Housing Urbanism
Living with Neighbours

by
Meng Wang

A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Master of Architecture

Waterloo, Ontario, Canada, 2016
© Meng Wang 2016

Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

My thesis explores how new social relationships can be reinforced by architectural spaces in residential projects in today's complex, cross-cultural, political, and economic urban conditions. In Toronto, some newer types of construction often lack the same potential for people to connect and feel accepted within a community. Especially in newly constructed condo projects and suburban houses, Toronto is losing much of its social heritage. Corresponding with the City of Toronto's appeal for better community housing, this proposal presents a new type of lifestyle, hybrid and vital living in a social-dynamic community. My hypothesis is that the degree of social cohesiveness in a residential project is impacted by its spatial forms. In this regard, the research is conducted on both spatial and social aspects so that a conclusion can be drawn from a cross-projects analysis. Hutong life in Beijing, presented as an ideal urban living precedent has a similar social bond. Based on the spatial form in Hutong, space regulation becomes the original strategy in the proposal.

John Holland proposed a methodology of constrained generating procedures. Two models comprise this modeling system: the static model stands for physical forms, such as maps and architecture; the dynamic model discovers the "rules of the game" that allow systems to change their forms. By importing the concept cohort as the basic living cluster, the spatial hierarchy has been set up as the static model, which becomes the bottom-up architectural form for generating a community. The dynamic model that represents the emergence of bottom-up social interaction is approached by setting up the rules, which include social programs, such as social activities for different scenarios, autonomous clans, or commercial behaviours. Spontaneously, the new social network within this community forms. This generating process abstracts residences from cities as an independent self-organizing system that implies in a residential community.

Acknowledgements

Advisor: Adrian Blackwell

Committee: John McMinn, Marie-Paule Macdonald

External Reader: Rob Cadeau

I would like to thank my surpervisor, Adrian Blackwell, for supporting me thoughout the course of my thesis and contagious insistence for excellence.

Thank you to my committee members, John McMinn and Marie-Paule Macdonald, for your invaluable insight and support. John, I could not have completed my thesis without your instruction and support in the TRD2 studio.

Thanks Rob Cadeau, for taking the time from your busy schedule to my defence.

Finally, Siyu Quan, thank you for your patience and faith in me every time when I encountered difficulties during my research.

Contents

ii. Author's Declaration
iii. Abstract
iv. Acknowledgments
v. Contents
vi. List of Figures

PART I	1	1.1 Introduction
FOREWORD	8	1.2 Background
	17	1.3 Manifesto
	19	1.4 Methodology
PART II	23	2.1 Hypothesis
RESEARCH	25	2.2 Theoretical Framework
	29	2.3 Living in The History
	37	2.4 Unresolved Living in Toronto
	45	2.5 Precedents
	65	2.6 Toronto Housing Market
	69	2.7 Government Intervention
PART III	79	3.1 Liberty Village
SITE AND COMMUNITY	87	3.2 Community Design
PART IV	95	4.1 Space Strategy
DESIGN PROPOSAL	121	4.2 Live with Neighbours
	143	4.3 Floor Design
CONCLUSION	159	
BIBLIOGRAPHY	161	

List of Figure

Part 1 FOREWORD

3	Figure 1.1	Jianchang Hutong, Beijing Hutong Life Sylvie Guérard. http://www.sylvieguerard.com/beijing-hutong-life.
6	Figure 1.2	“Dayuan”(Courtyard) Life Tengxunkuaixun. http://house.qq.com/a/20160715/030304.htm.
6	Figure 1.3	Real Life in Beijing Liu, Shuzhen. http://lsz.7697.blog.163.com/blog/static/480261612014620125997/.
9	Figure 1.4	The History of Courtyard Wang, Yuxia. http://www.ecns.cn/2013/12-18/93180_2.shtml.
11	Figure 1.5	Bettmann, Corbis. “The Entrance Hall of Hull House.” . http://www.missedinhistory.com/blogs/missed-in-history-jane-addams-part-1.htm.
18	Figure 1.6	Exchange Feature in Social Relation By author
18	Figure 1.7	Autonomy Feature in Social Relation By author
20	Figure 1.8	Thesis Process By author

Part 2 RESEARCH

25	Figure 2.1	Theoretical Framework By author
26	Figure 2.2	Social Connection Between People By author
26	Figure 2.3	Robin’s Theory about Social Group Division By author
27	Figure 2.4	A Designed Community Perspective By author

29	Figure 2.5	Hutong Urban Pattern in Beijing Urbanus. “Dashila Design Community.” . http://www.cfcca.org.uk/archive/2014/design-show.
30	Figure 2.6	Variations on House Typologies Zheng, Xicheng. Troditional Courtyard House in Beijing, Beijing: Xueyuan Publisher, 2009.
31	Figure 2.7	Typical Small Courtyard Siheyuan https://www.mcgill.ca/mchg/student/neighborhood/chapter3.
31	Figure 2.8	Typical Medium Courtyard Siheyuan http://greenbuildingelements.com/2014/09/22/john-perlin-series-five-major-breakthroughs-solar-energy-part-ii/.
32	Figure 2.9	Existing Siheyuan in Beijing Hutong Tonkie. “Existing Siheyuan in Beijing Hutong.” . https://en.wikipedia.org/wiki/Hutong#/media/File:Peking_Hutong_courtyard.JPG.
31	Figure 2.10	The History of Hutong By author
33	Figure 2.11	Space Hierarchy in Hutong By author
34	Figure 2.12	Space Transformation of Siheyuan By author
36	Figure 2.13	Space Feature in Hutong By author
35	Figure 2.14	Yu Er Hutong Street View By author Image Source: google street view
37	Figure 2.15	St. James Town Urban Pattern By author
37	Figure 2.16	St. James Town Sky View By author Image Source: google street view
38	Figure 2.17	St. James Town Urban Structure By author
39	Figure 2.18	St. James Town Space Hierarchy Distribution By author

40	Figure 2.19	St. James Town Possible Active Space By author
41	Figure 2.20	East York Urban Pattern By author
41	Figure 2.21	East York Bird View By author
42	Figure 2.22	East York Urban Structure By author
43	Figure 2.23	East York Hierarchy Distribution By author
44	Figure 2.24	East York Possible Active Space By author
45	Figure 2.25	Co-operative living at Spreefeld Ute Zscharnt, 2014, http://www.uncubemagazine.com/blog/14986603
47	Figure 2.26	Ground Floor of Yokohama Apartment Erika Kim. http://www.designboom.com/architecture/on-design-partners-yokohama-apartment/.
48	Figure 2.27	Yokohama Apartment Space Hierarchy By author
49	Figure 2.28	Yokohama Apartment Space Organization By author
50	Figure 2.29	Yokohama Apartment Space Ocuppied by Daily Routine By author
51	Figure 2.30	Open Window of Mariyama House Dean Kaufman, http://ideasgn.com/architecture/moriyama-house-tokyo-by-ryue-nishizawa/
52	Figure 2.31	Mariyama House Space Hierarchy By author
53	Figure 2.32	Mariyama House Space Organization By author
54	Figure 2.33	Mariyama House Space Ocuppied by Daily Routine By author
55	Figure 2.34	Street View of Sakura Apartment

Napya Fujii, https://www.flickr.com/photos/naoyafujii/6610417457

56 Figure 2.35 Sakura Apartment Space Hierarchy
By author

57 Figure 2.36 Sakura Apartment Space Organization
By author

58 Figure 2.37 Sakura Apartment Space Ocuppied by Daily Routine
By author

59 Figure 2.38 Facade of Cohousing Community
CERUZZI & MURPHY PROJECTS, http://camparch.com/index.php?/projects/cohousing/

60 Figure 2.39 Cohousing Community Space Hierarchy
By author

61 Figure 2.40 Cohousing Community Space Organization
By author

62 Figure 2.41 Cohousing Community Space Ocuppied by Daily Routine
By author

63 Figure 2.42 Housing Typology comparison
By author

65 Figure 2.43 Toronto Urban Development
By author

66 Figure 2.44 Housing Type Distributuin
By author

67 Figure 2.45 Toronto Living Condition 1
By author

68 Figure 2.46 Toronto Living Condition 2
By author

69 Figure 2.47 Mayor's Task Force
By author

71 Figure 2.48 Toronto Housing Division
By author
Image Source: google map, google street view

73 Figure 2.49 Retirement Home Building Process

		Image Source: http://www.christiegardens.org/
73	Figure 2.50	Affordable Ownership Housing Building Process Image Source:google street view
74	Figure 2.51	Rental Housing Building Process Image Source: http://www.libertyvillagecondo.com/dna-condos-1-shaw-st-and-1005-king-st-w
74	Figure 2.52	Market Housing Building Process Image Source: http://www.libertyvillagecondo.com/38-joe-shuster-way
75	Figure 2.53	Proposed Institutional Prganization Building Process By author
76	Figure 2.54	Proposed Self-organization Building Process By author
		Part 3 SITE AND COMMUNITY
77	Figure 3.1	A View of Liberty Village google map, https://ssl.panoramio.com/user/3996735
79	Figure 3.2	Liberty Village Land Use By author
81	Figure 3.3	Community Housing around Liberty Village By author
83	Figure 3.4	New constructed high-rise condos around the site By author Image Source: http://www.libertyvillagecondo.com
85	Figure 3.5	New constructed low-rise detached houses and mid-rise condos around the site By author Image Source: http://www.libertyvillagecondo.com
87	Figure 3.6	University Grad Distribution By author
87	Figure 3.7	Chinese Immigration Distribution By author
88	Figure 3.8	Self-employment Distribution By author

88 Figure 3.9 Retirement Population Distribution
By author

89 Figure 3.10 Scenarios
Image Source: http://skalgubbar.se/

90 Figure 3.11 Daily Activities for Each Scenarios
By author

91 Figure 3.12 Program Structure Design
By author

92 Figure 3.13 Program Hierarchy Design
By author

Part 4 DESIGN PROPOSAL

97 Figure 4.1 Design Process
By author

98 Figure 4.2 Sun Light Condition on The Site
By author

99 Figure 4.3 Proposals on A better Interior Environment
By author

100 Figure 4.4 Proposals Comparison
By author

101 Figure 4.5 Prototypy Shadow Test
By author

102 Figure 4.6 Phase One Shadow Test
By author

103 Figure 4.7 Phase Two Shadow Test
By author

104 Figure 4.8 Phase Three Shadow Test
By author

105 Figure 4.9 45^0 CUT Climate Based Illuminate Autonomy
By author

106 Figure 4.10 60^0 CUT Climate Based Illuminate Autonomy
By author

107	Figure 4.11	45^0 CUT Daylight Factor Nodes Analysis By author
108	Figure 4.12	60^0 CUT Daylight Factor Nodes Analysis By author
109	Figure 4.13	Design of Group Communal Space By author
110	Figure 4.14	Foldable Window Facing toward Communal Spa By author
111	Figure 4.15	First Floor Space Hierarchy of A Neighbor Group By author
112	Figure 4.16	First Floor Plan of A Neighbor Group By author
113	Figure 4.17	Second Floor Plan of A Neighbor Group By author
114	Figure 4.18	Third Floor Plan of A Neighbor Group By author
115	Figure 4.19	Section Shadow Test By author
117	Figure 4.20	First Floor of Neighbor Group Shadow Test By author
119	Figure 4.21	Third Floor of Neighbor Group Shadow Test By author
121	Figure 4.22	Graduates Scenario floor plan 1:150 By author
122	Figure 4.23	Graduate Unit Example By author
122	Figure 4.24	Graduates scenario section 1:150 By author
123	Figure 4.25	Graduates Scenario Life 1 By author
125	Figure 4.26	Graduates Scenario Life 2 By author

127 Figure 4.27 Professional Scenario floor plan 1:150
By author

128 Figure 4.28 Professional Unit Example
By author

128 Figure 4.29 Professional scenario section 1:150
By author

129 Figure 4.30 Professional Scenario Life 1
By author

131 Figure 4.31 Professional Scenario Life 2
By author

133 Figure 4.32 Seniors Scenario floor plan 1:150
By author

134 Figure 4.33 Seniors Unit Example
By author

134 Figure 4.34 Seniors scenario section 1:150
By author

135 Figure 4.35 Seniors Scenario Life 1
By author

137 Figure 4.36 Seniors Scenario Life 2
By author

139 Figure 4.37 Immigrant Family Scenario floor plan 1:150
By author

140 Figure 4.38 Immigrant Family Unit Example
By author

140 Figure 4.39 Immigrant Family scenario section 1:150
By author

141 Figure 4.40 Immigrant Family Scenario Life
By author

143 Figure 4.41 Hierarchy Design
By author

145 Figure 4.42 Community Section 1:500
By author

147 Figure 4.43 Ground Floor Plan 1:500
By author

149 Figure 4.44 Basement Floor Plan 1:500
By author

150 Figure 4.45 Roof Garden Floor Plan 1:500
By author

151 Figure 4.46 Master Plan
By author

153 Figure 4.47 Street Perspective View
By author

155 Figure 4.48 Bird’s eye View
By author

157 Figure 4.49 Roof Garden View
By author

Chapter 1
FOREWORD

Figure 1.1 Sylvie Guérard Jianchang Hutong, Beijing Hutong Life

Using the Chinese ink and paper, Sylvie Guérard, a French visual artist, creates a series of drawings about daily life in Hutong. Street vendors, close drying, and conversations are the simple things happening along the Hutong, which tell a vivid story of Hutong life.

1.1 Introduction

Housing Urbanism

Housing must be re-conceived as a generator-rather than the result-of a broader urban paradigm. The research and design of new forms of housing must emerge from contemporary urban topics and engage larger metropolitan and regional systems. Housing can become a viable initiateor of new ways and forms of life in the contemporary metropolis only if we understand housing as a form of urbanism in and of itself.

--Clare Lyster

The Siheyuan, which loosely translates to "courtyard house", is one type of generator of Housing Urbanism in Beijing. This house type is the catalyst of a Hutong, which is a typical street form in China. Today, I will tell a story of what happened in a Hutong.

It's a normal cold winter morning in Mr. Six's 50s, he goes out walking his old friend—a myna bird. At the street crossing, he notices there is a conflict between the municipal police and another friend, Dengpao, who is a breakfast pedlar living in a neighboring courtyard house. As a young street punk Mr. Six reigned over this Hutong area, so he takes charge of this dispute with his old school rules. In his eyes, beyond the rules, there is still fairness and kindness in the Hutong territory that is the key that gives him a reputation with the crowd and neighbors.

This is the opening scenario in the movie "Mr. Six". It describes the status of a typical Hutonger's life. They know each other very well since they have been living together for years. They support each other, especially those living in the same courtyard house—sharing a fine dinner meal, taking care of each other's kids, and participating in every members' big moments. This is the neighborhood utopia inherited from the former generation.

On the other side of the world, Toronto is losing its social heritage either in newly constructed condo projects or suburban houses. These new

Figure 1.2 Dayuan(courtyard) Life

Figur 1.3 Real Life in Beijing

constructions lack the same potential for people to connect and feel embedded in a community. Such condos, or suburban houses, creates isolated residential developments that blocked inhabitants in their own territory from communicating with neighbors, which in turn creates stagnant communities. As a result, in Toronto, we can choose where to live, how much we want to pay, and how large a home we want, but there is no option for neighbors, who we want to live close, and this is the big gap in the Toronto housing market.

The strong social ties generated in the Hutong experience are affected by its spatial transformation. I want to introduce this type to Toronto's housing market to close the gap of neighborhood living by exploring how new social relationships can be reinforced by architectural space.

1.2 Background

New social relationship:
Traditional social relationships are generated from cultural, political, and environmental similarities, which are homogeneous, while new social relationships are influenced by multi-media, which is heterogeneous. This new relationship fosters a self-organizing system that provides choices.
Architectural space:
The architectural space is not a purely repetitive physical space, but a space which arises from people's awareness of the three-dimensional quality. It promotes the idea of architectural space dependent on the needs of the user, those who wants to use, experience and affect it.

Courtyard house in Beijing

"The courtyard is still a central part of the traditional Chinese dwelling. It serves as a playground for the children as well as the place for a lot of domestic activities, including cooking, repairing bicycles, storing of coal and cabbage, laundering and so on.[1]*"*

The Beijing courtyard house constitutes a crowded, structural form, which is the result of a long process of interaction between the built form, the social, the economic, the habitual and the cultural needs of the people that inhabit it[2]. The courtyard house registers the historical changes between the feudal and modern societies. This ideal typology experienced the living of ups and downs in the past centuries. One of the most important characteristics of the Siheyuan is its flexibility in accommodating population growth and spatial change. The courtyard allows for a whole range of outdoor activities and can provide additional space to accommodate relatives or to store diverse items[3]. Housing in a Siheyuan is designed for an extended family and their servants. The form clearly demonstrates social hierarchy, with all rooms facing inward to the courtyard. The resulting architectural space places the parents,

1 Solvig Ekblad and Finn Werne, "Housing and Health in Beijing: Implications of High-Rise Housing on Children and the Aged," *J.Soc.& Soc.Welfare* 17 (1990), 51.
2 Ibid.
3 Anne-Marie Broudehoux, *Neighborhood Regeneration in Beijing: An Overview of Projects Implemented in the Inner City since 1990.*Mcgill University, 1995).


Figure 1.4 History of Siheyuan in Beijing, www.ecns.cn

who are the masters of the family, in the main units facing south; the children, who are less important, live in the east or west. The servants usually live in the north or outside of the courtyard near the main door. The streets or lanes are like narrow branches bordered by continuous walls on both sides and are only interrupted by the portals framing the entrances to the courtyards. Since the new China has been founded, most of the Siheyuan in Beijing's inner city have been experienced a series of transformations. These traditional Siheyuan could no longer achieve to provide an abrupt overpopulation to inhabit. After the Chinese Revolution, both small typical Siheyuan with one courtyard and large Siheyuan has been subdivided in order to accommodate several more unrelated households[4]. This resulted in a substantial reduction of the available floor area per household[5]. In the early 1950s, between two to four households shared a compound originally intended for a single extended family. This situation changed after the Tangshan earthquake in 1976. To rescue immigrants from Tangshan, who came to Beijing as families, the courtyards were fully occupied by kitchen and shelters. Furthermore, the courtyard space was taken

4 Ibid.

5 Andre Casault, "The Beijing Courtyard House: Its Traditional Form and Present State," *Open House International* 12, no. 1 (1987).

over by extendable structures that accommodated over ten homeless families. New convenience stores and public washrooms were built to facilitate the growing population in the Beijing Hutongs.

The process that increased the population of one Siheyuan from one extended family to multiple families to over ten families led to new social relations inside it. Even before the increase to ten families, older residents still preferred to live with three generations of their family. These residents then had to share a single household with other large families.

The courtyard creates much chaos and conflict because of its common use, but it still provides space for social interaction and acceptance of newcomers. Based on the way a neighbourhood is generated, there are two types of social integration— passive and active. In the beginning, people gathered based on family ties, which is a passive choice. This "no-choice" social relation determines the original form of architectural space under a feudal context. Once the population began to rise, the type of integration shifted into an active mode. The closer people live together the more opportunity they have to interact. They live in a limited space, greet neighbours by habit, and quarrel about the shared courtyard. The architectural space, which in this case is both extendible and flexible, plays a decisive role in fostering social relations.

Hull-House in Chicago

In North American cities, community living is not a new type of life. The process of community coherence is different from that in the Hutongs in China, but it shows similar close social ties. In her book, *The Grand Domestic Revolution*, Dolores Hayden describes attempts by feminists to transform domestic space in the late 19th Century, by creating more collective living spaces.

"The public kitchen, designed as a small, white clapboard house, with a peaked roof and a board, inviting front porch, promised to fit perfectly into any conventional neighbourhood of modest single-family homes. Inside, however, was all the equipment of a scientific laboratory designed to extract the maximum amount of nutrition from food fuel.[6]"

6 Dolores Hayden, *The Grand Domestic Revolution : A History of Feminist Designs for American Homes, Neighborhoods, and Cities*, ed. William Dendy (Cambridge, Mass.;

Figure1.5 The Coffee House at Hull-House, from the 1906-07 Hull-House Yearbook. Jane Addams Papers Project

This is the description of the 1890s' cooperative kitchen in Chicago called Hull House, which was established by a group of highly educated women. To achieve even more productivity, after its initial success, this scientific kitchen was adapted to better serve immigrants. This form of urban cooperation was adopted by many social settlements in the coming decades. More amenities, day care centers, and cooperative housing continued to be added, and a new residential community developed. During the immigration boom, female pioneers recruited professionals to reform the architectural space into Hull House. This reformation included the addition of facilities for child care, food, and housing. Pushed by female leaders, more social infrastructure was established. By 1907, entertainment spaces and rest areas were added to the Hull-House complex[7]. In parallel to this architectural development, social activities and associated organizations were being developed. This energetic community attracted more

Cambrdige, Mass. : Mit Press, C1981).

7 Ibid.

people from different locations to visit and stay. As this community continued to grow, it became more political. The power of groups is far more influential than individual power. Even though collective cooking, dining, laundering and housekeeping are not seemingly social attractors, the inherent social gathering and central "kitchen" led to political uprising. A shift was created by adding more roles that allowed female workers into the larger regime, and they moved from service to domain and from producer to consumer. To summarise a leader, a target group, some attracting events, and an architectural space to house them comprised this successful social cooperative pattern. This dynamic pattern corresponds to Michel Foucault's critique of historically determined space being regarded as a mechanical, static, and undialectical object, "Space is fundamental in any form of communal life; space is fundamental in any exercise of power."[8]

Hull House was not an exception during this progressive era when a social movement turned into a political movement. It was one significant success that showed feminist activism's ability and power during the domestic revolution. During the following two decades, women's unions spread into New York through their desire for control of their own housing. This growing force earned women working rights in the labour market and they became the majority population in some industrial markets. From its humble beginning under two professional women to becoming a large community of fifty residents, Hull House showed an incredible influence of cooperative domestic life and collective living among urban immigrants.

Striated space and smooth space

It is possible to describe the differences between public and private space through the divide between what French philosophers Gilles Deleuze and Felix Guattari call smooth and striated space. The private space is striated and dimensional, defined by a standard. Contrary to this, public space is smooth. It is a deterritorialized directional space. Public space as we understood it is a physical space that

8 Crampton, Jeremy W. and Stuart Elden. Space, *Knowledge and Power Foucault and Geography* (Aldershot, England ; Burlington, VT: Aldershot, England ; Burlington, VT : Ashgate, 2007).

is open and accessible to people and is constructed by architects. As technology develops, the "social" component is being redefined by social media. The way people interact with each other is experiencing a tremendous change; the way "I" connects to both space and people has been dramatically shifted. Additionally, in residential projects like Hull-House and Siheyuans, there is liminal, threshold space between the striated and the smooth. This space is semi-private or semi-public space. This type of semi-private and semi-public space becomes the prototype where new social relations can be fostered.

So how can architectural space construct virtual social relation in these spaces? Instead of a static neighborhood or family group, residents living in an active community have the desire to extend their personal networks. Social background, territory, and hierarchy are no longer emphasized. A smooth space is more flexible to positing new social relations than striated space. Schemes, such as social gathering activities, have continuous variation, which develops without a specific limitation. The only limit tracing back to individuals is an active choice whether they want to integrate with others. It is self-evident that individuals become the singularities of an event, or a moment instead of an object or subject fixed in a tree relationship as they were in earlier times. This brings me to the crux of architectural space as an album of all these moments. Architectural space is no longer defined by form, function, or material. Instead, it is a Cartesian system with two kinds of relation. One is the self-relation that is comprised of position, movement, and speed. The other is the relationships between these singularities including force, vector, and difference. In this system, it is no coincidence that relations in Hull House and a Siheyuan can be mapped out according to these factors.

Emergence

As the space has been divided, the next question is how to map new social relationships in it. John Holland describes the "emergence" as a pervasive phenomenon. Among living forms on earth, the construction of communities is a unique human activity model. We rarely think about how various and important these models are in day-to-day existence. To understand and manipulate emergence, Holland proposed a methodology for modeling what

he called constrained generating procedures[9]. Two models comprise this system. The static stands for physical forms, such as maps and architecture; the dynamic discovers the "rules of the game" that allow systems to change forms.

These two models can be understood separately. The static model provides architectural space for the dynamic model. The static model home is the point where we distance ourselves from the world, and it, in turn, is a projection of the way we understand the world. The house stands for different personalities that intensify contrasts which bring them together to experience and understand. From a house to a community, there is a scaling hierarchy that operates invisibly when we observe the regularities that foster the community's social relations. From a micro-environment to a macro-environment, space is arranged by scaling interaction. This is the prototype of city organization. In contrast, in the dynamic model, scaling plays little or no role. It acts like a colony of ants. It shows extraordinary flexibility in probing and exploiting surroundings, which occurs without directives from a central power[10]. This "game of the rule" provides more possibilities, but it asks more of the singularities within it. New types of community behaviours have similar patterns as the system is self-organizing and generating in the face of today's residential market.

The states of a game are analogous to the configurations of matter obeying natural laws. "We usually think of games as invented by humans to generate a particular type of outcome. This is a kind of "reverse science" in which laws are invented to generate phenomena."

In Hull-House and Siheyuan, the emergence of bottom-up interaction is approached by building the new forms of residential buildings and also setting up the rules which can include community activities, social clans, or commercial behaviours. Spontaneously the new social structure within this community forms. This generation process abstracts residences from cities as an independent self-organizing system that has similarities with "organic,

---

9 Holland, John H. *Emergence: From Chaos to Order* (Oxford, Oxford University Press, 2000), 14.

10 Steven Johnson, *Emergence: The Connected Lives of Ants, Brains, Cities, and Software* (Simon and Schuster, 2002)

spontaneous, and untidy" cities.

Managing city of difference

Sandercock argued, in her book *Towards Cosmopolis*, that "there are three important contemporary socio-cultural forces: transnational migrations, post-colonials, and the rise of civil society. These forces converged to place the concept of difference on the agenda of the planning and design professions[11]." Meanwhile, the dark side of this process should not be neglected—fear and acceptance. In a community, the concept of fear results from strangers who bring chaos into the existing social order. These strangers are not only new residents but also uncertain visitors. Acceptance means understanding and accepting a high degree of interaction with neighbours. Usually, the more interactive our lives are, the more potential there is for problems between neighbors. Acceptance is to endure the drawbacks of living closely. These two obstacles could be used as excuses for the failures of top-down planning processes. Examples include inner-city slums with increasing crime rates[12]. However, the Hutongs in Beijing provide an example of the opposite. They are categorized as a highly governed historical pattern. Only if its social hierarchy breaks down from inside can a Hutong be born anew. From this perspective, a bottom-up self-organizing system is more efficient in conquering fear.

Also, learning from Hull House, residents participating in the earlier management processes help with managing cooperative behaviours in shared space. Design of this sort of space requires: an open and communicative planning process, involving negotiation and mediation with the users[13]. This brings the self-organizing system in the early stage of the community build-up process, which offers the opportunity to the residents to contact with their neighbors and accept each other. Ultimately, the top-down and bottom-up building processes intrude into

11 Sandercock, Leonie and Peter Lysiottis. *Towards Cosmopolis: Planning for Multicultural Cities*. (Chichester, England; New York: John Wiley, 1998).

12 Steven Johnson, *Emergence: The Connected Lives of Ants, Brains, Cities, and Software* (Simon and Schuster, 2002)

13 Leonie Sandercock, *When Strangers Become Neighbours: Managing Cities of Difference*. (Planning Theory & Practice 1, no. 1 2000), 13-30.

each other.

Conclusion

The ideal of the "broken society", which is popular in today's political discourse, suggests that there are people who embrace new types of social cohesion rather than stick to the normative cultural, political, and environmental coherence. This situation can be a challenge for residential architectures to operate with. The framework I applied in my thesis seeks to analyse the effect of architectural space on social relations. It allows architectural space to recognise its social realities in contemporary society by returning priority to the residents. "While convinced of the need to rethink the links between place and identity, many theorists are wary of tendencies simply to invert the isomorphism of space and identity, that is, to conceive of mobile identities as deterritorialized"[14].

