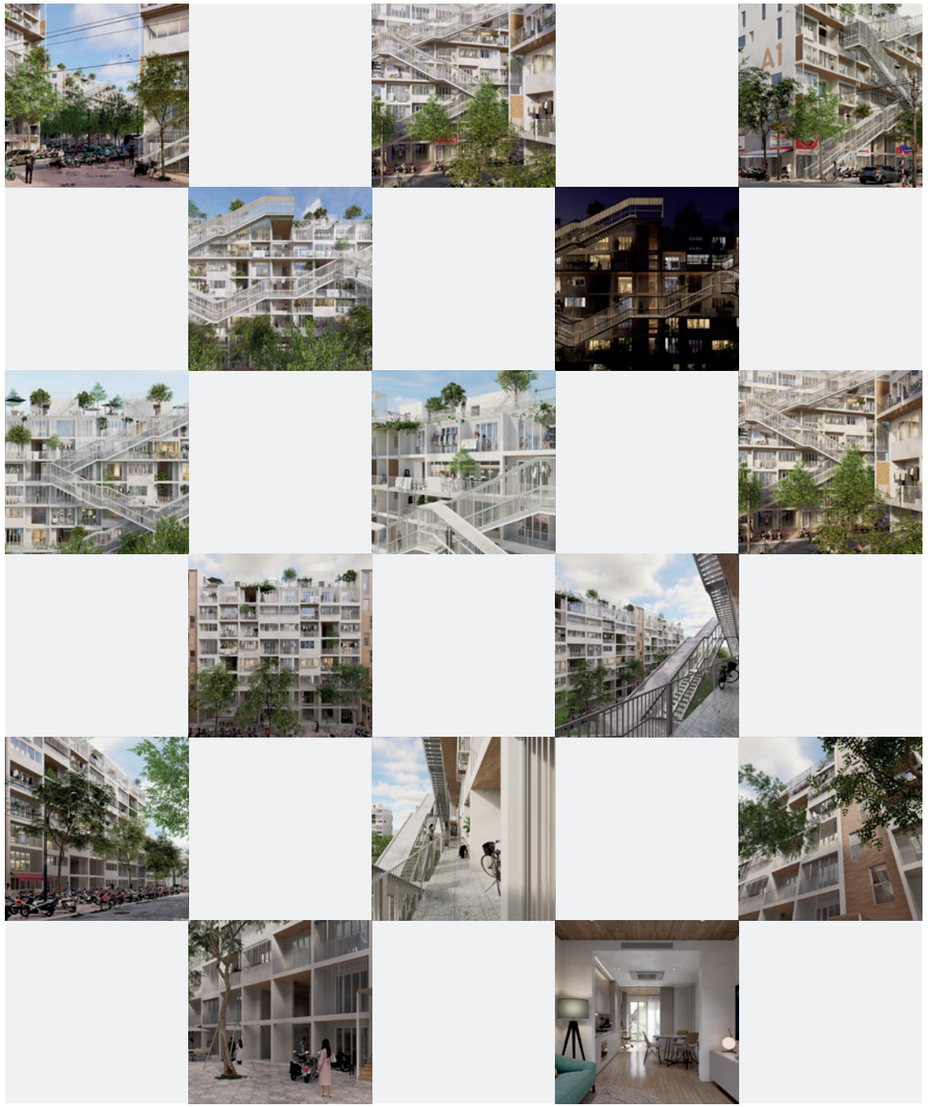
Dubai: multiple and aligned balconies

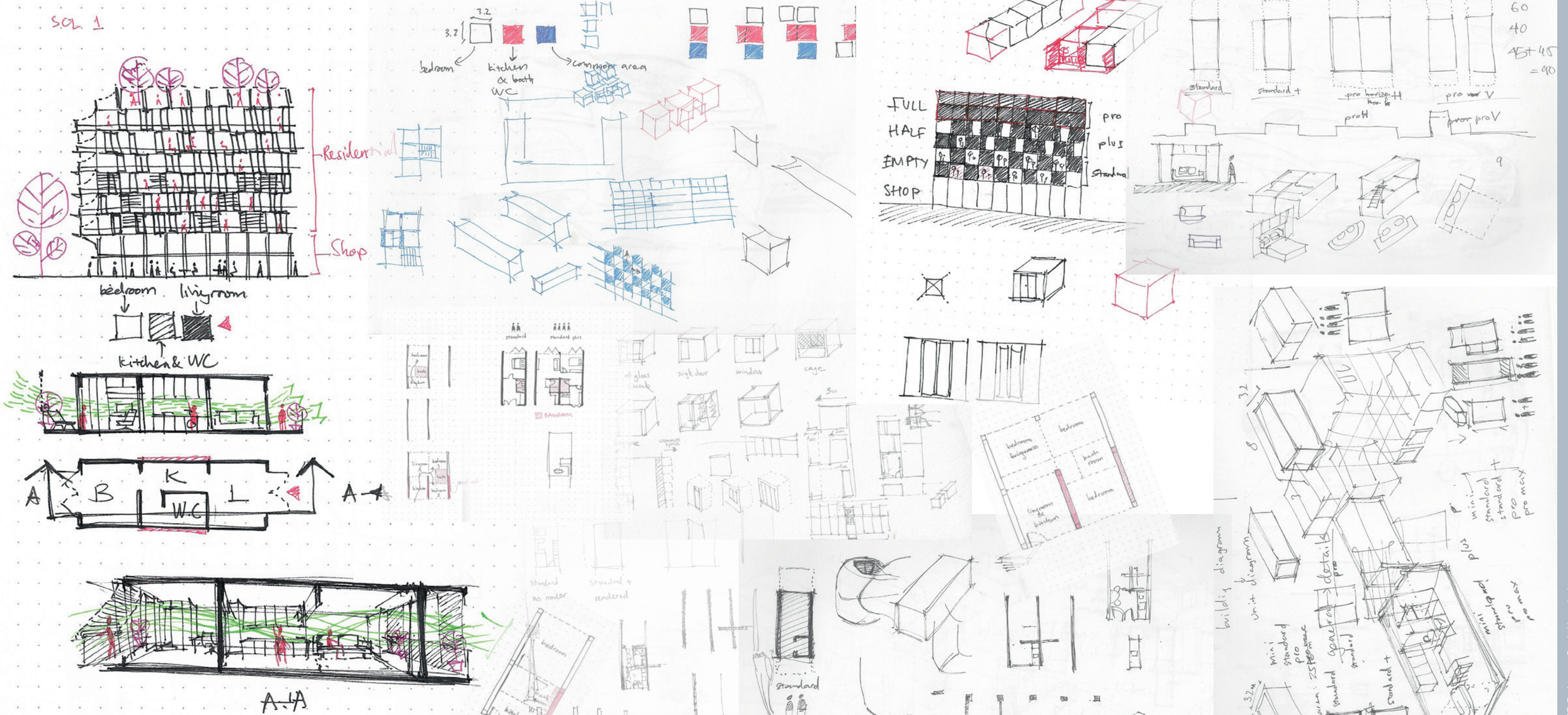
OTHER INFORMATIONS

Background Knowledge



Proposed KTT Visualization





CHAPTER 5: Aways Seek Knowledge

CONCLUSION

The preparation of this was for us to have an opportunity to reflect on an issue we are very familiar with, the one of housing needs in an expanding city such as Hanoi, utilizing the tools of architectural design we have learnt during these years in Turin. To address the substitution of a specific social housing estate (KTT) in Thanh Cong district , we explored the variety of modes in which standardized state-owned (long time ago state owned but now private owners) residential spaces in mid-rise linear buildings were appropriated by inhabitants to meet their evolving needs, despite low quality materials and chaotic (sometimes dangerous) façade extensions and other additions like the so called 'tiger cages', which became more common with the land use policy that granted to inhabitants the rights and permissions to modify the house.

KTT is undergoing major transformations of its built stock. Addressing how the positive aspects of 'personalization' of social housing models of the past, and the bottom-up reorganizations they went through, can be incorporated by means of architectural design tools is thus functional to imagine the city of the future and places where most people will be living. We have singled out some major features that characterize housing models which maintain standardized construction but incorporate sufficient room for flexible and safe personalization by the inhabitants:

- The structure is based on modules.
- The building 'infrastructures', such as pipe work and rooms served with tap water (kitchen and bathroom), define a central core that is not available for extreme modifications.
- Vertical and horizontal distribution characterizes and unifies the building layout, with common corridors spaced every two-story level, providing more private balconies than public corridors.