14 Fincher, Ruth and Jane Margaret Jacobs. *Cities of Difference* (New York, Guilford Press, 1998), 27.

1.3 Manifesto

Interactive

Courtyard space should be easily accessible to all the units sharing it. This way a balence between the positive aspects of interaction and hte possibility of meeting others is achieved.

Programmed Mix

A day-lit interior street can be used for lesure activities and social center. Together with the ground commercial space it will become the social infrastructure in this community.

Adaptability

interact choice
Space between the private and semi-private space is adaptable to individual's willingness of interact-tion. Within the units, rooms can be divided or open up.

unit area
The units have different areas to meet the requirements of a wide range of family types.

common utility
The shared space can be trans-fered into different usages accord-ing to the intent of each group.

Cluster Living

Three to five units sharing the commen space to maintain the cluster living pattern and neigh-borhood quality.

Social Sustainability

Social structure in this community is supported by the diversity of space which also facilitates a gen-erational development sequence.

Urban Benefits

Including a multiplicity of pro-grams for the benefit of both pub-lic and private.

The Expected Social Relation

Exchange

To approach the qualities in the Manifesto, social relations among the residents living in this community are more active. The exchange, such as skills, spare time, and business opportunities, between residents is the possible bond connecting each other.

Autonomy

Residents hold their responsibility of benefiting from this community, meanwhile, their duty to maintain a healthy order shall be underlined.

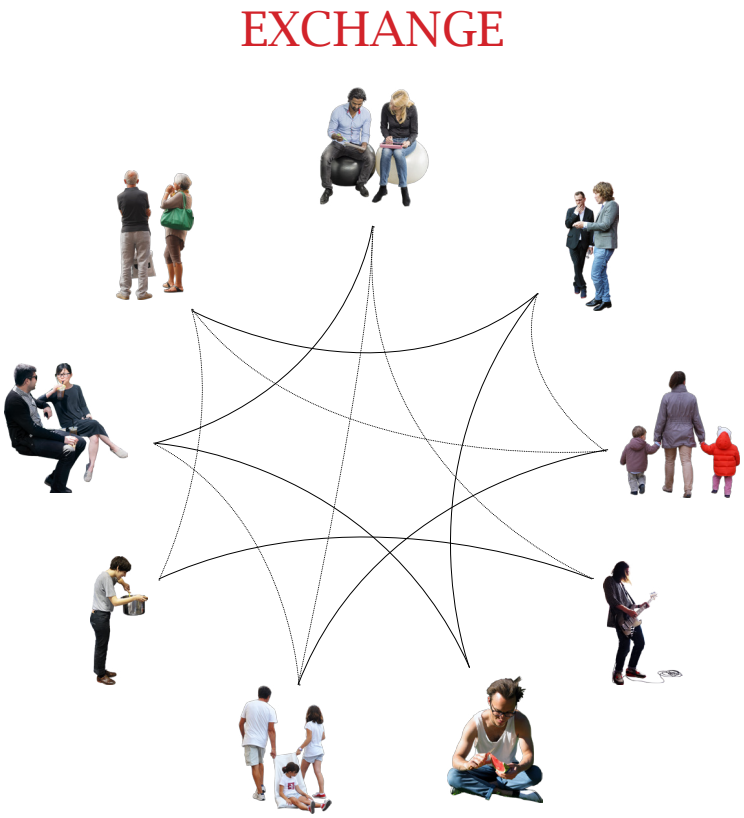


Figure1.6 Exchange Feature in Social Relation

Figure1.7 Autonomy Feature in Social Relation

1.4 Methodology

I Precedent Research
I am using two scales to analyse precedents as evidence for my research. At the urban scale, housing should not only be designed to meet fundamental living requirements but also to mitigate urban crises by improving the social relationships between users, for example, by providing public space, creating community cohesion, and reducing the long-distance transportation burden for a larger regional system. The analysis is based on spatial and social aspects to detect the way they influence each other. At the architectural scale, my design has its typical interactive form, both in social and spatial aspects, that is different from the ordinary form, which mainly consists of circulation space. For a given project, the space and activity can be defined using the same method.

II Design Strategy Application
Based on the above considerations, the analysis will be applied to both a community proposal and an architecture design. My design process mainly focuses on the typology of social space and the morphology to manipulate it. The form of unit aggregation will be based on the space in Hutong in Beijing.

III Perspective Evaluation
There are two methods engaged through the design. One is the special quality test—a shadow test to see if the space functions well with a comfortable interior condition. The other is the space occupation test—a projection of future life that requires detailed design for spatial organization. This method will be applied to examine the project from architectural scale to urban scale.

Thesis Process

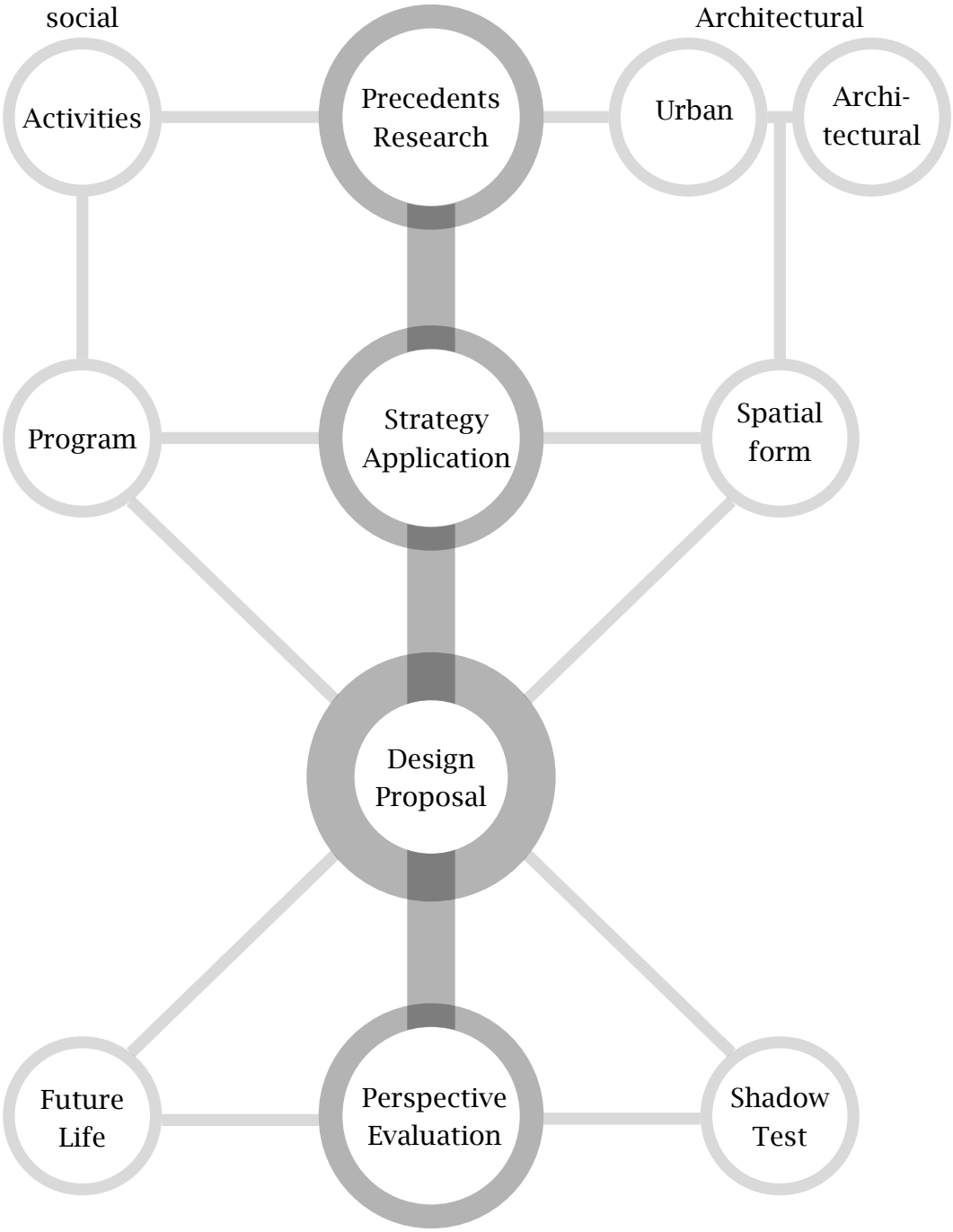


Figure1.8 Thesis Process

PART II
RESEARCH

2.1 Hypothesis

From social, economic, and architectural perspectives, a neighbourhood can be enhanced by a space-oriented residential project. To achieve this goal, the research must consider both the local social network and Toronto's current residential market. For my hypothesis, both social network and spatial form have a similar hierarchy that is the key connecting the social and architectural aspects. In my design, the hierarchy of the social network maps on the hierarchy of the spatial form. By dividing living space into a private-public hierarchy, a new social coherence and economic model could be deployed in each shared space.

"If social relations in the city were characterized by anonymity and rationality, urban communities were throwbacks to other places and older kinds of sociality. They appeared like villages in the city, based on familiarity and shared cultural norms, and usually transported by rural incomers or foreign immigrants."[1]

In a congested metropolis like Toronto, the market housing is losing its sense of neighborhood and community. In modern cities, a community is a place that provides common collectives, cultural ties, and economical similarities. As a living pattern, community living produces social relations which have an "include-exclude" trend in city life. Inside of this enclave, the social relations are based on mutual properties and activities, While, in a larger territory, a repetitious architectural pattern releases a signal of indifference. Regardless of whether they are high-rise condos or suburban townhouses, they have a similar development tendency and compatible forms of living units are duplicated in vertical and horizontal directions that weakly encourages social integration. As the result, no clear boundaries or restrictions can separate enclosures from each other. Equality (both in living units and social status) is not the only factor that pushes people close together. Also, subjectivity and social distance drive people to settle within their own groups. Both equality and subjectivity cultivate new social relations.

1 Fran Tonkiss, *Space, the City and Social Theory : Social Relations and Urban Forms* (Cambridge, U.K. ; Malden, Mass.: Cambridge, U.K. ; Malden, Mass. : Polity, 2005).

Spatial logic is required to map out social life in a residential project. The hierarchical “private-public” space provides a foundation where incremental neighborhood relationships easily fit and can find roots. Public space is a smooth space referring to a deterritorialized(undefined) fluid space, dominated by variation; private space is striated space defined by a family’s special choice and use of specific functions[2]. By using the concept of a “cohort”, which consists of three to five units according to Robin Dunbar’s theory, a scaled-up spatial hierarchy is complete from private(units), semi-private(cohort), semi-public(neighborhood), to public(community). Each smaller scale is the catalyst of the next. The expression of high quality in different scales has to be properly designed based on the corresponding social distance and economical environment; the expression of difference is achieved by diversified choice of living requirements and integration demands.

Residents living in this community have social differences in profession, income, cultural background including lifestyle, religion, and origin. A reasonable economic model is the fundamental requirement to bring this project to Toronto’s housing market. Undoubtedly, living with different neighbors with distant social ties evokes the hesitation of exposure. Instead, through a participatory design process it will be possible to eliminate the “fear and acceptance” toward neighbors. Meanwhile, this becomes an opportunity for relatively lower priced units for owners who are eager and patient about participating in the community activities[3].

2 Gilles Deleuze and Félix Guattari, “1440: The Smooth and the Striated,” *A Thousand Plateaus: Capitalism and Schizophrenia* (1987), 474-500.

3 Ida Marie Henriksen and Aksel Tjora, “Interaction Pretext: Experiences of Community in the Urban Neighbourhood,” *Urban Studies* 51, no. 10 (2014), 2111-2124.

2.2 Theoretical Framework

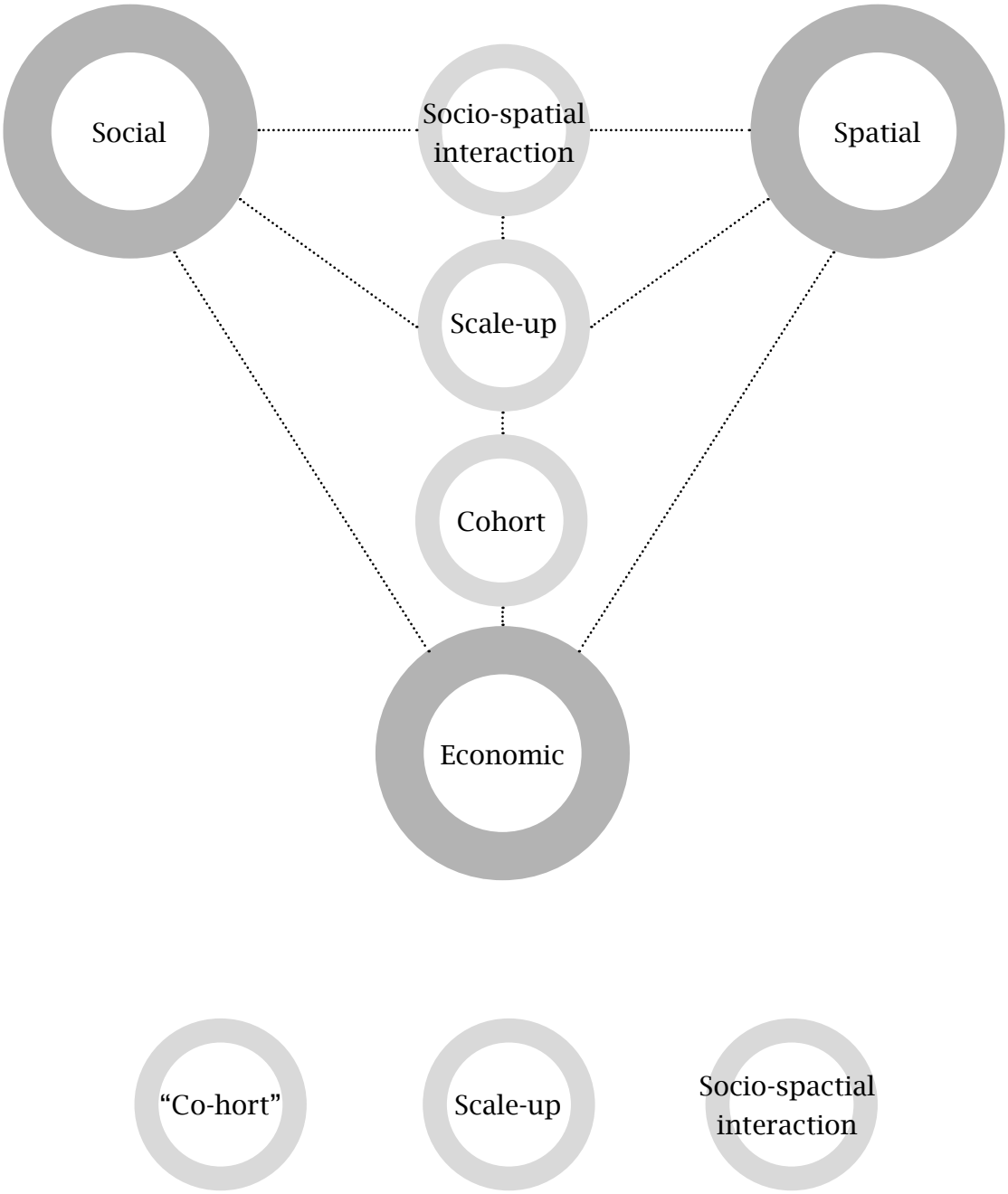


Figure2.1 Theoretical Framework

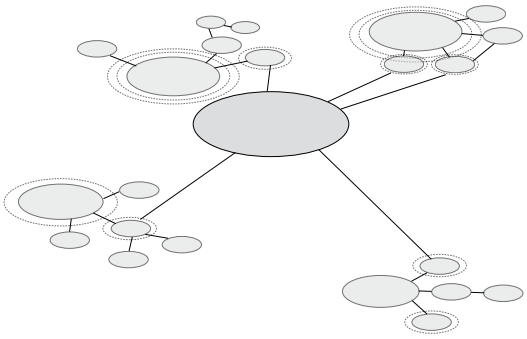


Figure 2.2 Social Connection Between People

Cohort

definition:

Three to five families live closely together by sharing common space which can be transformed into different programs depending on their social demand, such as kitchen, dining room, or living room. A cohort is the basic integration group that contributes to developing and maintaining an intimate social relationship. Residents in this designed cohort living have a closer relationship than those living in co-housing which is a semi collective type of living arrangement and building cluster originated in Denmark. [1]

theory:

Robin Dunbar, an English anthropologist, has made a study of how many people the average person knows and keeps a close relationship with. In his book *How many friends do you need*, the social relationship is divided into three types based on the intimate degree. For an individual, the average close, personal relationships are three to five[2]. This is the foundation of my cohort prototype.

precedents:

Coop Housing at River Spreefeld, Berlin

Yokohama House, Japan

Sakura Apartment, Japan

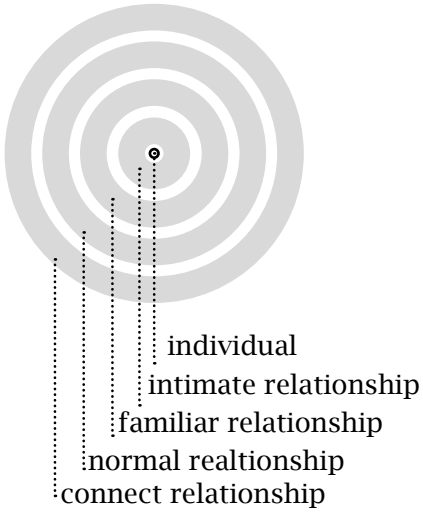


Figure 2.3 Robin's Theory about Social Group Division

Scale-up

definition:

There are two hierarchical scale-ups in the hypothesis. One is social hierarchy—individual, intimate relationship, familiar relationship, normal relationship, and connected relationship. The sequence of scales is based on Robin Dunbar's research about social networks. He mentions that beyond three to five close relationships, an average of fifteen people is the next

1 Ross Jackson, "The Ecovillage Movement," *Permaculture Magazine* 40 (2004), 25-30.

2 R. I. M. (R Dunbar, *How Many Friends does One Person Need? : Dunbar's Number and Other Evolutionary Quirks* (London: London : Faber and Faber, 2010).

familiar relationship volume. Marie Hartwell-Walker describes this group—They are the kind of people who seem to be in ongoing conversations with us that are interrupted by long periods of silence[3]. The next relationship is fifty people who may be friends of friends meet before but not familiar. Around one hundred and fifty people can be recognized by sight in our daily life without knowing their name. Even though these volumes of groups maybe shift a little among different age, the outcome has a similar tendency in R.A. Hill's research. In my hypothesis this is the enactment of social hierarchy.

On the other hand, the spatial hierarchy begins from the private living unit, to semi-private common space in a cohort, semi-public space among neighbors, to public space in the community. Different hierarchical space has different values of space quality and authority.

theory: Robin Dunbar, R.A. Hill, Gilles Deleuze

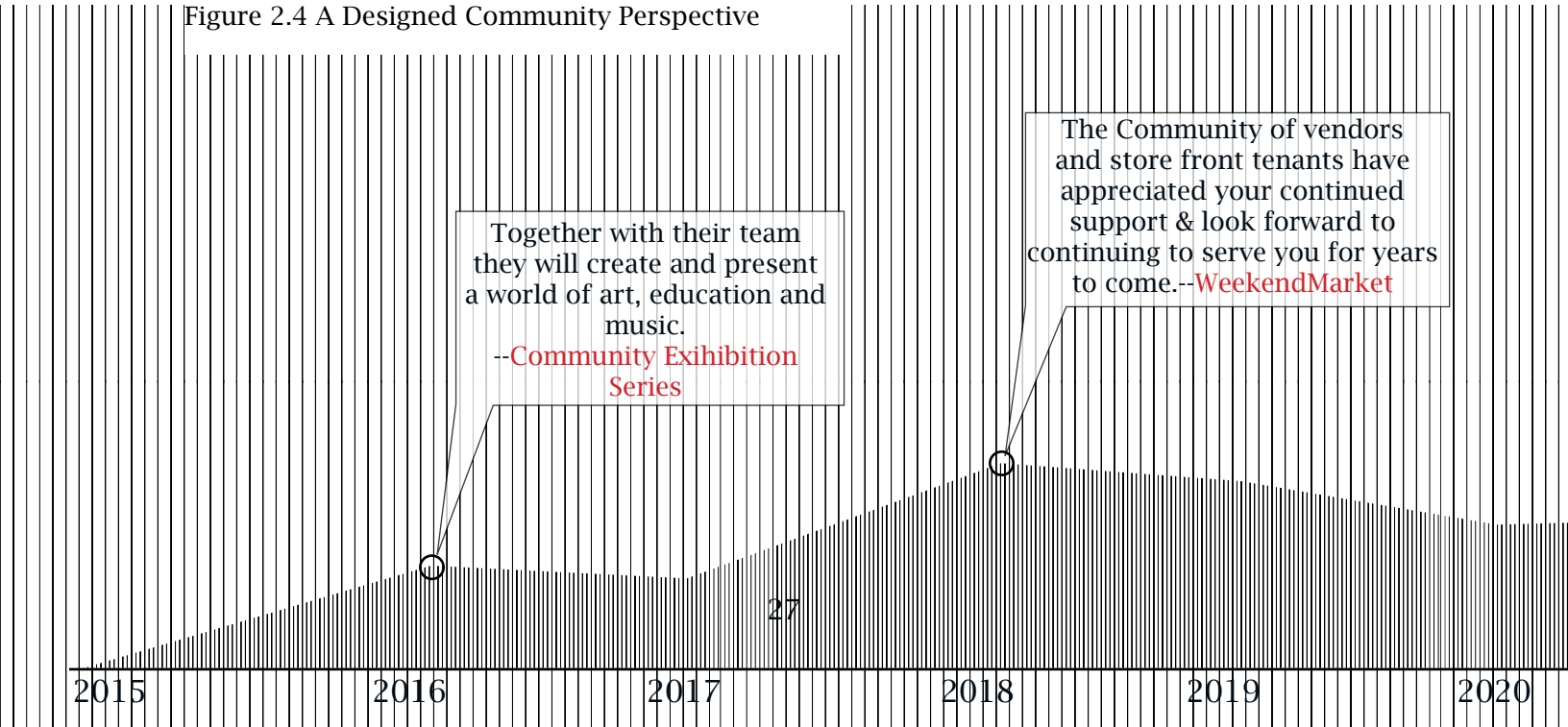
precedents:

Star Apartment, LA

Cohousing Community proposal, East Boston

3 R. I. M. (R Dunbar, *How Many Friends does One Person Need? : Dunbar's Number and Other Evolutionary Quirks* (London: London : Faber and Faber, 2010).

Figure 2.4 A Designed Community Perspective



Socio-spatial interaction

definition:

Architectural design is the first step before life unfolds within it. If spatial hierarchy can be seen as a static model, social life is a dynamic model. To construct a new close neighborhood relationship in a residential project, the static model should consider the characters for each scaling dynamic model from a long view.

theory:

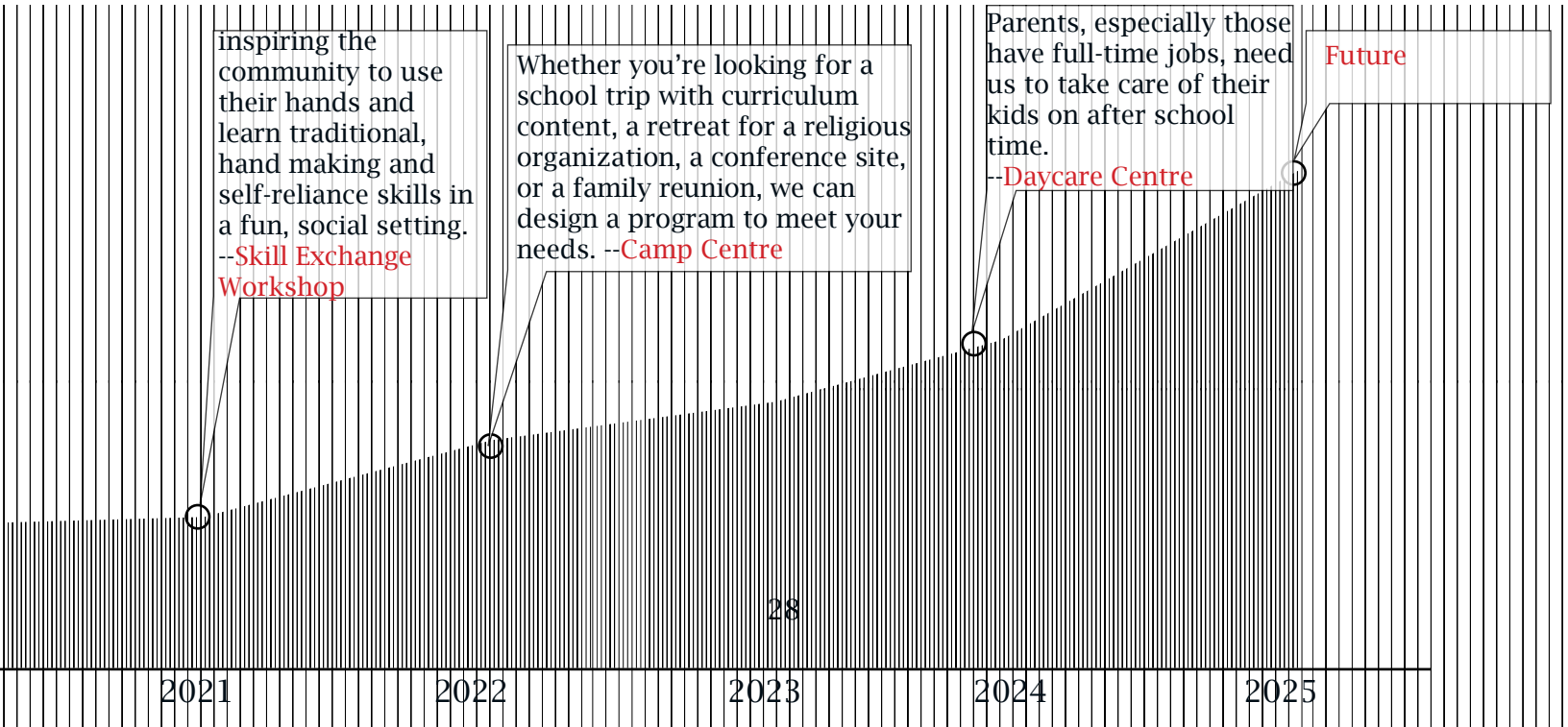
Jan Gehl, Jane Jacob, John Holland, Dolores Hayden, Leonie

Gehl separates activities into three types—necessary/functional activities, optional/recreational activities, and social activity. “While necessary activities take place regardless of the quality of the physical environment, optional activities depend on a significant degree on what the place has to offer and how it makes people behave and feel about it[4].” Social activity is happening in a specific place when people gathering for a certain purpose.

precedents:

Courtyard House, Beijing

4 Jan Gehl, *Life between Buildings: Using Public Space*Island Press, 2011).



2.3 Living in The History

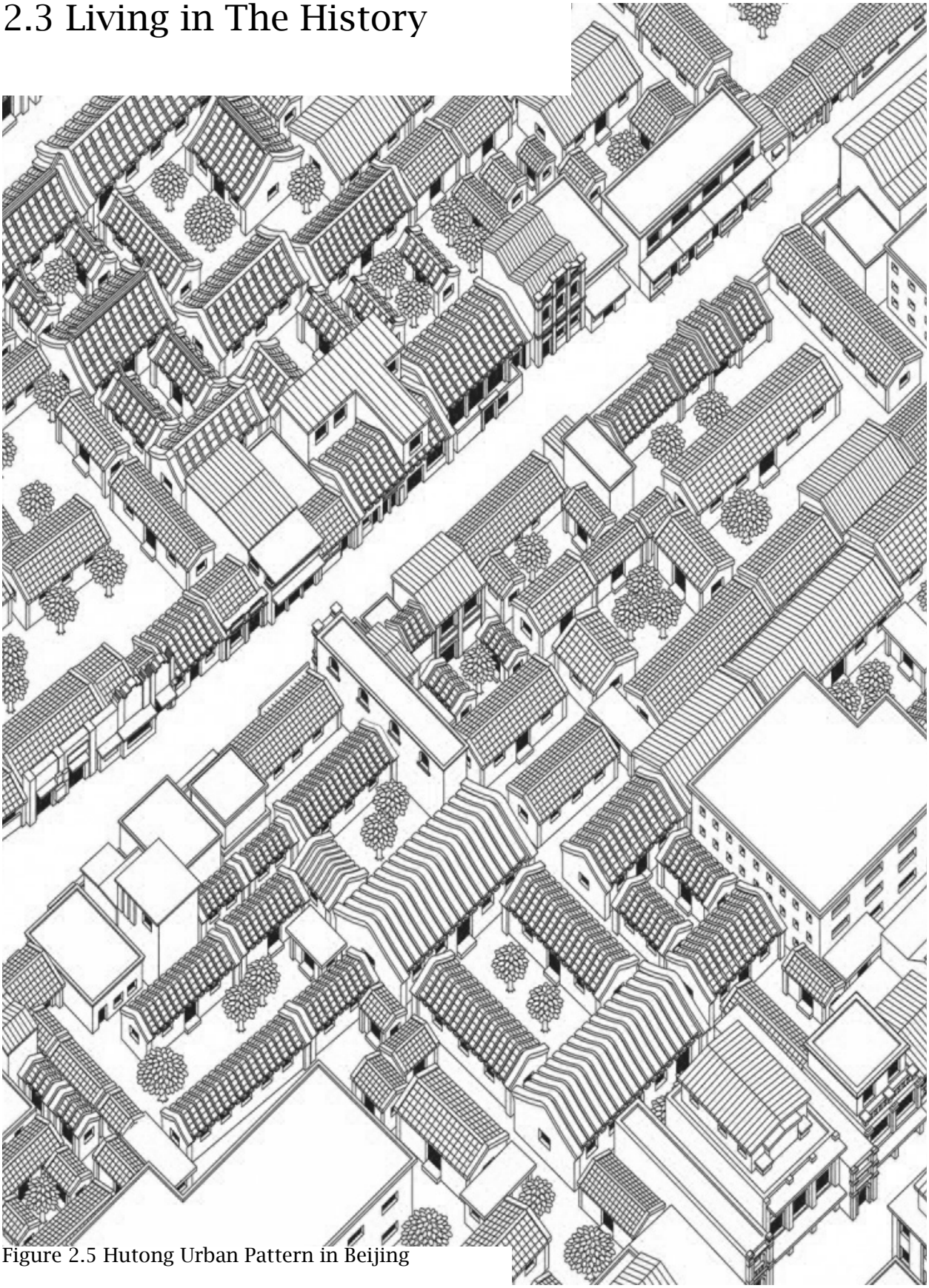


Figure 2.5 Hutong Urban Pattern in Beijing

Hutong Courtyard

Beijing

Around the Forbidden City, the culture of Beijing is fostered by hundreds of Hutongs and courtyards. Because of the crossing and interlacing lanes every house is connected to the others, making it easy for local people to keep in touch with their neighbors. Therefore, once one enters any of the lanes, one can feel the deep and warm relationships among people, which is rarely found in contemporary urban environments.

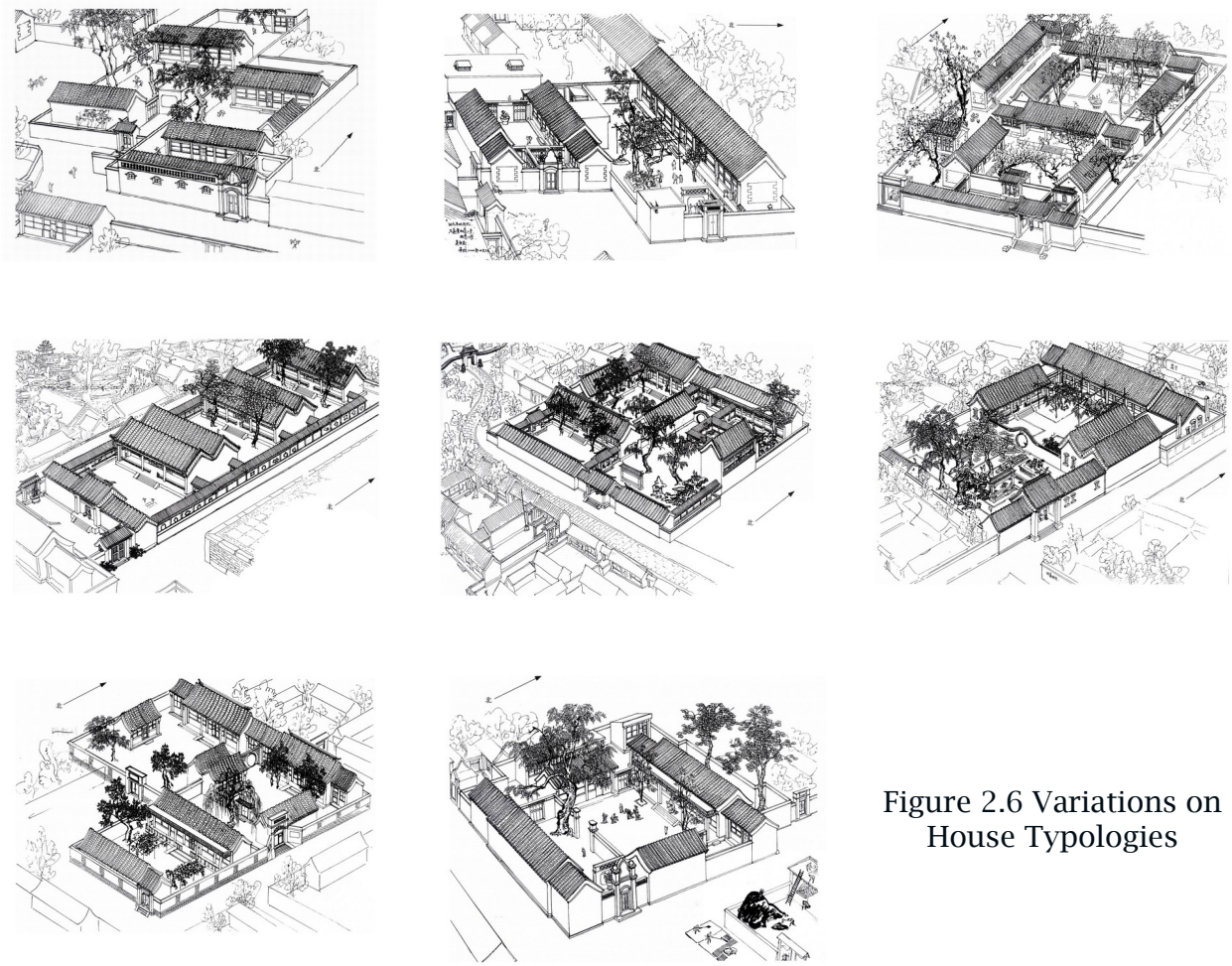


Figure 2.6 Variations on House Typologies

Beijing Hutong Courtyard

Since the new China has been founded, most of the Siheyuan in Beijing's inner city have been experienced a series of transformations. These traditional Siheyuan could no longer achieve to provide an abrupt overpopulation to inhabit. After the Chinese Revolution, both small typical Siheyuan with one courtyard and large Siheyuan has been subdivided in order to accommodate several more unrelated households.

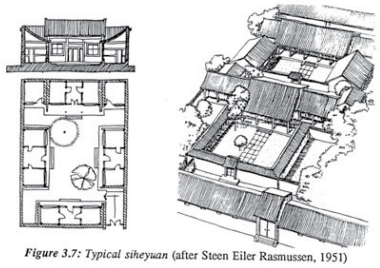


Figure 2.7 Typical small courtyard Siheyuan

The process that increased the population of one Siheyuan from one extended family to multiple families to over ten families led to new social relations inside it. Even before the increase to ten families, older residents still preferred to live with three generations of their family. These residents then had to share a single household with other large families.

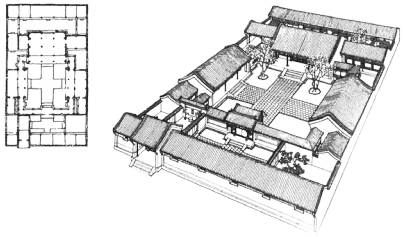


Figure 2.8 Typical medium courtyard Siheyuan

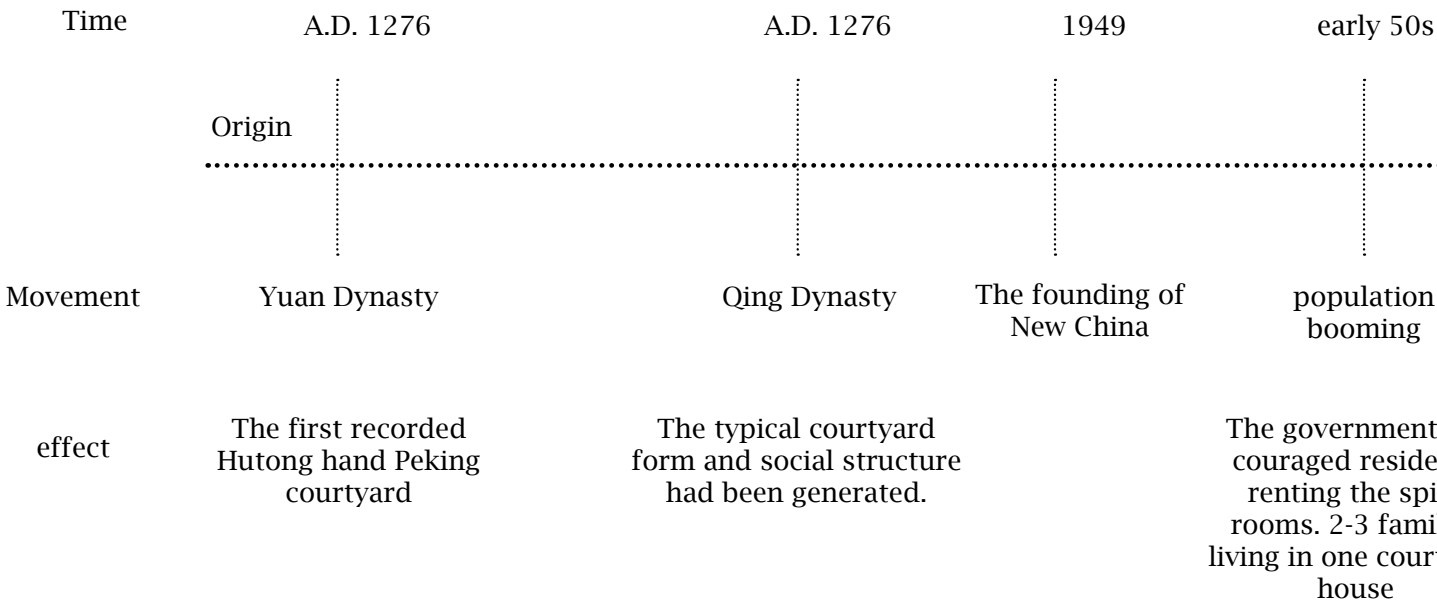


Figure 2.10 The History of Hutong

Figure 2.9 Existing Siheyuan in Beijing Hutong

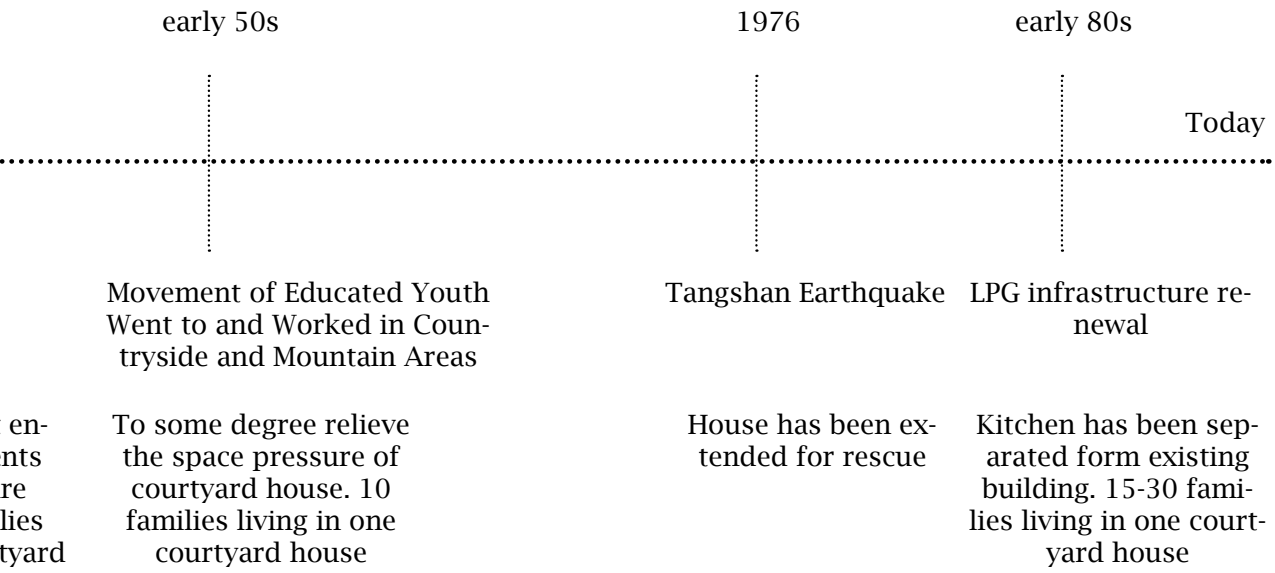


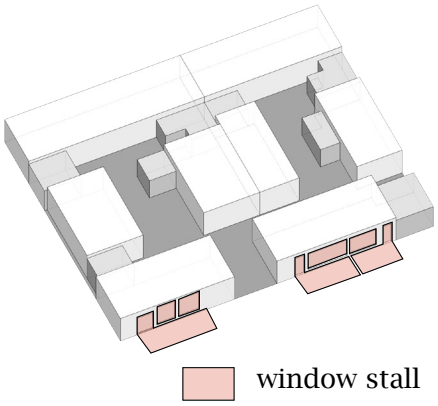
Figure 2.11 Space Hierarchy in Hutong

Possible Active Space

Figure 2.12 Space Transformation of Siheyuan

Neighbor Street Pop-up

Along the Hutong, street stalls, such as breakfast stall and hair cut stall, are the most popular recreation activity for the residents. In addition, open stalls such as convenience stores, game rooms, and salons are common information gathering stations.



Interior Orgnization

On one hand, inside the Siheyuan these extended kitchens and structures take open shared space from the public space. On the other hand, it is a new form of communal space.

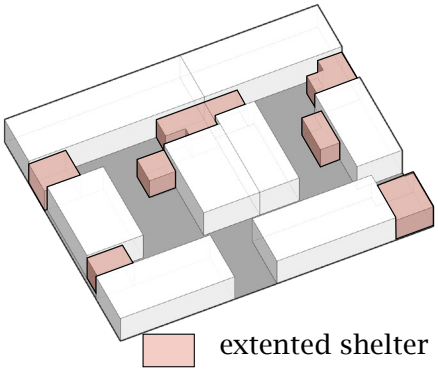
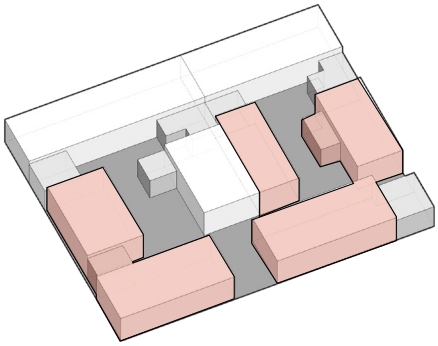


Figure 2.14 Yu Er Hutong Street View

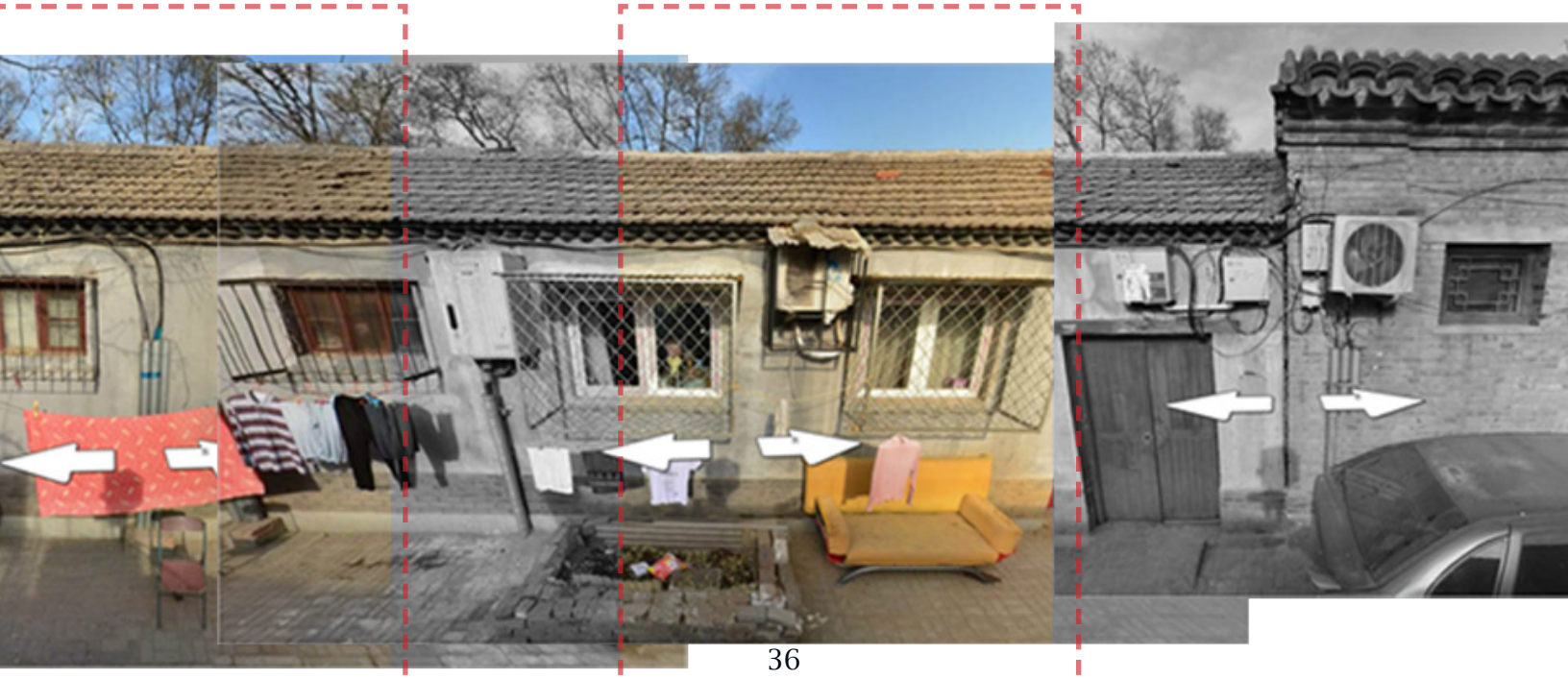


new tenants' room after 2005

Figure 2.13 Space Feature in Hutong

Social Gathering Type

The concepts and strategies presented here create a specific mix of uses, foster a social mix, support interaction between the new and old neighbors and strengthen the housing community.



2.4 Unresolved Living in Toronto

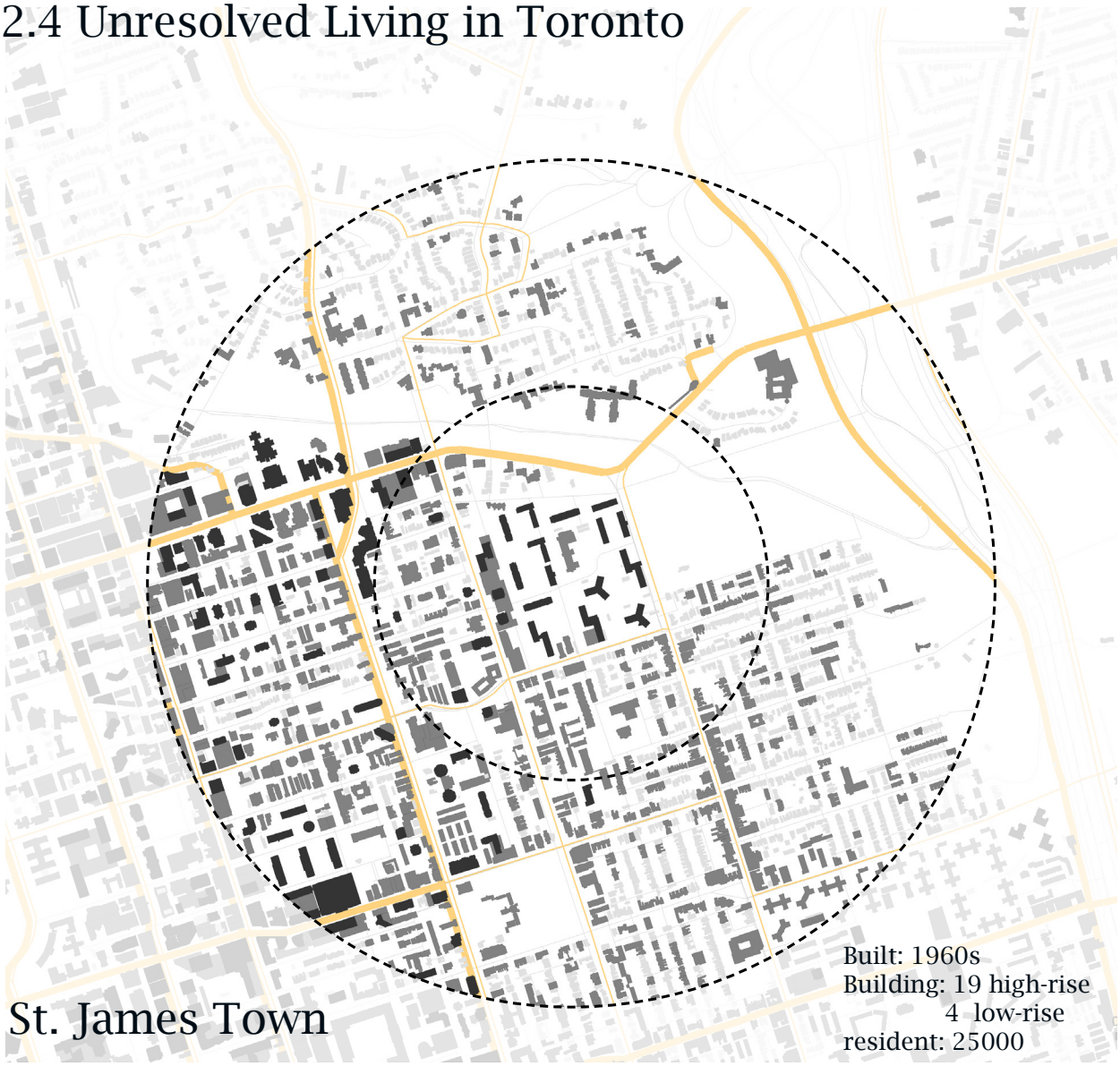


Figure 2.15 St. James Town Urban Pattern

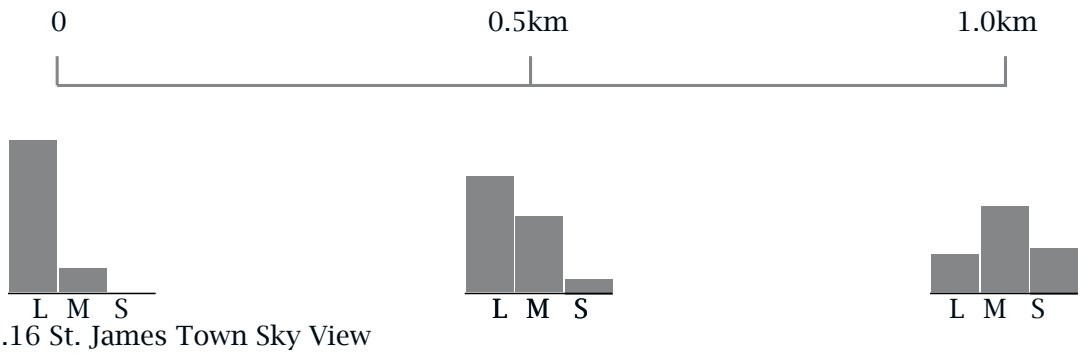
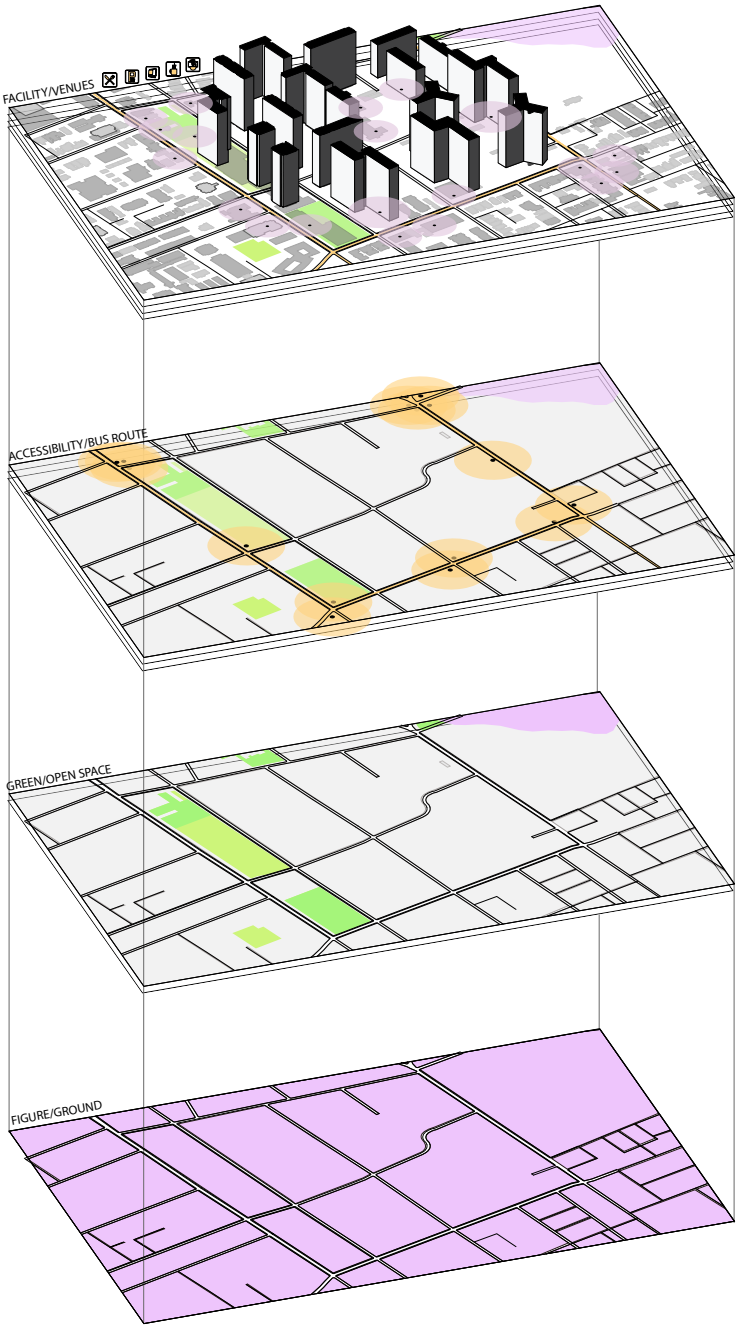


Figure 2.16 St. James Town Sky View

Compared with Hutong in Beijing, Toronto has some unresolved areas regarding community construction. Analysis of that social and architectural condition is difficult without integrating many crucial aspects. To find out the rules that set up an active community, the analysis is conducted by highlighting the differences within urban structure, spatial hierarchy distribution, and possible active space location.