- Ground floor shop will always have the limit of maximum 2 floors.
- Residential units have modular sizes, which is built around the central core, from a minimum of two additional rooms (21.78 m2) to a maximum horizontal and vertical extension of 12 rooms (130.68 m2), to accommodate nuclear families or extended families and other co-inhabitants according to needs that may occur.
- Most KTT buildings have 3 blocks with an elevator provided next to the common stair that acts as an emergency exit mainly facing the south (back facade) while an external stair acts as a common stair (front facade).

This study opens with the description of a specific conditions and argues to modify housing design choices and persuade those in the position to select and implement alternative housing models that substituting mid-rise linear buildings with high-rise ones would not necessarily address the conditions that made current KTT estates so alive but also unstable.

One focal point that this study emphasizes is that there are various solutions to such community problems apart from skyscrapers or high-rise buildings. This provides an alternative to current architectural design which will provide a more organized living space and community space which can be easily adapted to their everyday lives. It will open new ideas to be considered by some stakeholders, public interest, general population, real estate & the government.

0

INTRODUCTION

1

PAST IS PAST:

No, not everything.

2

UNLAWFUL BUT FUNCTIONAL:

As necessity dictates.

3

UNCONTROLLABLE BUT LIVABLE:

Owing to life's demands.

4

NEEDS HAVE CHOICES:

Due to heterogeneous users and shifting lifestyles.

5

ALWAYS SEEK KNOWLEDGE:

Given that wisdom is timeless and priceless.

CHAPTER 5: Always Seek Knowledge

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Photographs are individually labeled.

We consider that **architecture is an approach of thinking about life**. **For in conlusions lies the beginning of new adventures.** As we conclude our academic journey with this thesis, **may this investigation be a guiding tool for all.**