Urban Structure



store

bus stop

Figure 2.17 St. James Town Urban Structure

Space Hierarchy Distribution

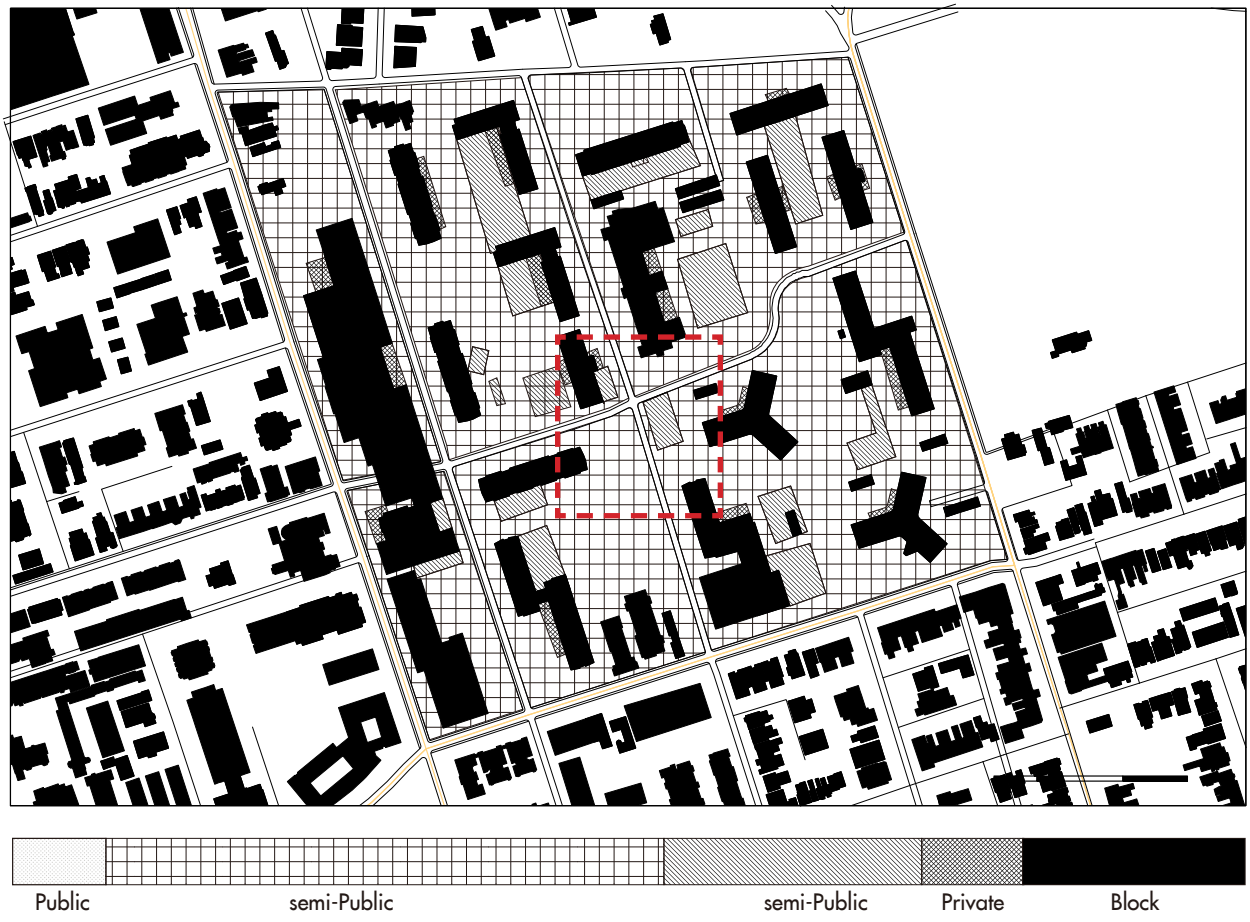


Figure 2.18 St. James Town Space Hierarchy Distribution

Possible Active Space

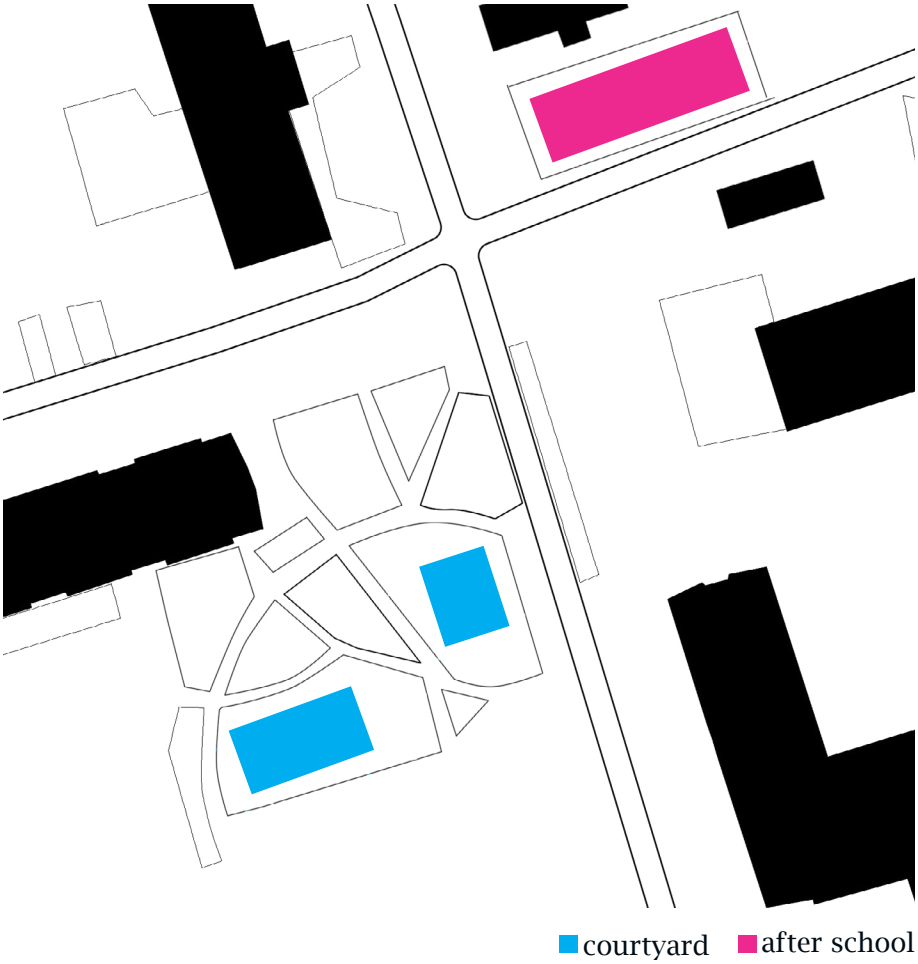


Figure 2.19 St. James Town Possible Active Space

Figure 2.20 East York Urban Pattern

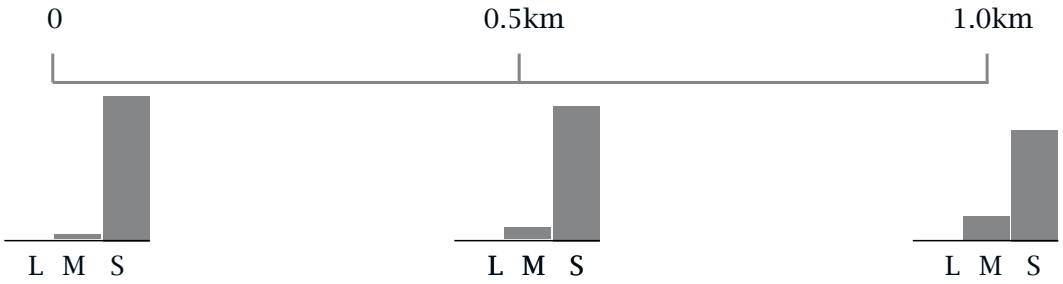
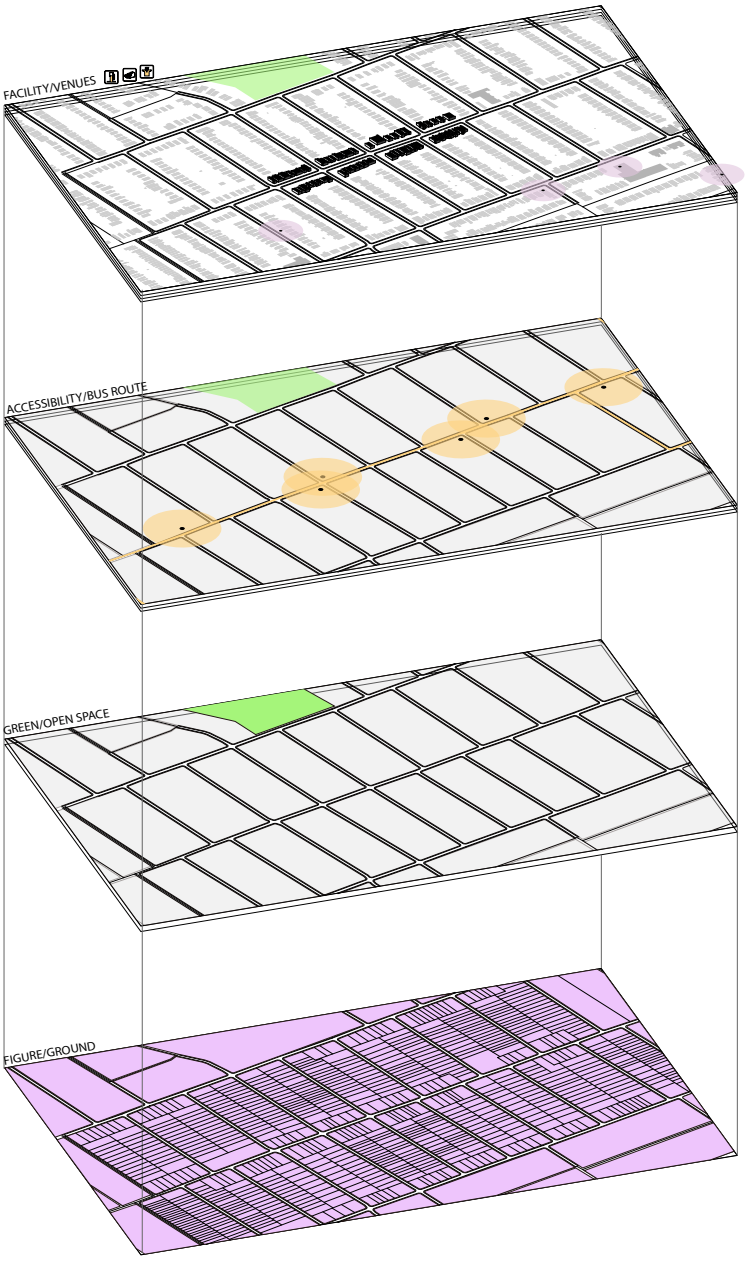


Figure 2.21 East York Bird View

East York is a low-density area that also have a relatively stagnant community sense. East York and St James Town are two extreme residential conditions that can represent two typical unresolved living conditions in Toronto.

Urban Structure



store

bus stop

Figure 2.22 East York Urban Structure

Space Hierachy

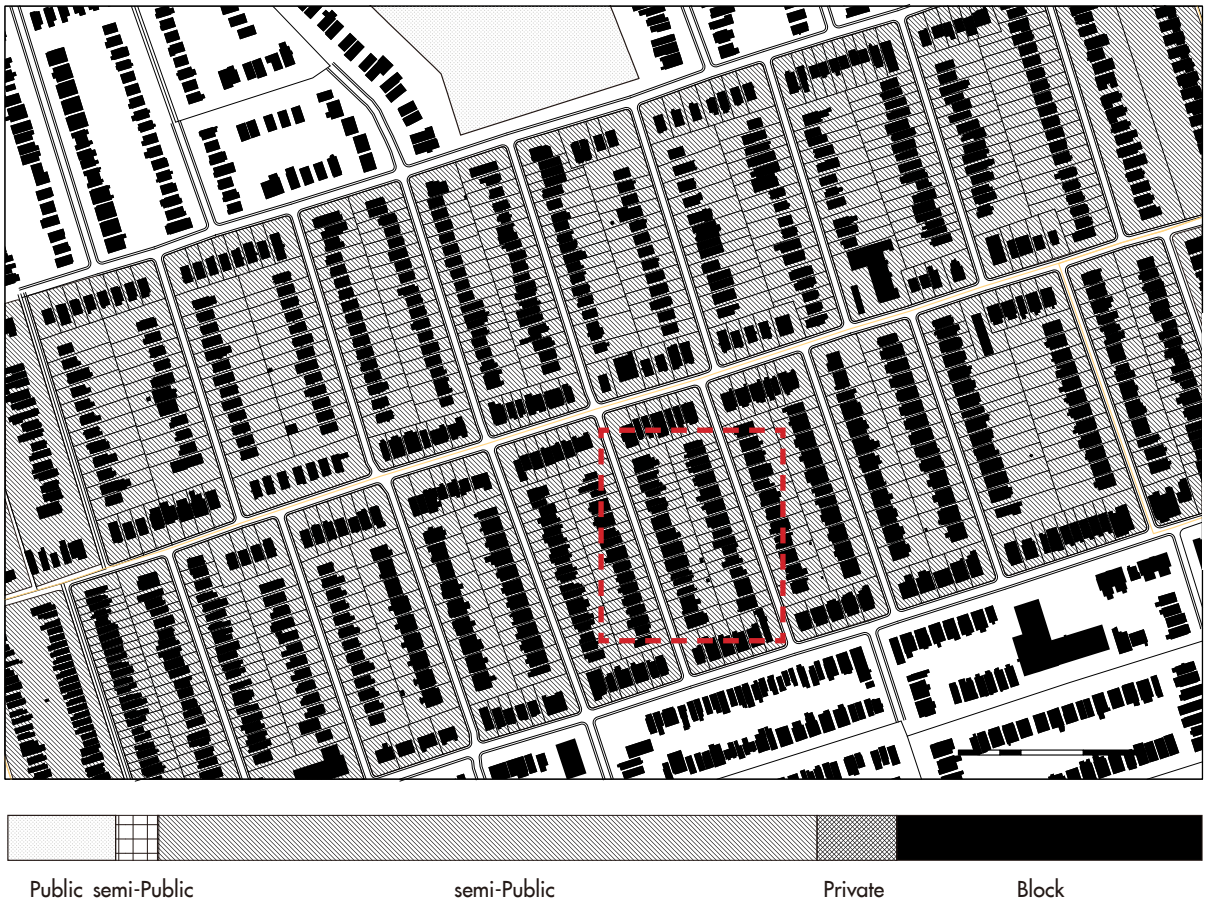


Figure 2.23 East York Hierarchy Distribution

Possible Active Space

Figure 2.24 East York Possible Active Space

Figure 2.25 Around a shared dinning table, everyone has equal space around the table, 2014. (Photo: Ute Zscharnt)

2.5 Precedents

In conjunction with the theories are precedents that exemplify the ideas proposed through community applications. Communities in buildings of different scales have different organizations and forms. Analysis is conducted on both spatial hierarchy and social activities on a daily basis. By analyzing this series of thresholds, we can find out how to encourage a community to be active.

Moriyama, Japan

Yokohama, Japan

Sakura Apartment, Japan

Community Apartment, U.S.

Figure 2.26 Ground Floor of Yokohama Apartment

Yokohama Apartment

ON Design Partner

There are four living units sitting on the ground space. Each unit has a seperate stair access climing through the storage room on the second floor. The ground floor which is open to the public surroundings. This covered ground floor has a kitchen and sink where supposed to be a communal kitchen. This space can be transformed into a exhibition, party, workshop space.

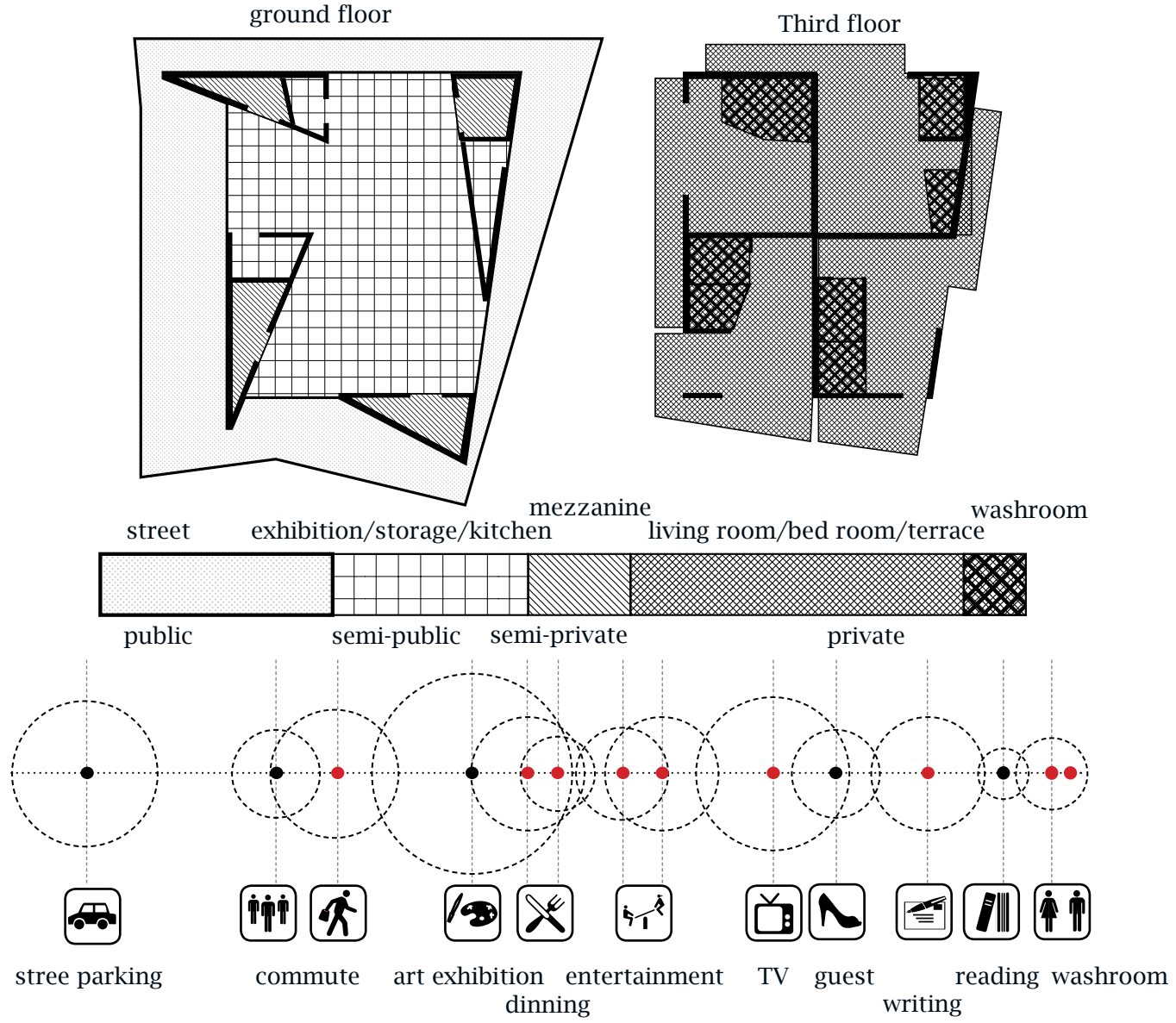
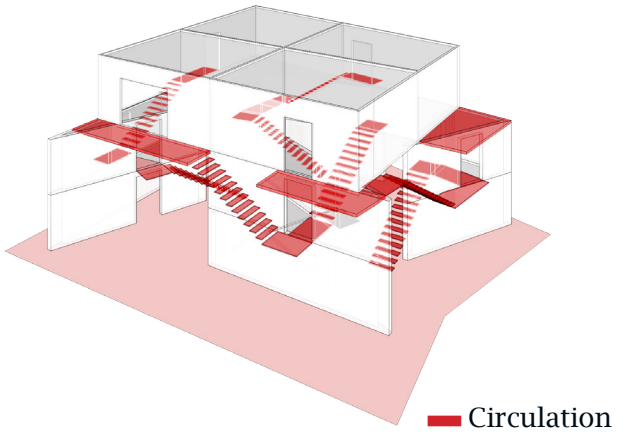
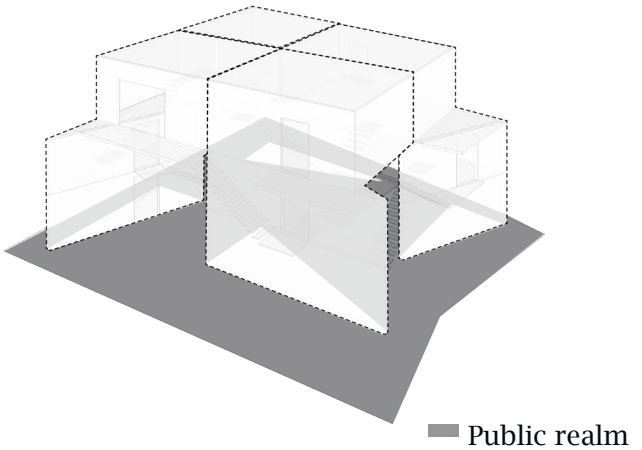
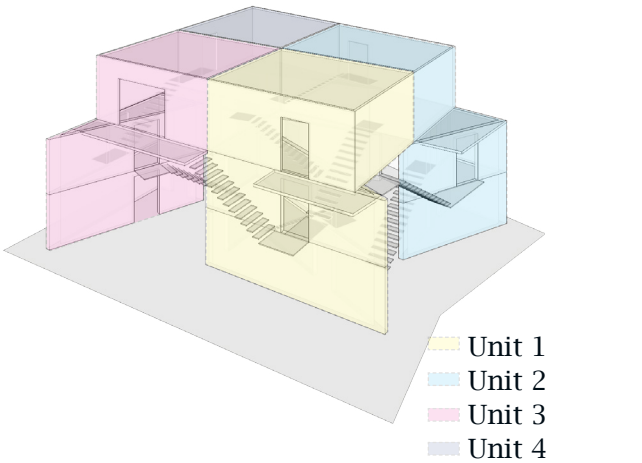


Figure 2.27 Yokohama Apartment Space Hierarchy







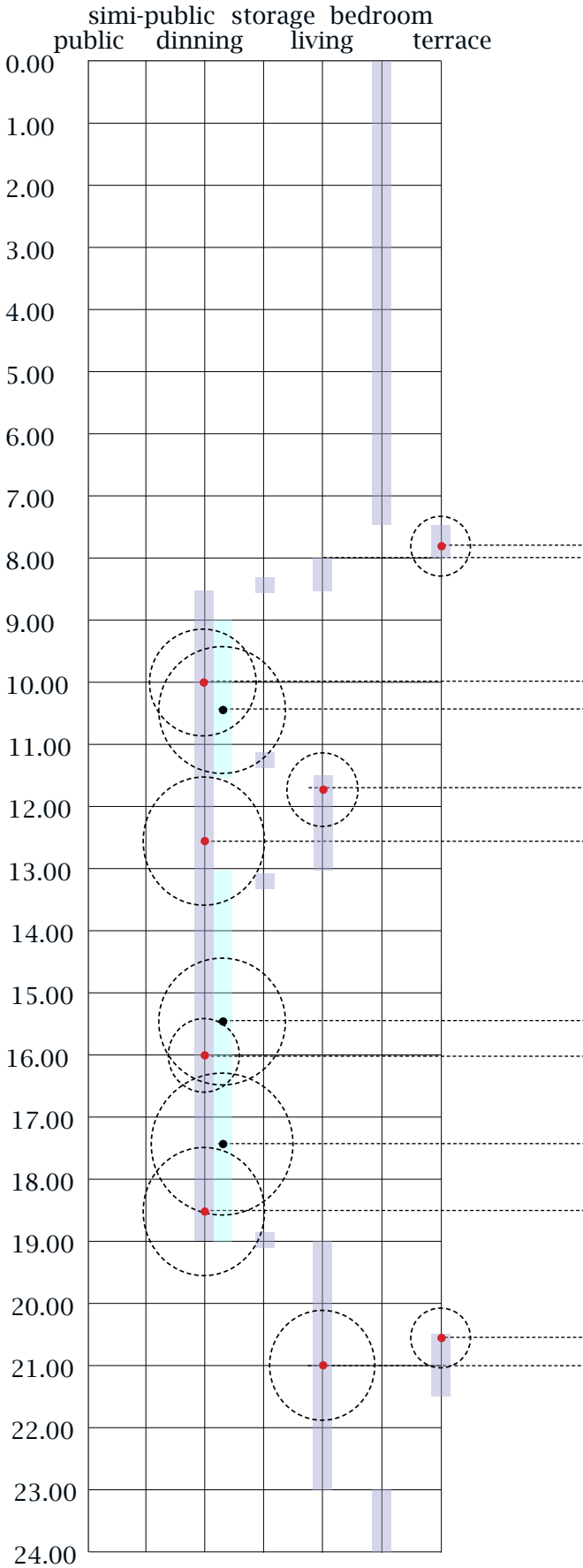


Figure 2.28 Yokohama Apartment Space Organization

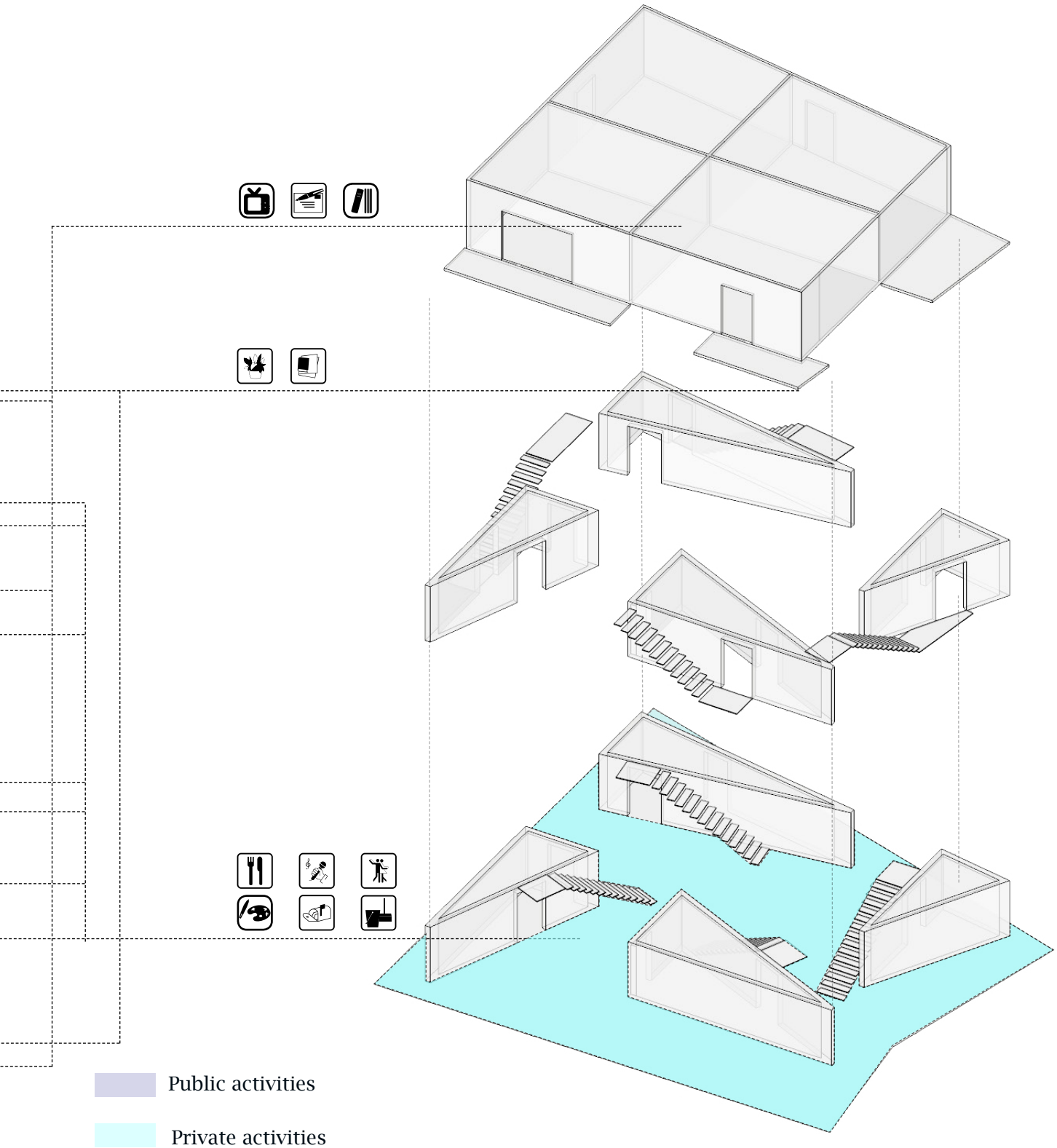


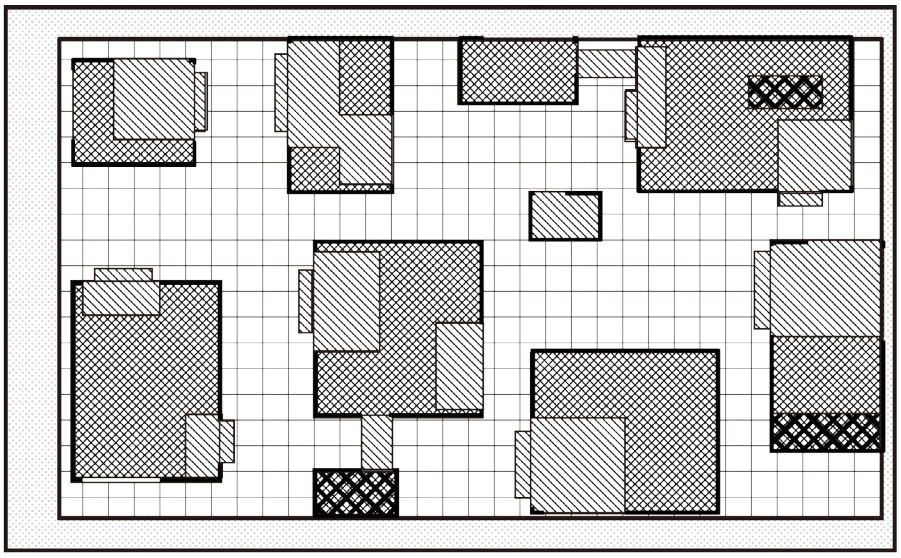
Figure 2.29 Yokohama Apartment Space Ocuppied by Daily Routine

Figure 2.30 Open Window of Mariyama House

Moriyama House

Ryue Nishizawa

As a one-family house, Moriyama House has been designed as separate living units within a compound. Each window porch facing towards the central area generates a communal space. The blurred boundary between inside and outside creates a semi-private space.



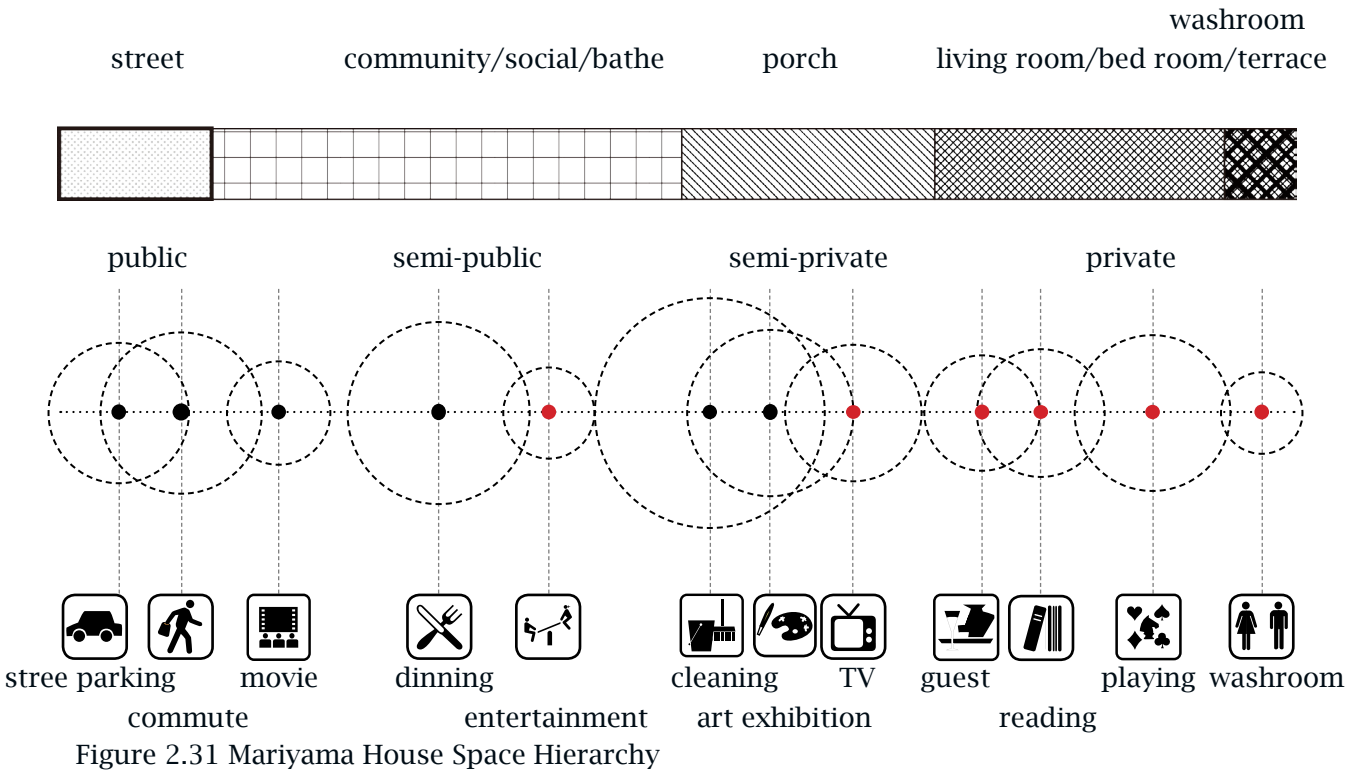
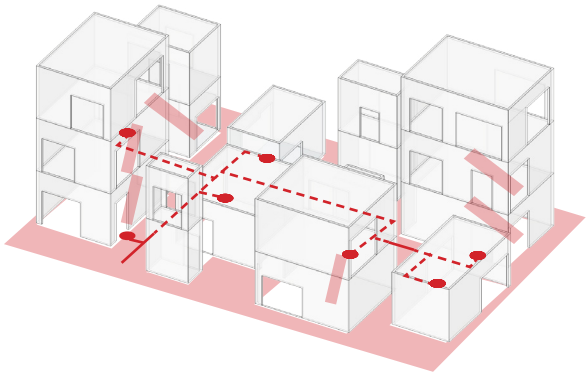
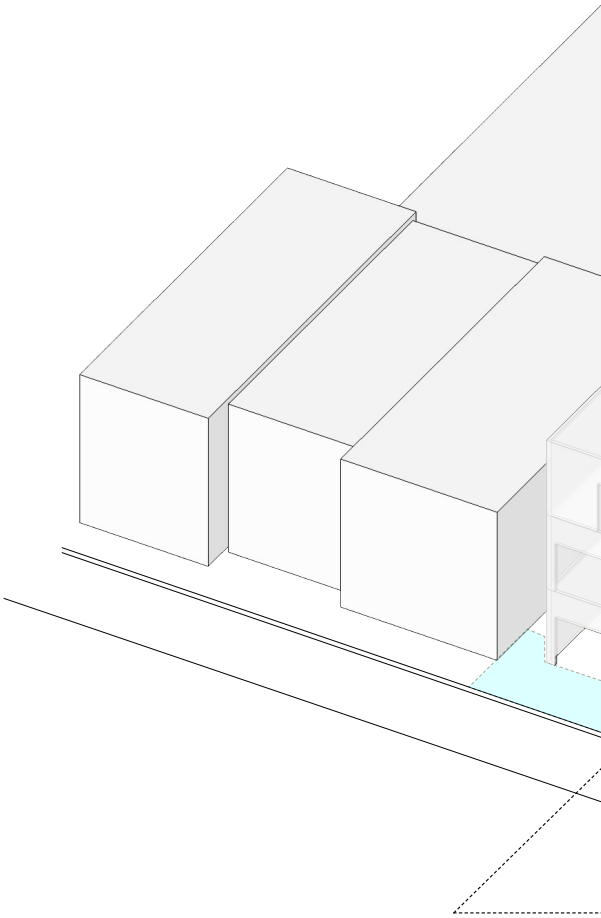
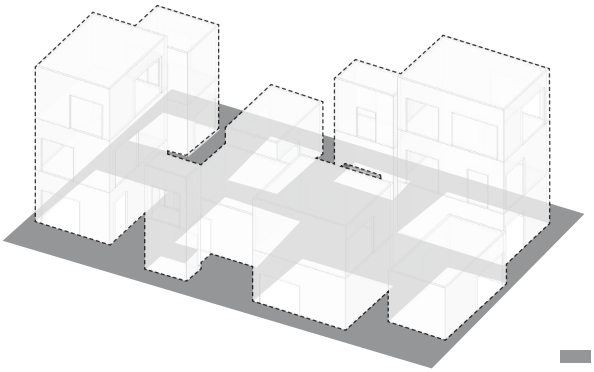


Figure 2.31 Mariyama House Space Hierarchy

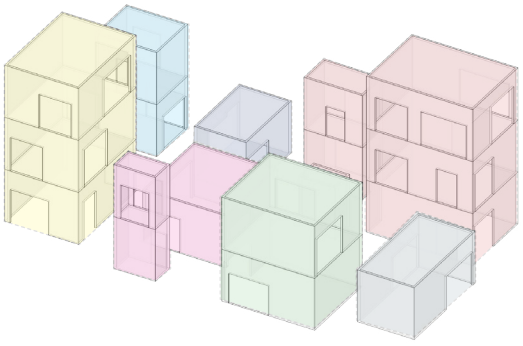


Circulation





Public realm
Private realm



Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7

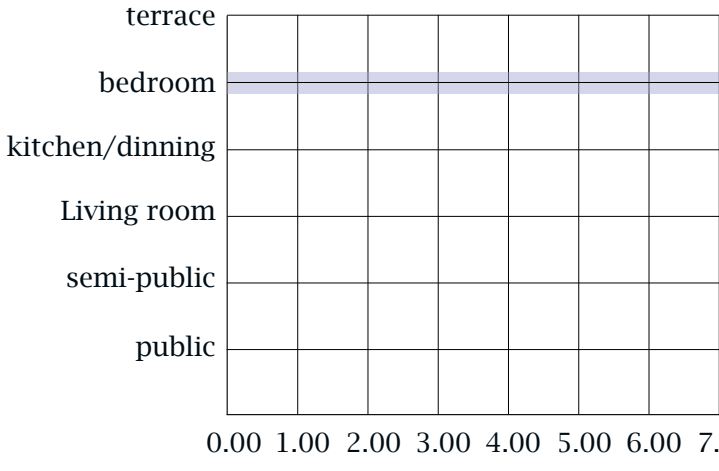


Figure 2.32 Mariyama House Space Organization

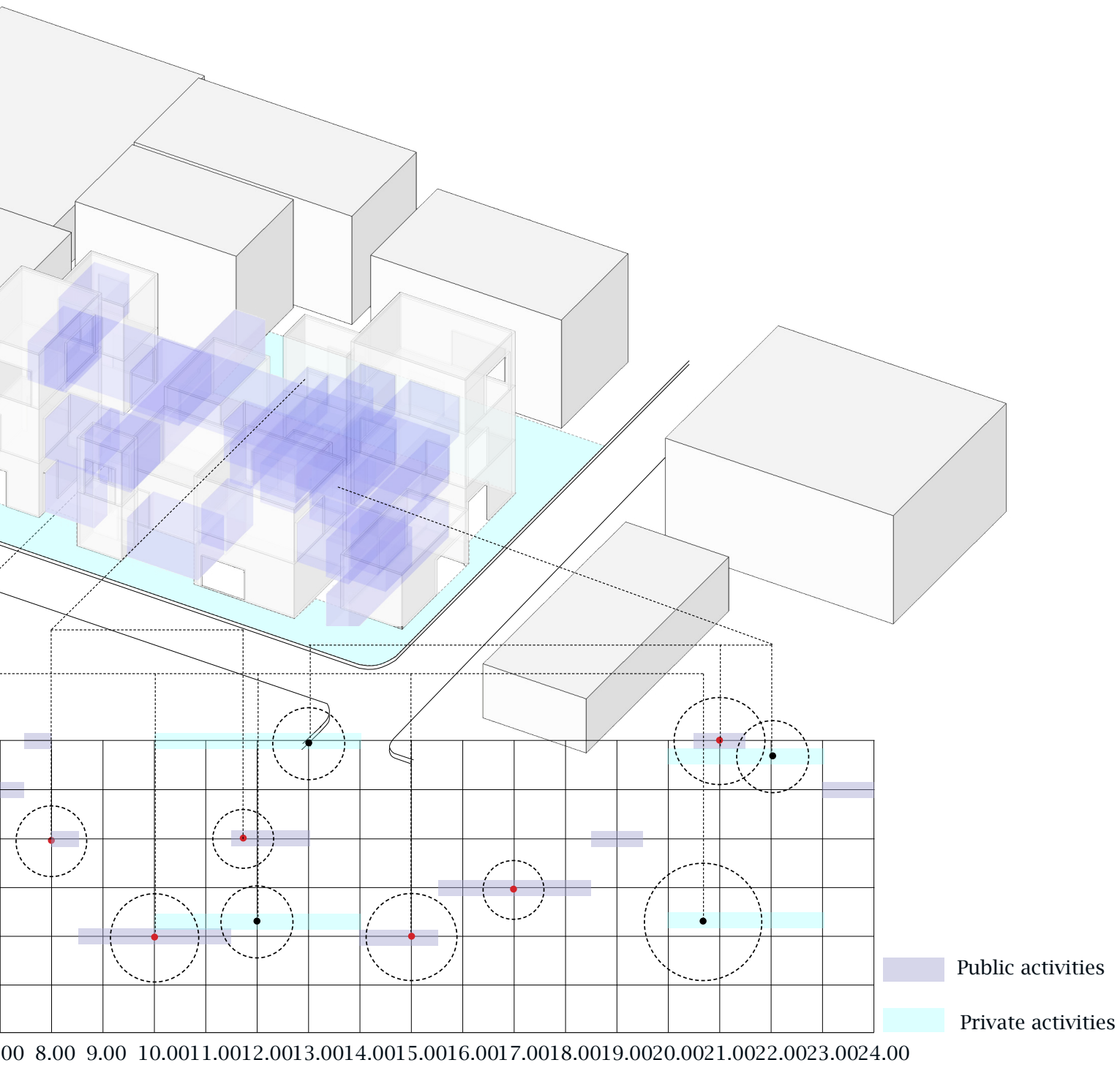


Figure 2.33 Mariyama House Space Ocuppied by Daily Routine

Figure 2.34 Street View of Sakura Apartment

Sakura Apartment

ON Design Partner

The seven box-like volumes are connected by concrete slabs, the exterior corridor spaces between them serving as shared terraces, having ambiguous distinctions between private and common territory.

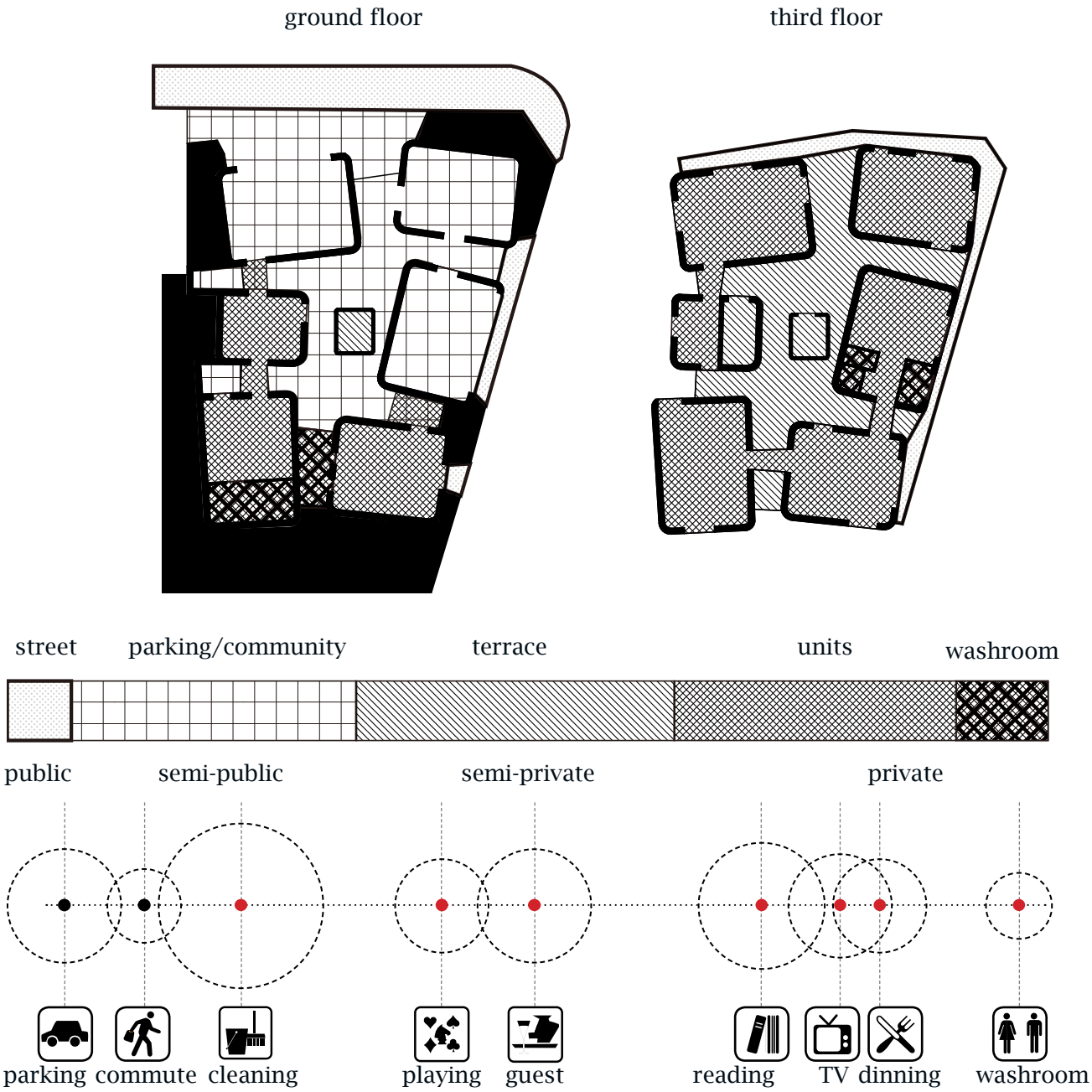
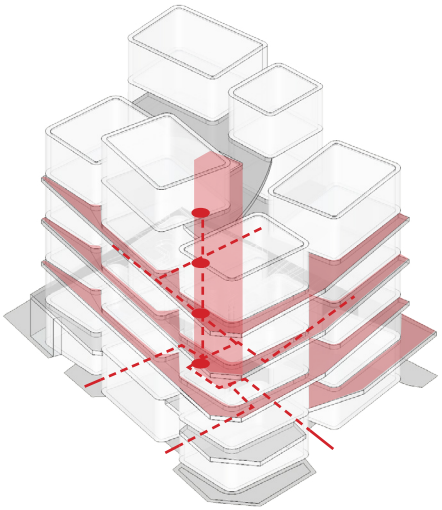
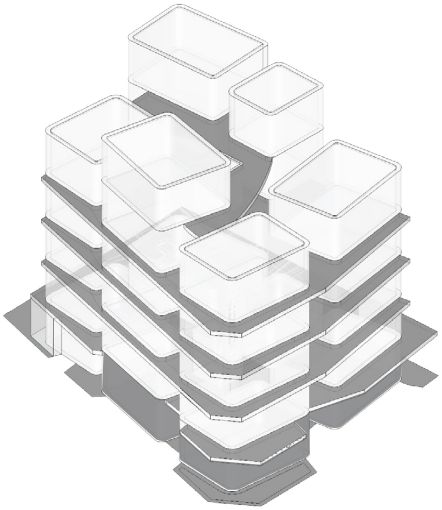


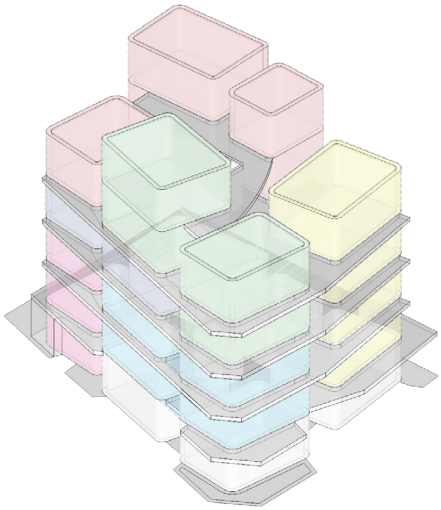
Figure 2.35 Sakura Apartment Space Hierarchy



Circulation



Public realm
private realm



Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6

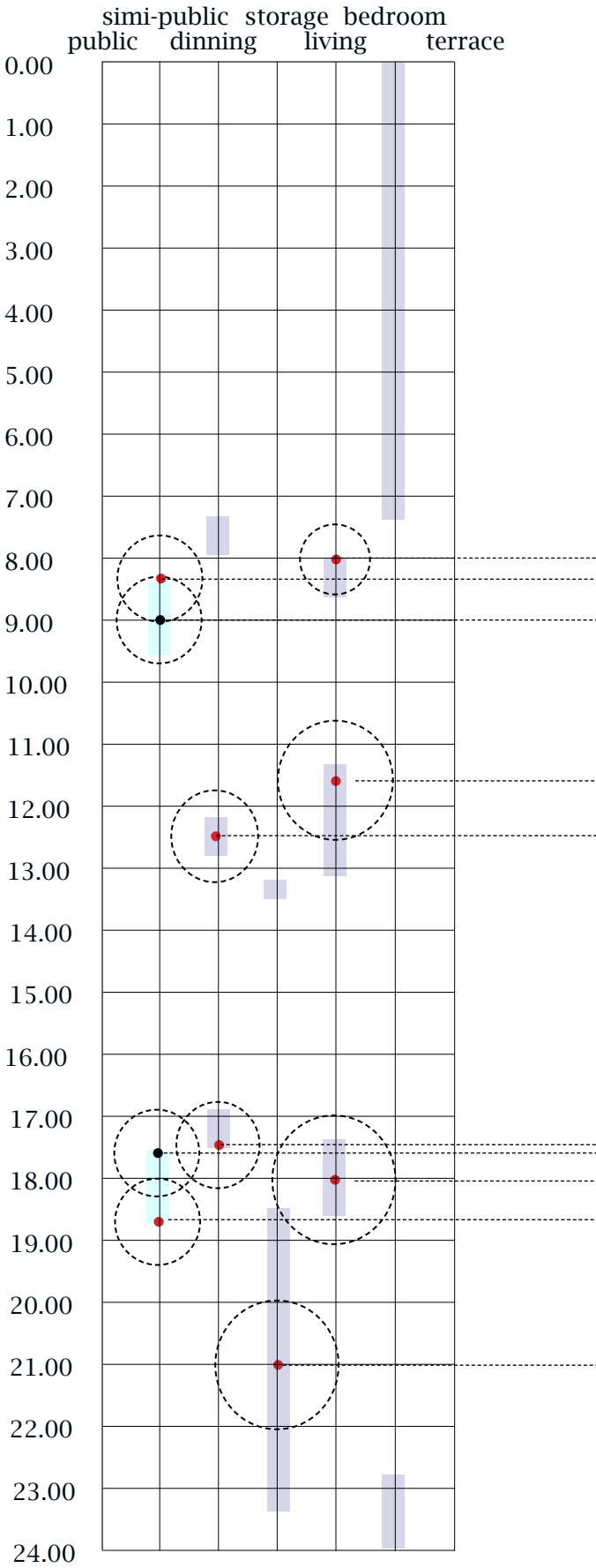


Figure 2.36 Sakura Apartment Space Organization

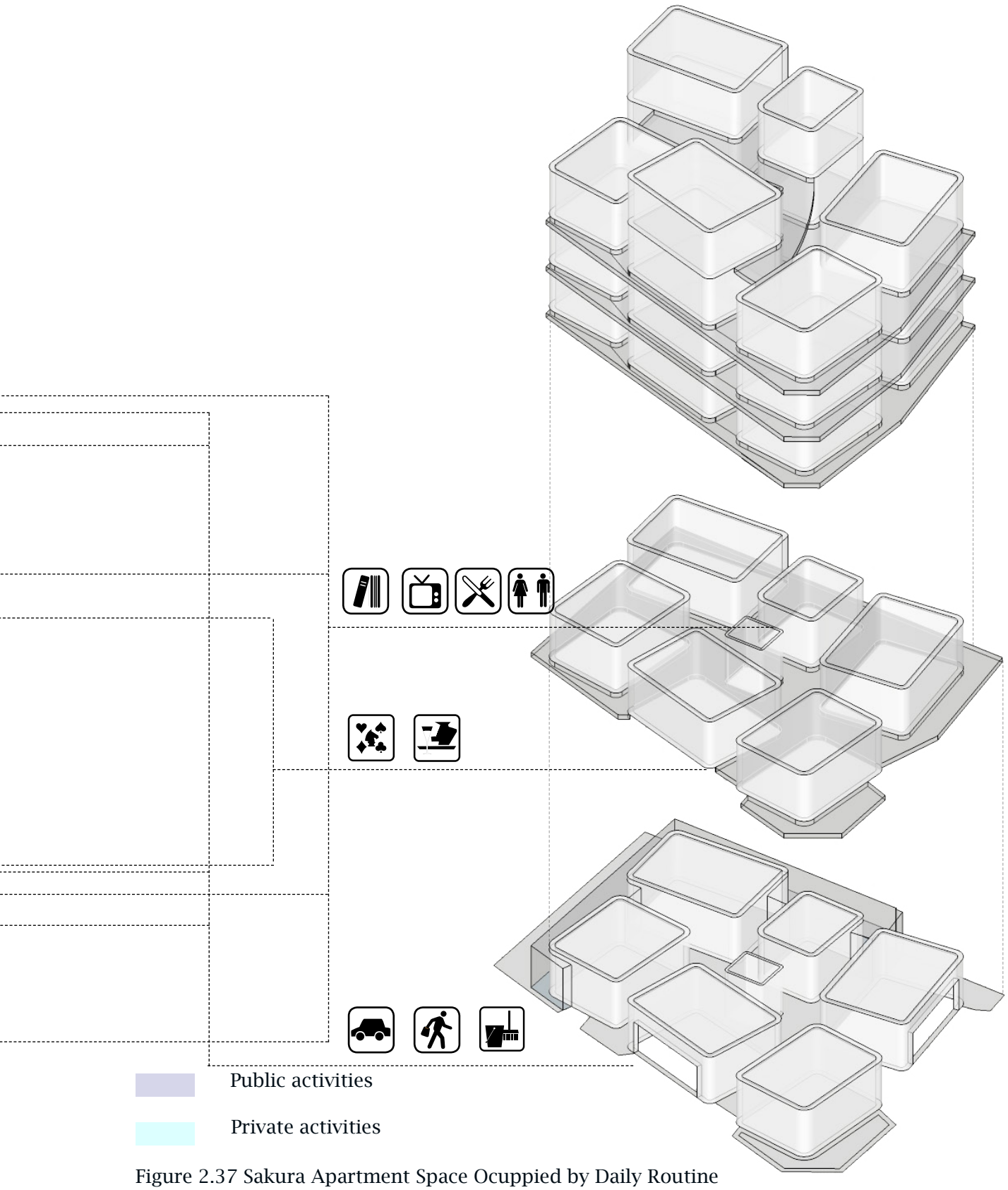


Figure 2.37 Sakura Apartment Space Ocuppied by Daily Routine

Figure 2.38 Facade of Cohousing Community

Cohousing Community

CERUZZI & MURPHY PROJECTS

A hierarchy of privacy is established through scale and axial organization. Communal spaces are defined both by their larger size and by the circulation routes through them. Private spaces are accessible from these public spaces and exist at the ends of circulation routes.

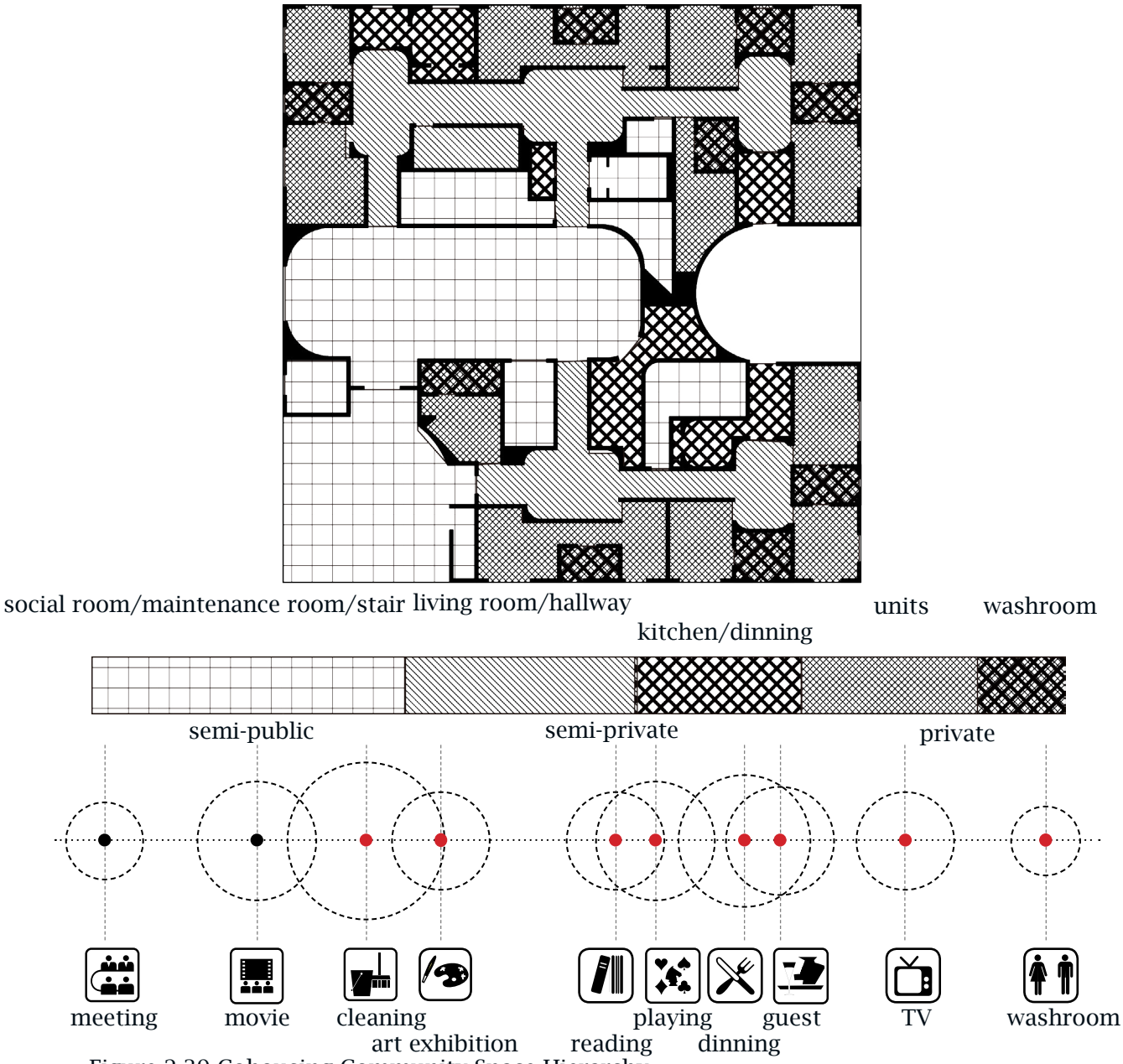


Figure 2.39 Cohousing Community Space Hierarchy

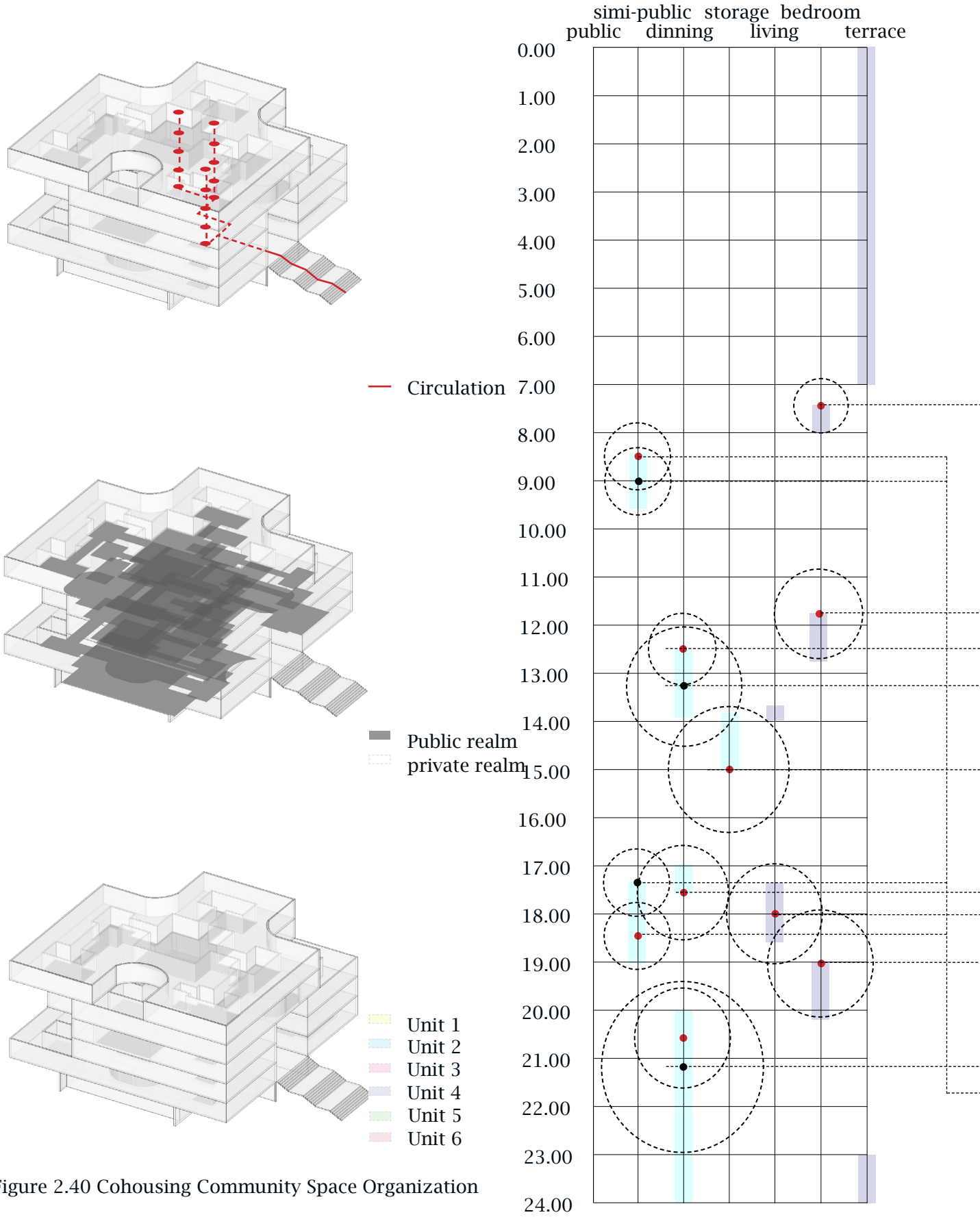


Figure 2.40 Cohousing Community Space Organization

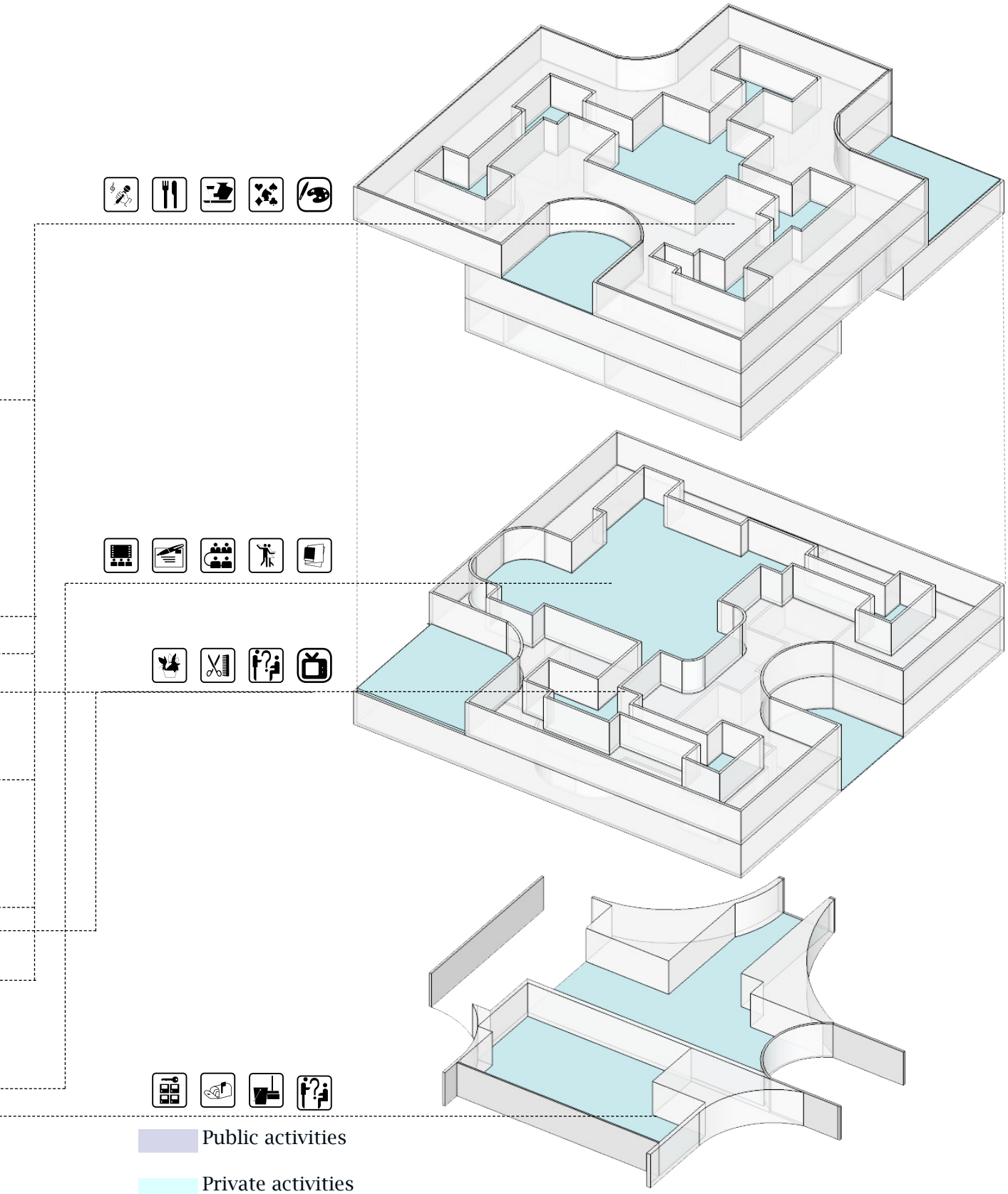
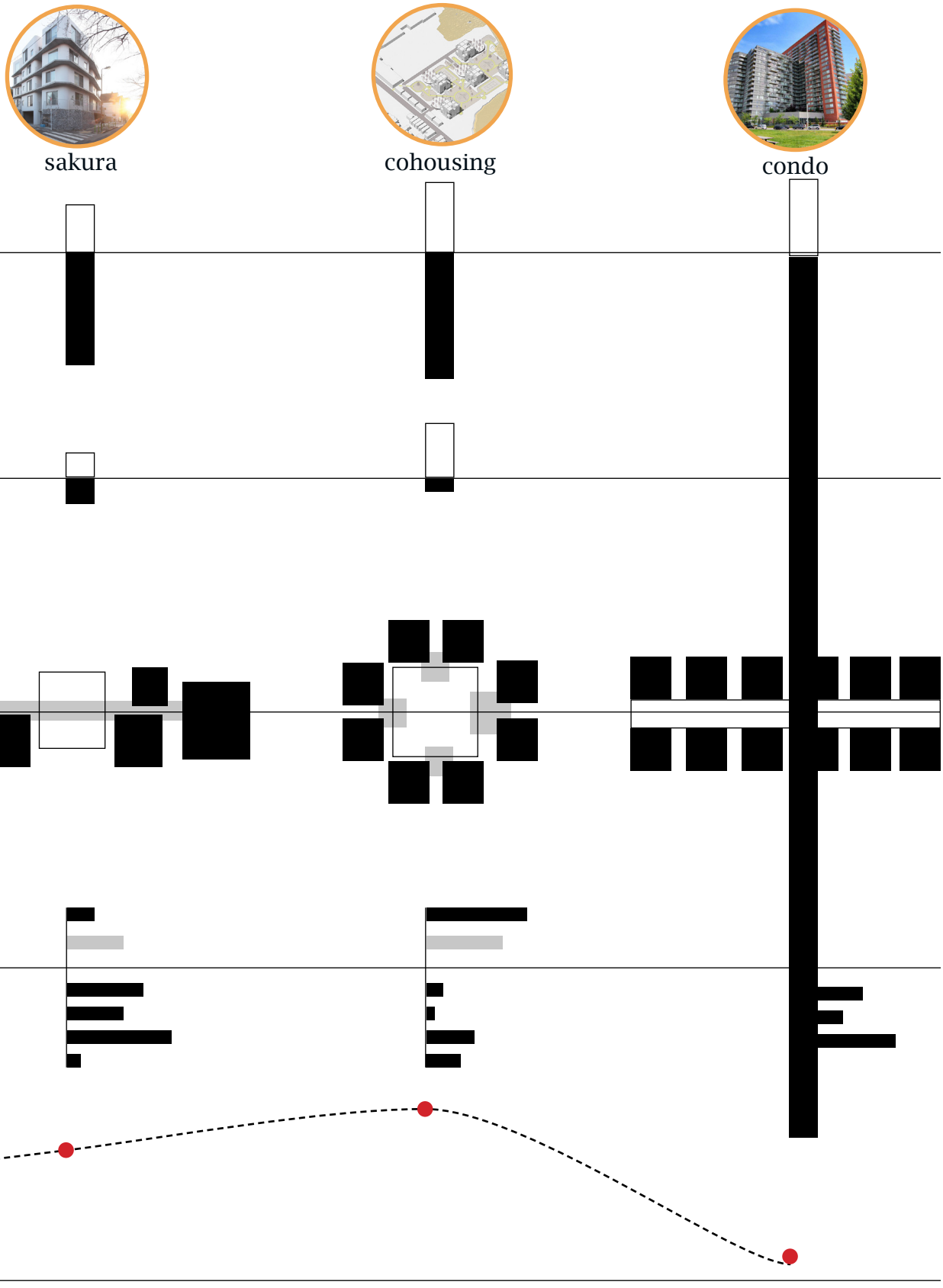


Figure 2.41 Cohousing Community Space Ocuppied by Daily Routine

Figure 2.42 Housing Typology comparison


sakura
cohousing
condo

2.6 Toronto Housing Market

Toronto's existing development trend is visible on the map with main roads, center areas, and developing areas. Compared with a suburban area, the central area still has unresolved problems in residential design.

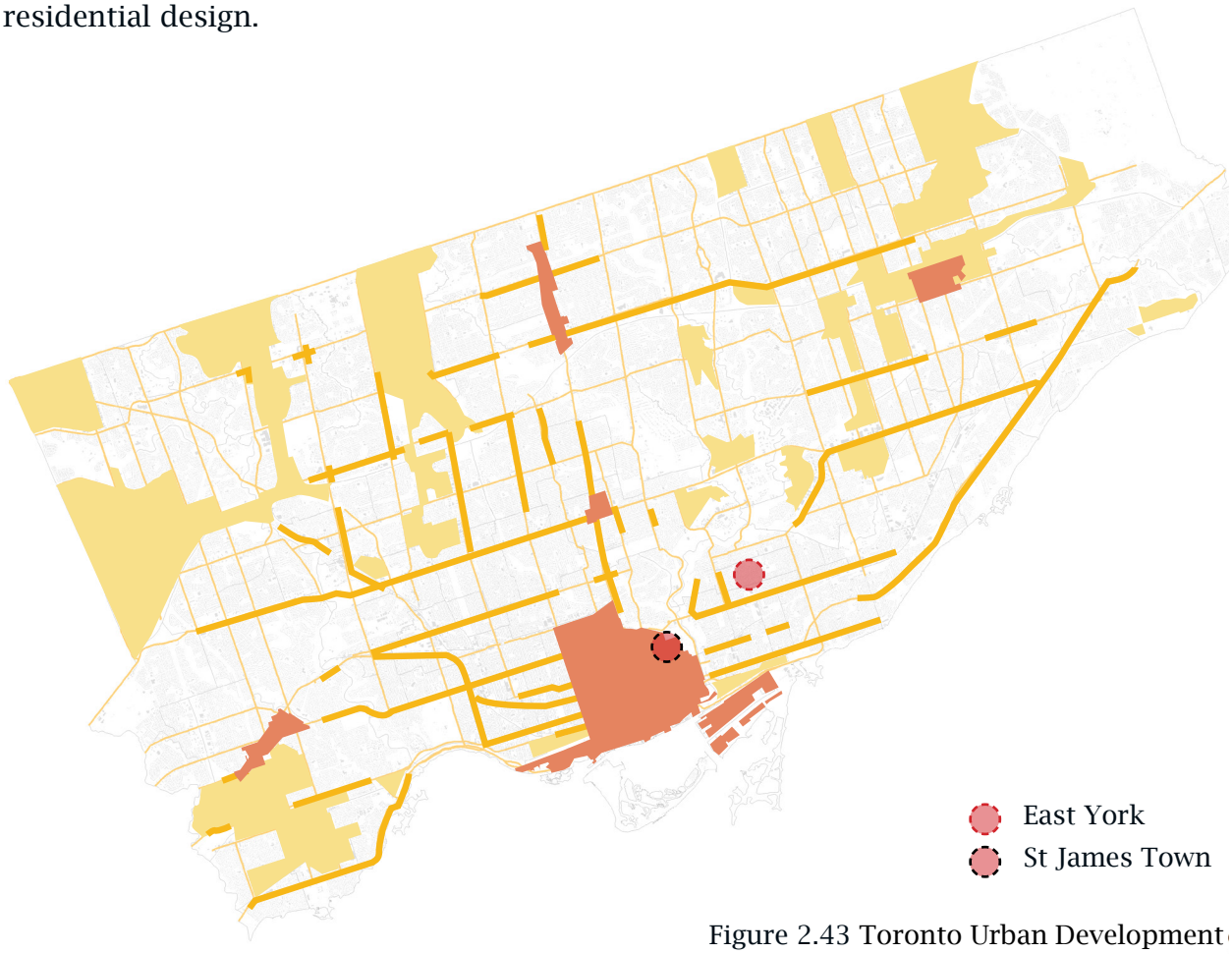


Figure 2.43 Toronto Urban Development

In Toronto, low-rise houses account for the majority of the whole volume of residential housing. Mid-rise and high-rise, which are distributed along the main roads, shoulder a higher population density than low-rise houses.

Figure 2.44 Housing Type Distributuin

Residents in small scale houses have a higher average income. Four bedrooms house is relatively more popular because of their growing families. This can also be proved in the age distribution data that those aging over 35 take the majority population. On the contrary, young couples are the main distribution in mid-rise and large-scale apartments, which mainly consist of one bedroom unit.

S: small scale housing, less than five storeys, town house, detached house
M: Mid-rise housing, five to twelve storeys
L: Large-scale tower, more than twelve sthoreys, condo tower

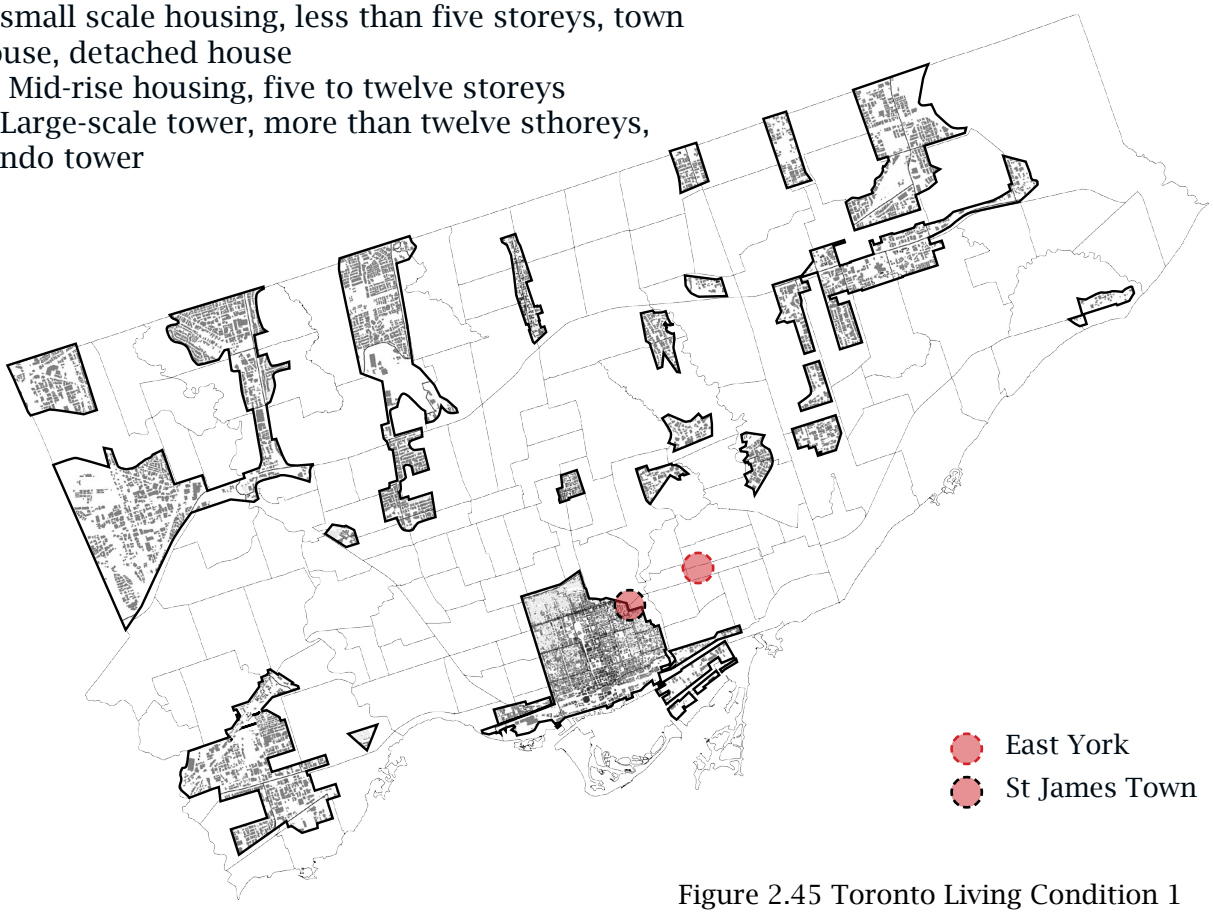
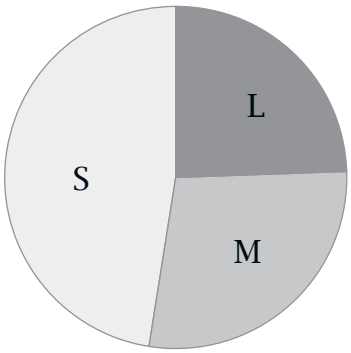
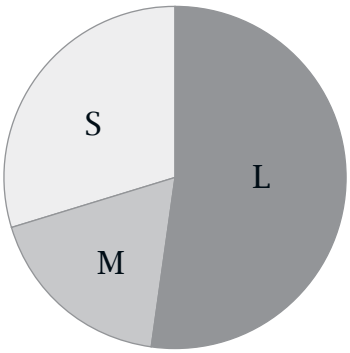


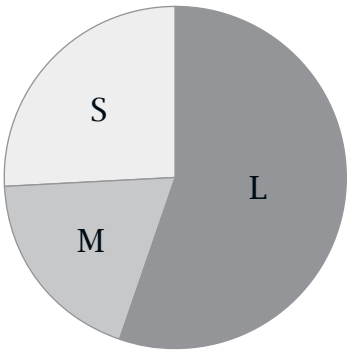
Figure 2.45 Toronto Living Condition 1



average income



family income



total population

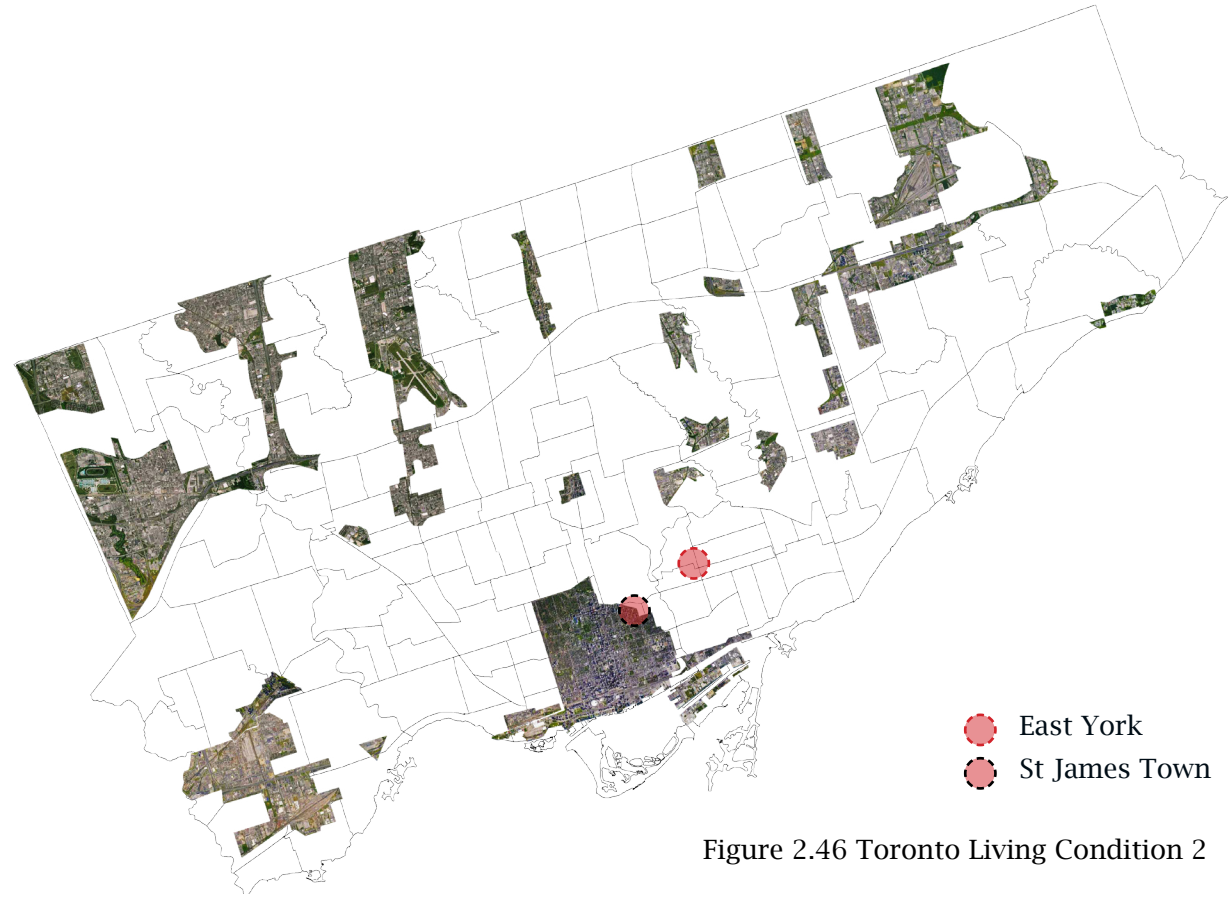
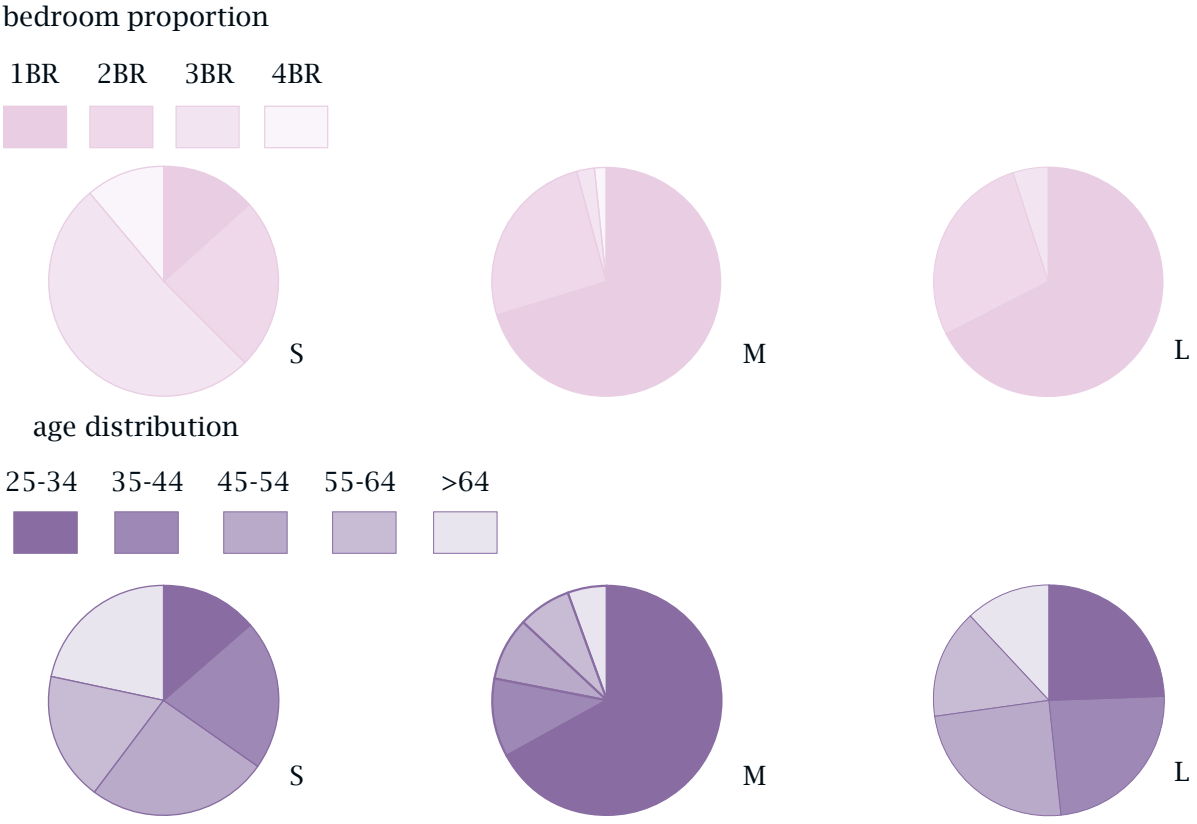


Figure 2.46 Toronto Living Condition 2



2.7 Government Intervention

To achieve the economic efficiency and response to Toronto's appeal concerning community housing, my design can benefit from input by the City of Toronto which has several support programs for community housing.

Subsidized housing options administered by the City of Toronto

Rent Supplement Program

The Rent Supplement Program is rent-geared-to-income housing with provate landlords. The household pays their rent-geared-to- income amount directly to the landlord and Housing Connections pays the rest of the rent to the landlord. Definition resource: http://www.housingconnections.ca/HousingInfo/RentSupplement.asp

Mayor's Task Force

Mayor John Tory appointed an independent six-person Housing Task Force to take a hard look at how Toronto Community Housing serves the people of Toronto and how it is governed.

Toronto Transitional Housing Allowances

New housing allowances to help large families and those needing modified units.

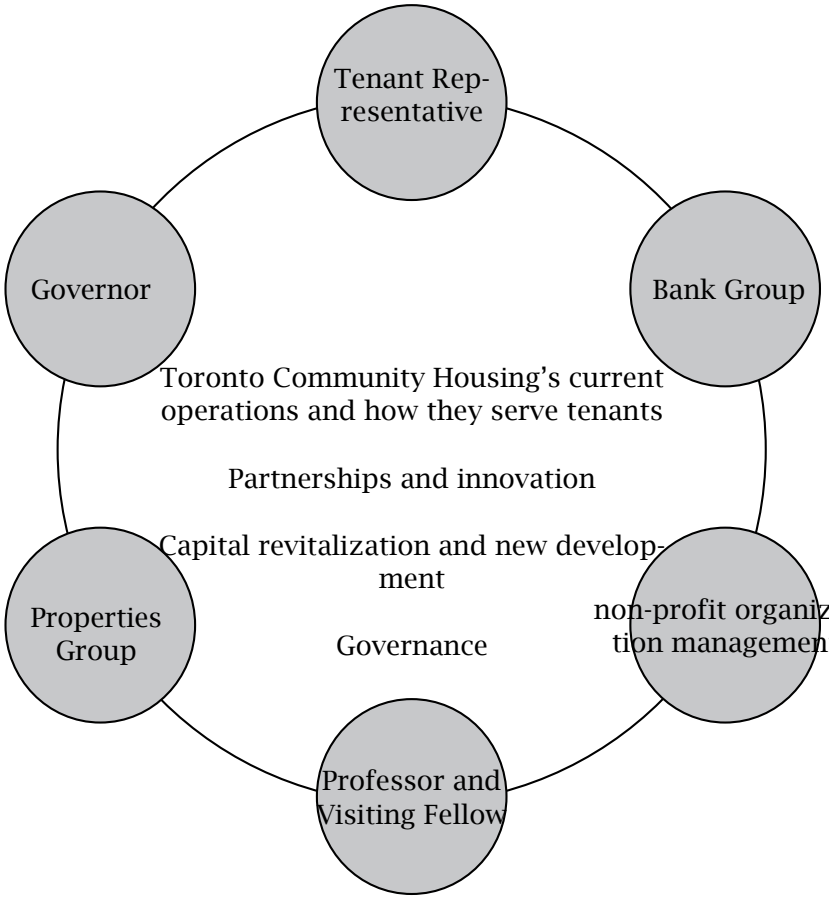


Figure 2.47 Mayor's Task Force

Toronto Housing Organization

Housing Connection
The majority of subsidized housing units in Toronto are allocated through one centralized waiting list, managed by Housing Connections. This includes rent-geared-to-income units in seniors' residences, retirement homes, nonprofits and co-ops
Definition resource: http://www.housingconnections.ca

Coordinated Access to Supportive Housing (CASH)
Supportive housing serves people with mental health and addictions issues, and there are many different supportive housing programs across the city, including some specifically for seniors
Definition resource: http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=1ae480695e127410VgnVCM10000071d60f89RCRD

Co-operative Housing Federation Toronto (CHFT)
CHFT provids development assistance for non-profit housing co-operatives. Projects have included townhouses and apartments, new construction and the rehabilitation of existing buildings
Definition resource: http://co-ophousingtoronto.coop/

Other Social Housing options in Toronto

Co-operative Housing
Co-operative housing is owned by residents and governed by a volunteer Board of Directors. In this type of co-op, residents are voting members and they assist with operations, but they do not have any individual equity and cannot sell their units.

Non-profit Housing
Non-profit housing is either owned by municipal housing corporations accountable to local governments, or is owned by private not-for-profit groups.
Definition resource: http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=16190e2afa527410VgnVCM10000071d60f89RCRD

Long-Term Care Homes
They provide around the clock supervision, nursing care and assistance with personal care and meals. They also provide shorter term stays for up to 90 days a year for those needing respite or convalescing.

Retirement Homes
Retirement homes usually have some on-site services such as housekeeping, dining or recreational programs, but they do not provide the same level of care as long-term care homes.

Close the Housing Gap

To find out where to locate my proposal in Toronto's housing market, this diagram shows the majority housing types according to the funding process.

The rent price of senior housing is even higher than the everage market housing rent. This is because of the service fee and additional infrastructure such as medical equipments are included.

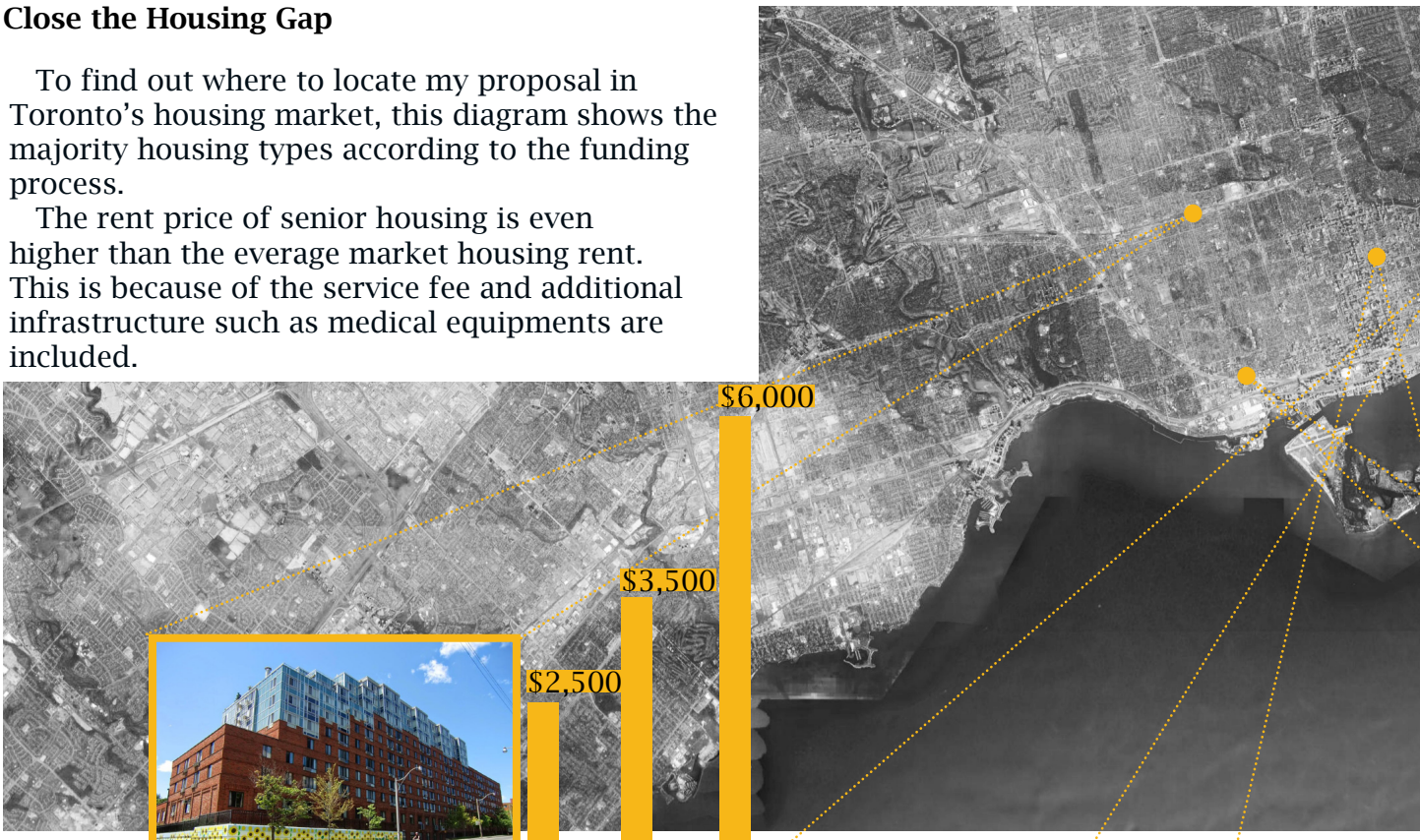
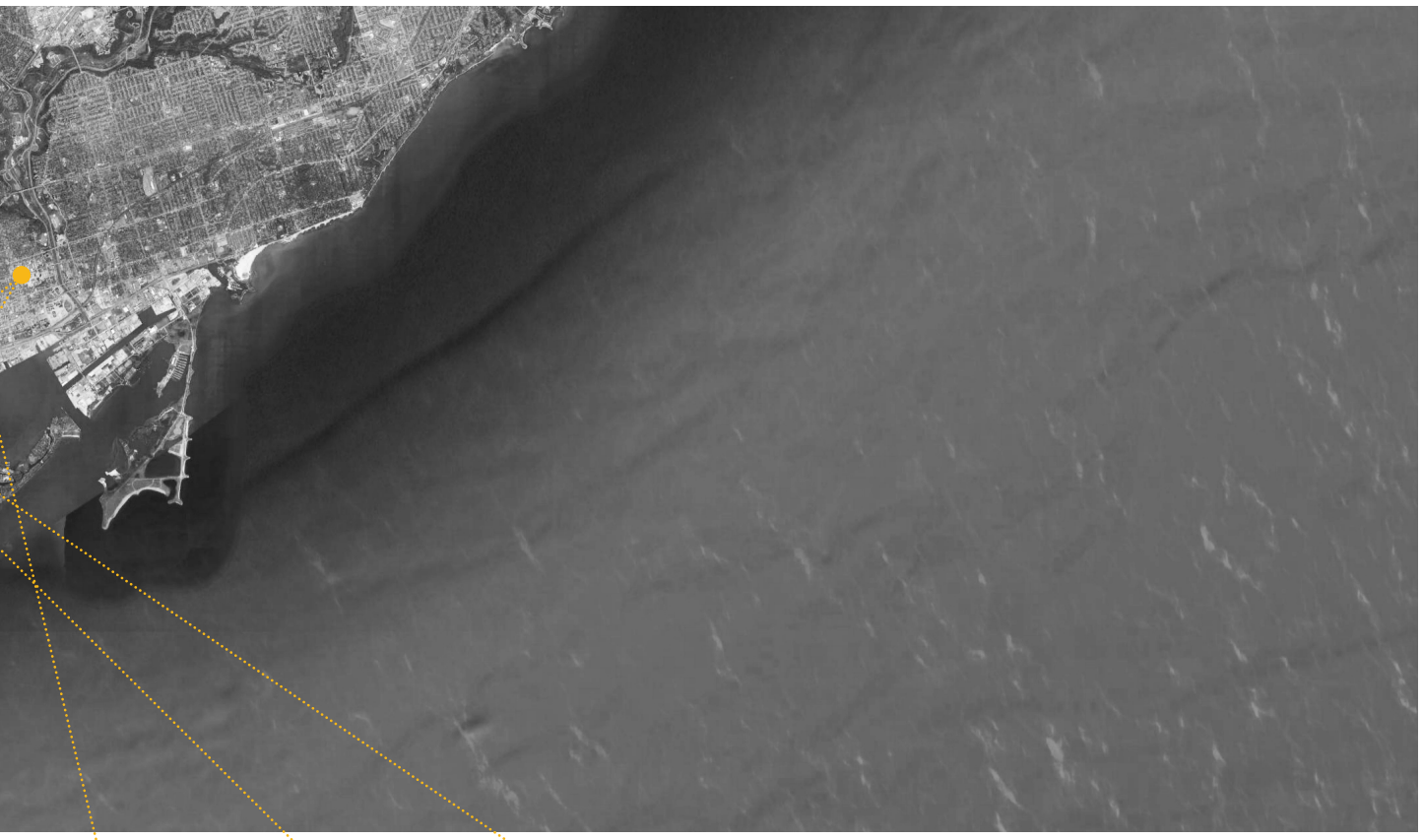


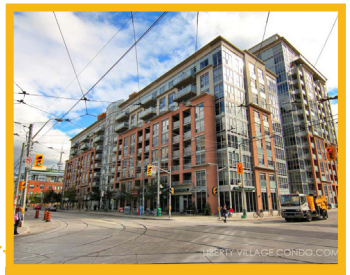
Figure 2.48 Toronto Housing Division



s
Housing

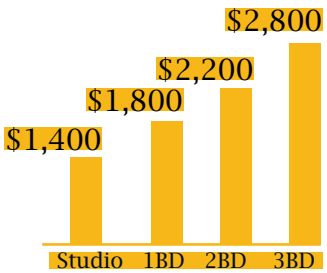
0

D



DNA
Apartment

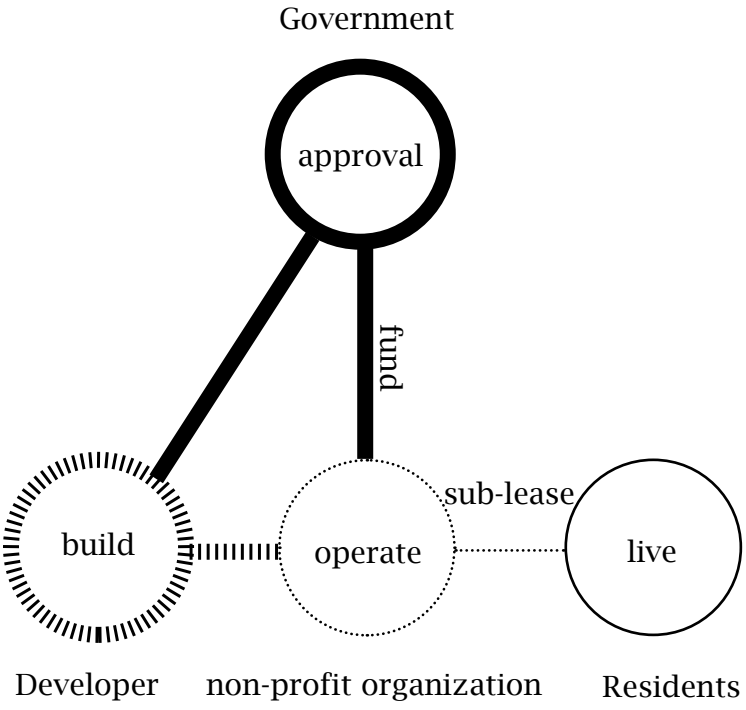
Bridge Condo
Condo



Rental Housing

Market Housing

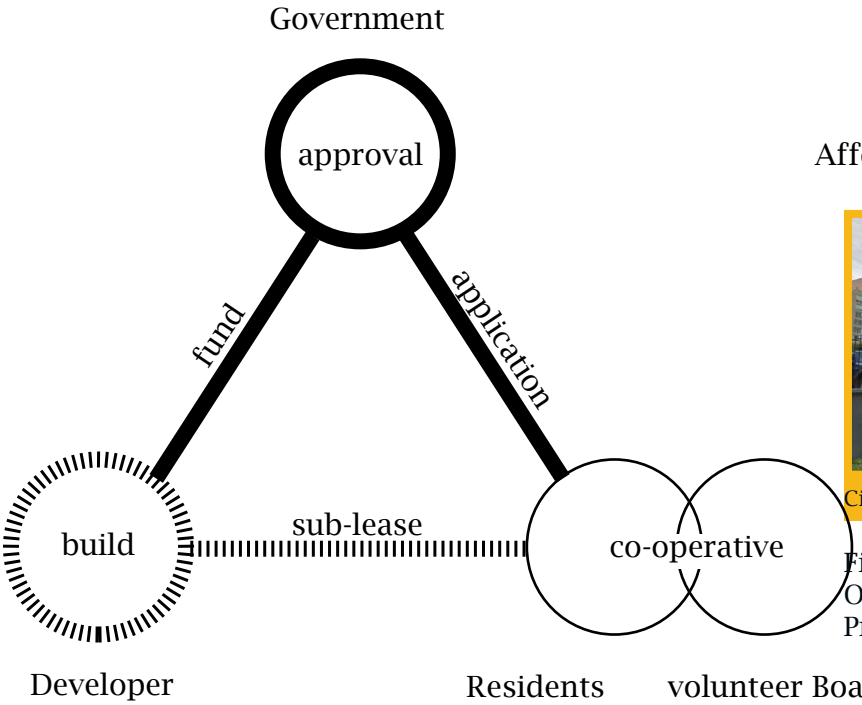
Building Process



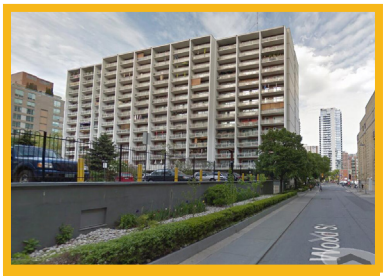
Retirement Homes

Christie Gardens

Figure 2.49 Retirement Home Building Process



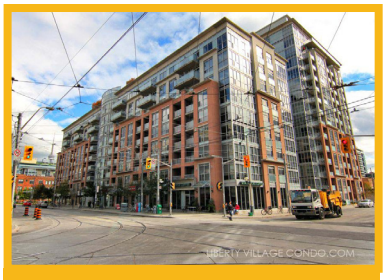
Affordable ownership Housing



City Parks

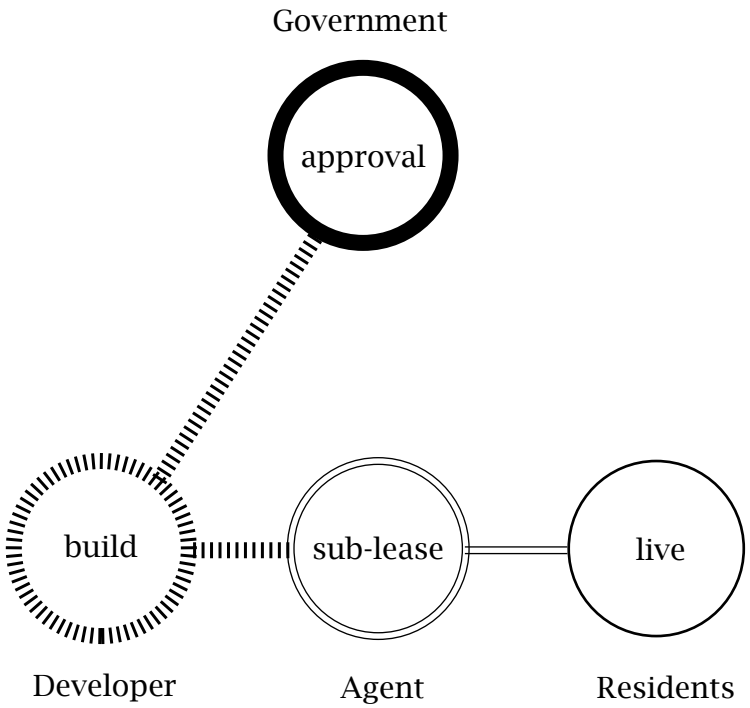
Figure 2.50 Affordable Ownership Housing Building Process

Rental Housing



DNA

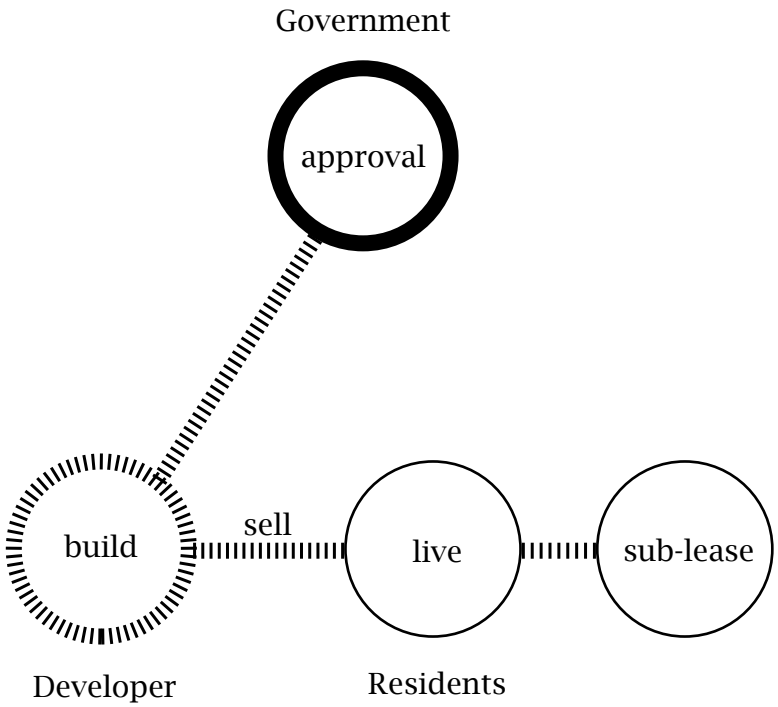
Figure 2.51 Rental Housing Building Process



Market Housing

Bridge Condo

Figure 2.52 Market Housing Building Process



Building Process Proposal

In this proposal, a non-profit developer can gain funding from the government in return of community contribution. A resident autonomy will found before the construction process. To achieve the same goal(social integration) this residents autonomy will take part in all the building process and future living to maintain a self-organizing community.

Institutional Organization

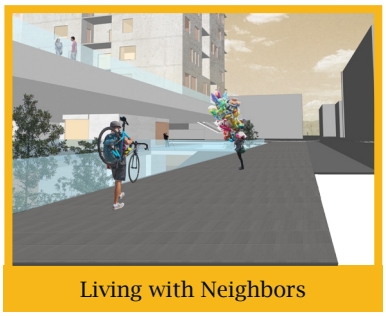
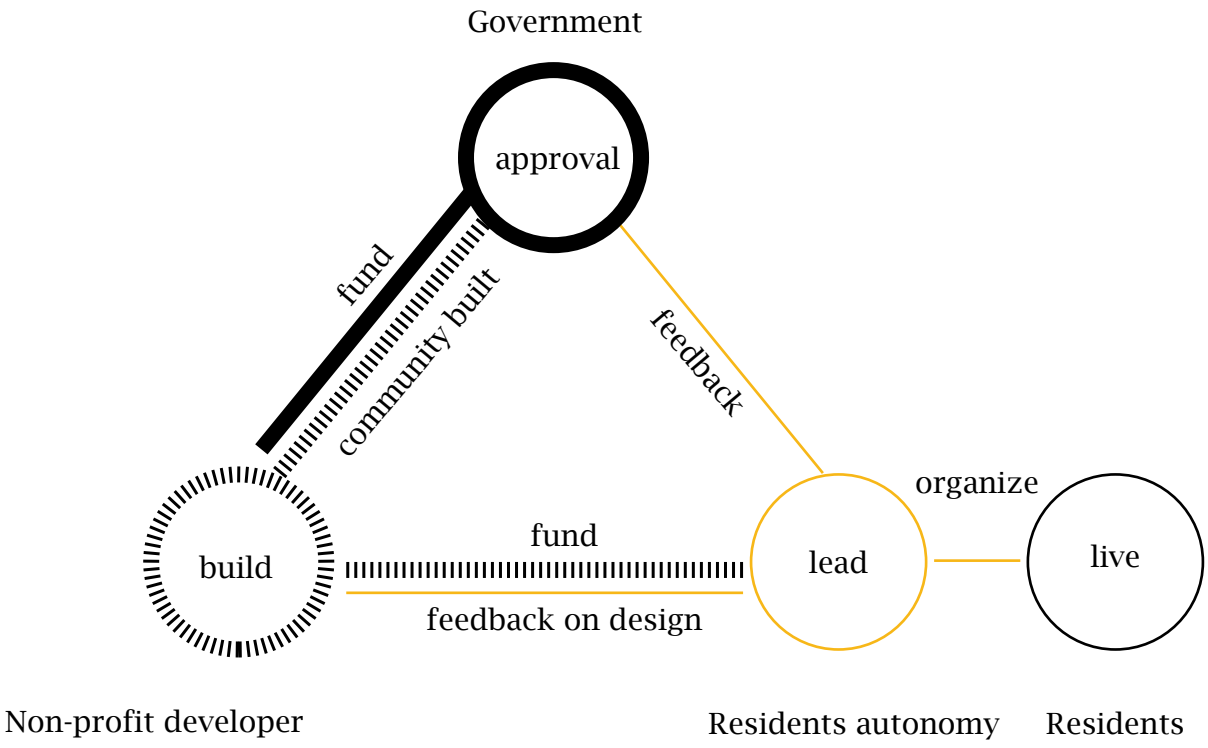
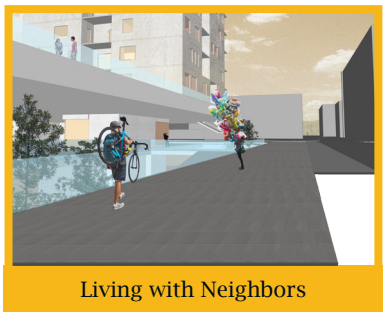


Figure 2.53 Proposed Institutional Prganization Building Process



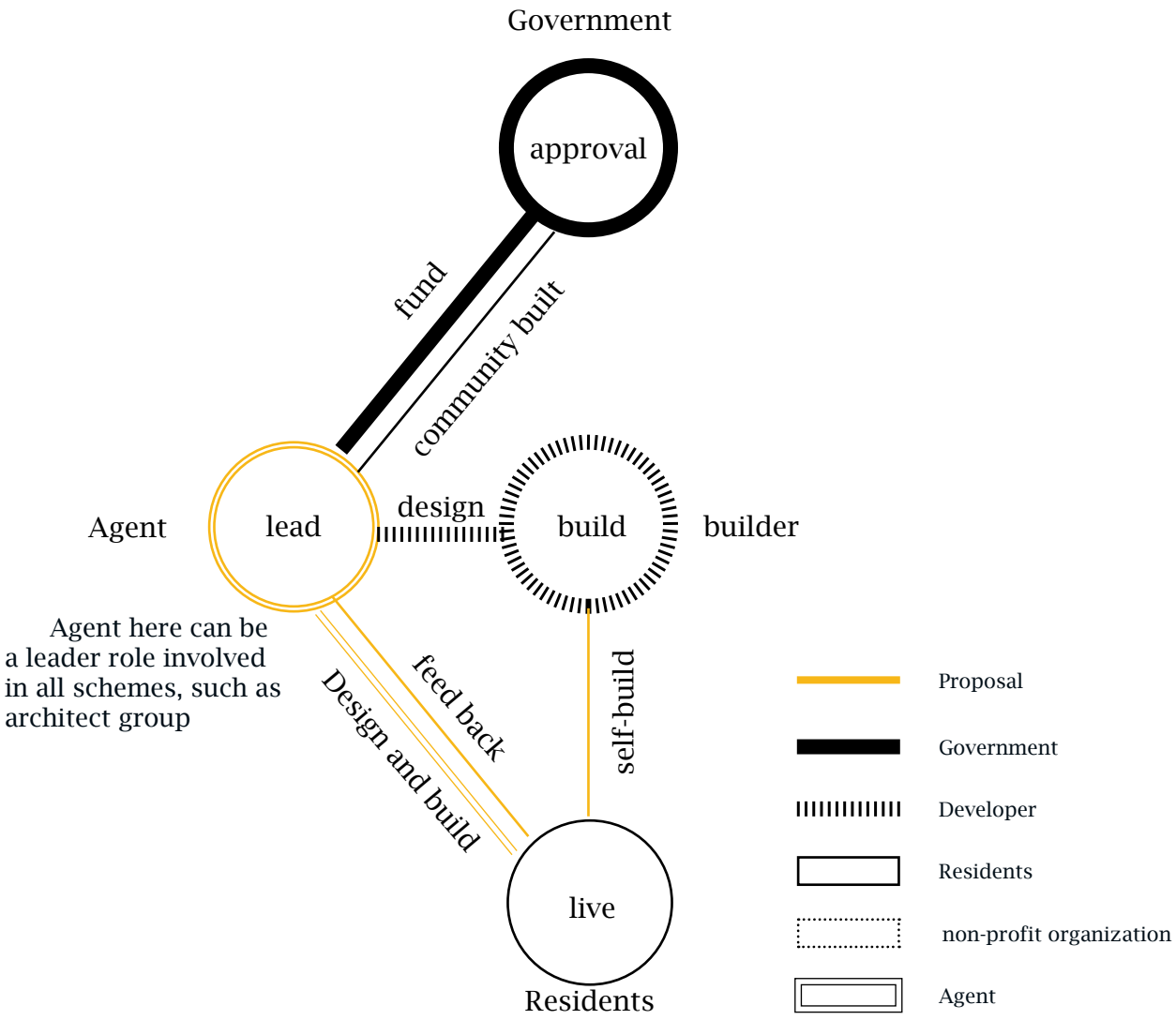
Self
Organization



Living with Neighbors

Figure 2.54 Proposed Self-organization Building Process

Compared with the first proposal, this one takes the developer out of the fund chain. In stead, an agent, who is also a resident in this community, takes the role as a leadership. The whole process will be transparent to all the other residents.



PART III

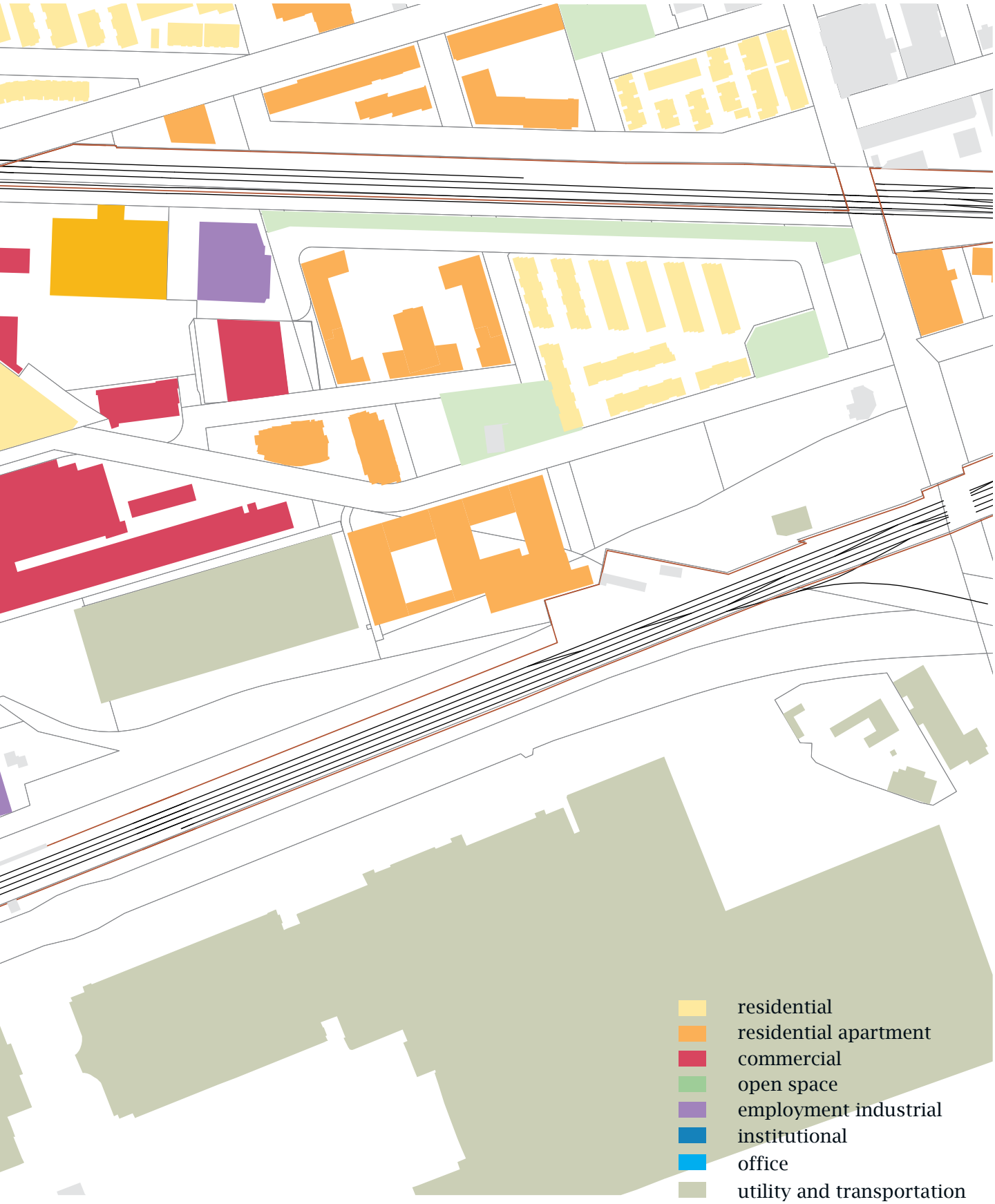
SITE AND COMMUNITY DESIGN

Figure 3.1 A View of Liberty Village

3.1 Liberty Village

As a new active developing district, there are some recent housing projects built around the site. However, high-rise condos and low-rise detached houses all look quite similar. My proposal should be the new paradigm of neighborhood living and stand out from all the residential projects around. Land use conditions around the site show the location of program, which will suggest of the new constructed program.

Figure 3.2 Liberty Village Land Use

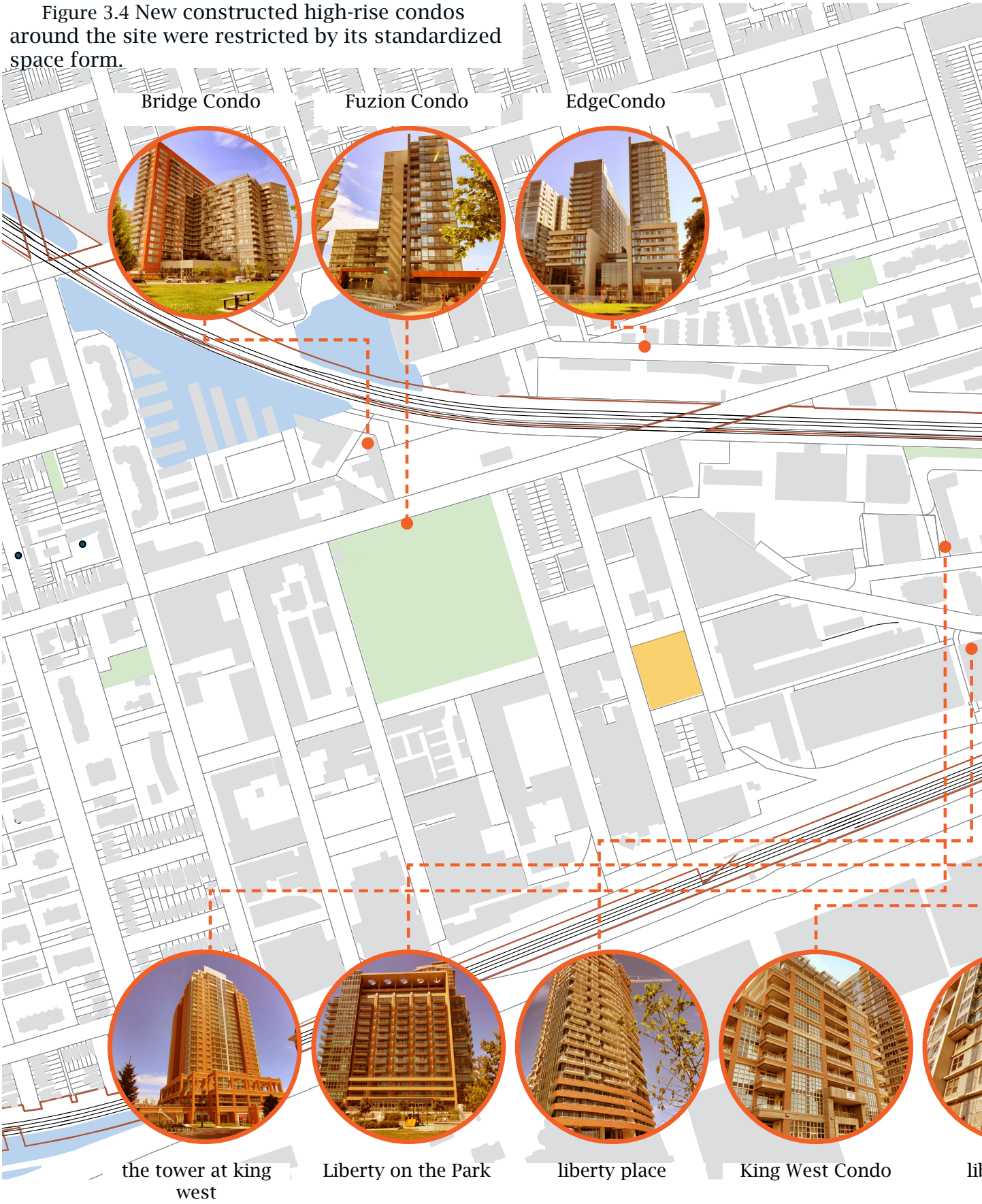

residential
residential apartment
commercial
open space
employment industrial
institutional
office
utility and transportation

Around Liberty Village, there are some community housing projects distributed along the main road. But, there is no community project in the Liberty Village area.

Figure 3.3 Community Housing around Liberty Village


main road
community housing

Figure 3.4 New constructed high-rise condos around the site were restricted by its standardized space form.



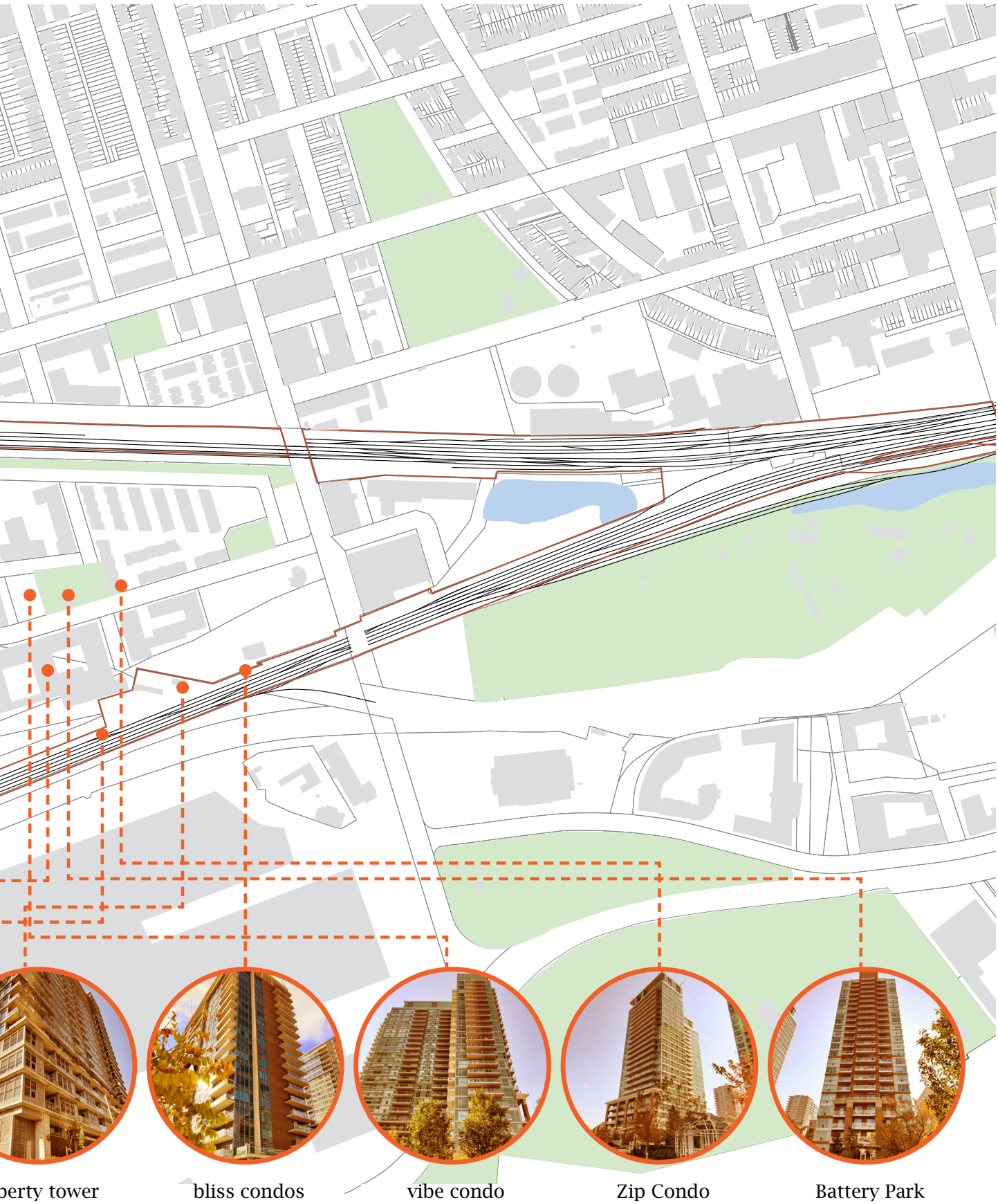
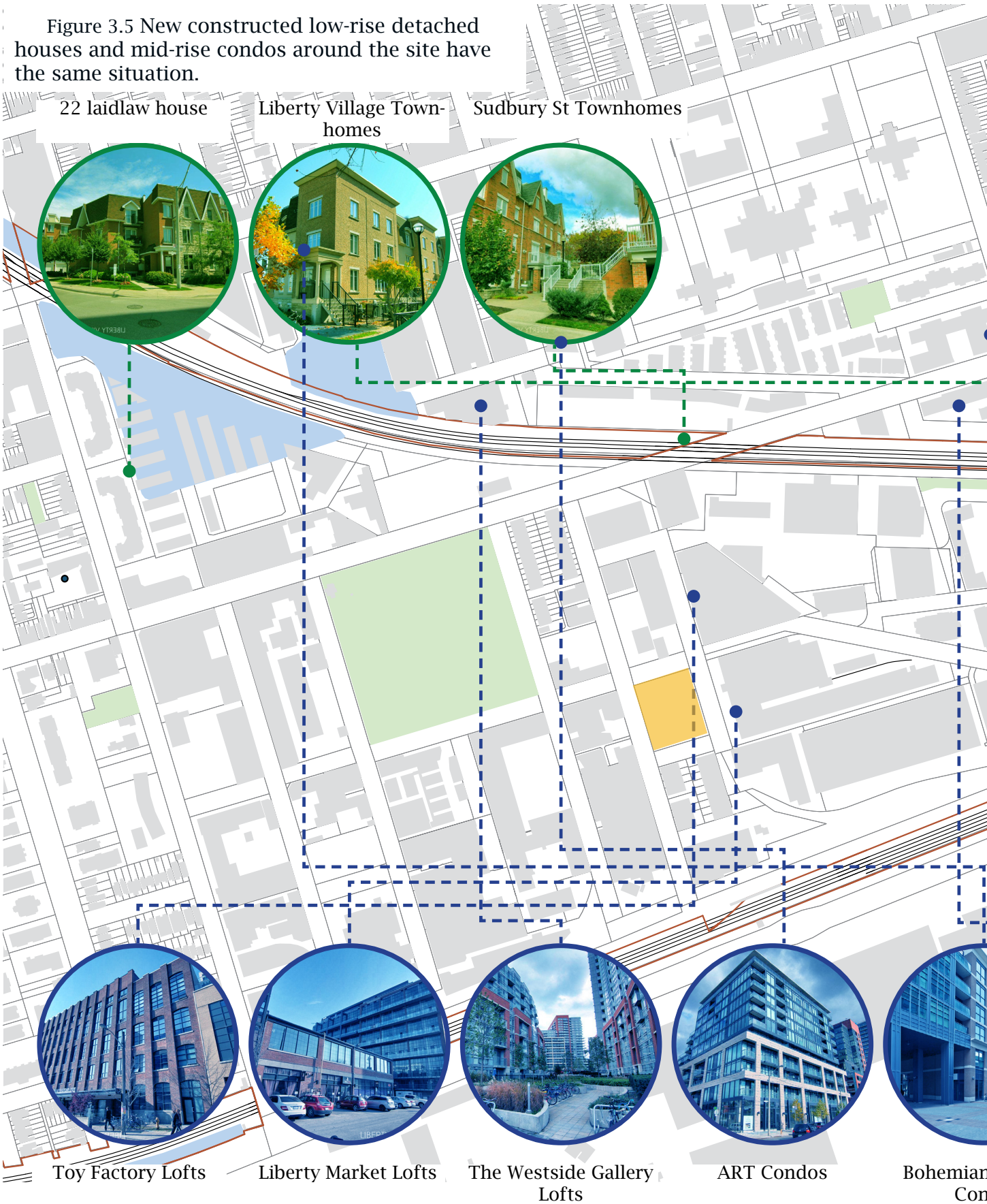
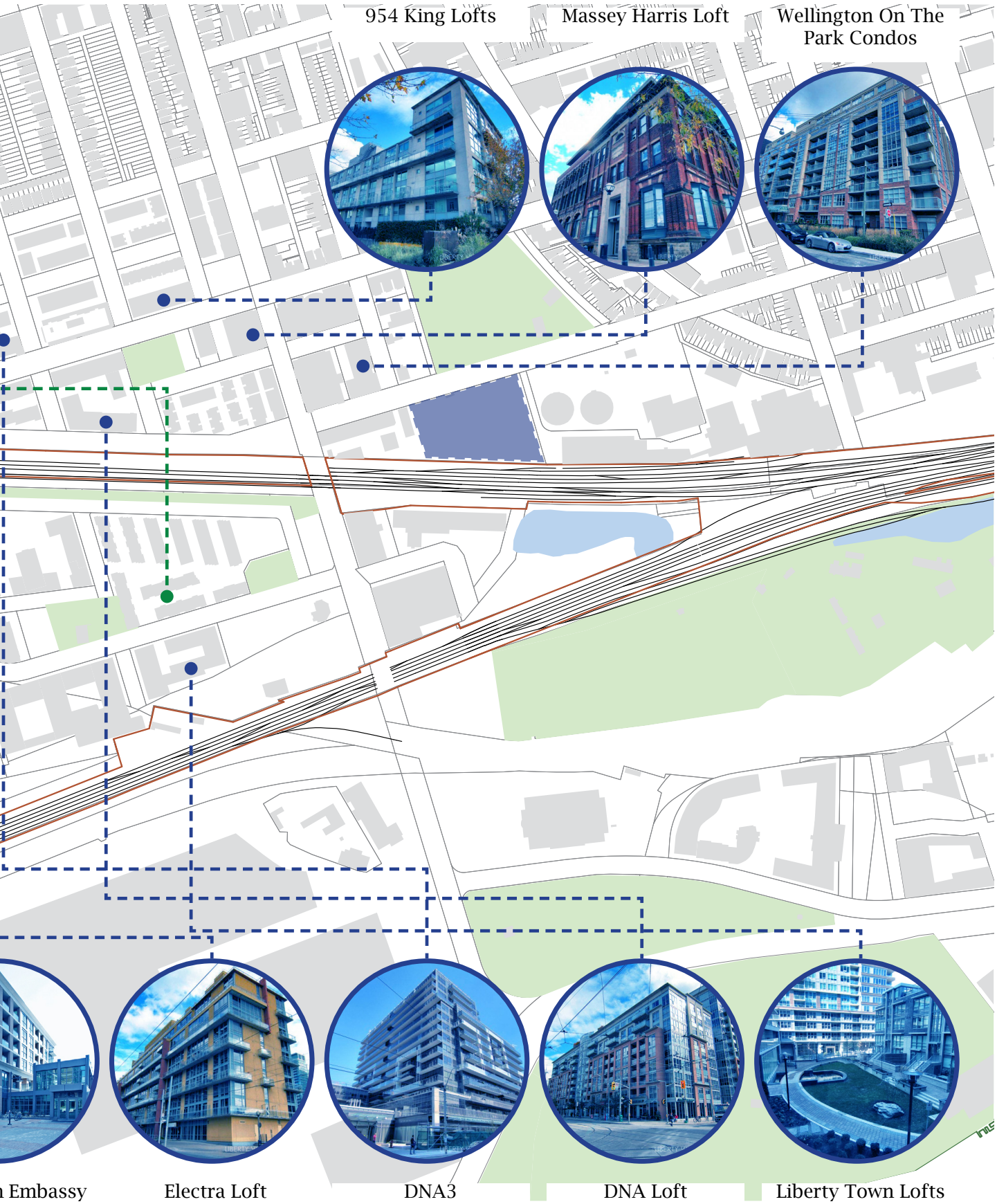

berty tower
bliss condos
vibe condo
Zip Condo
Battery Park

Figure 3.5 New constructed low-rise detached houses and mid-rise condos around the site have the same situation.




954 King Lofts
Massey Harris Loft
Wellington On The Park Condos
n Embassy ndos
Electra Loft
DNA3
DNA Loft
Liberty Town Lofts

3.2 Community Design

The potential residents are determined by the group density within a driving radius of 20 minutes. Based on four scenarios, the program of each spatial hierarchy can be determined.

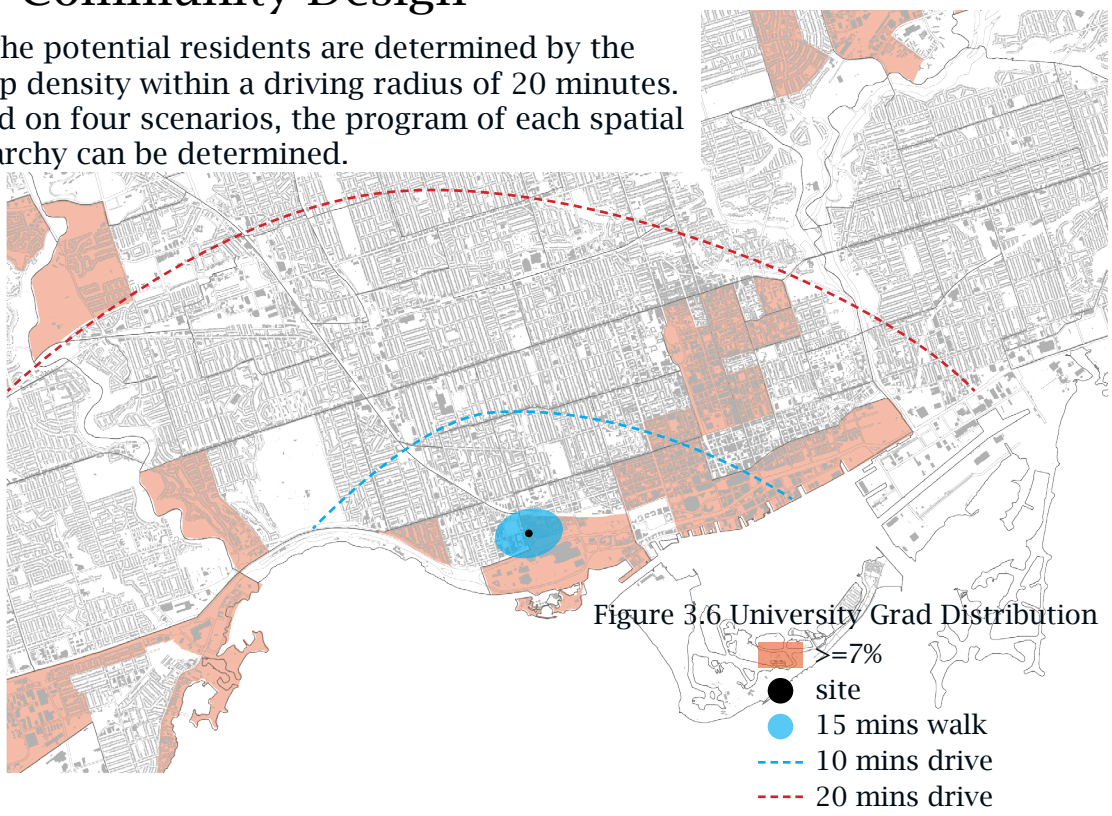


Figure 3.6 University Grad Distribution

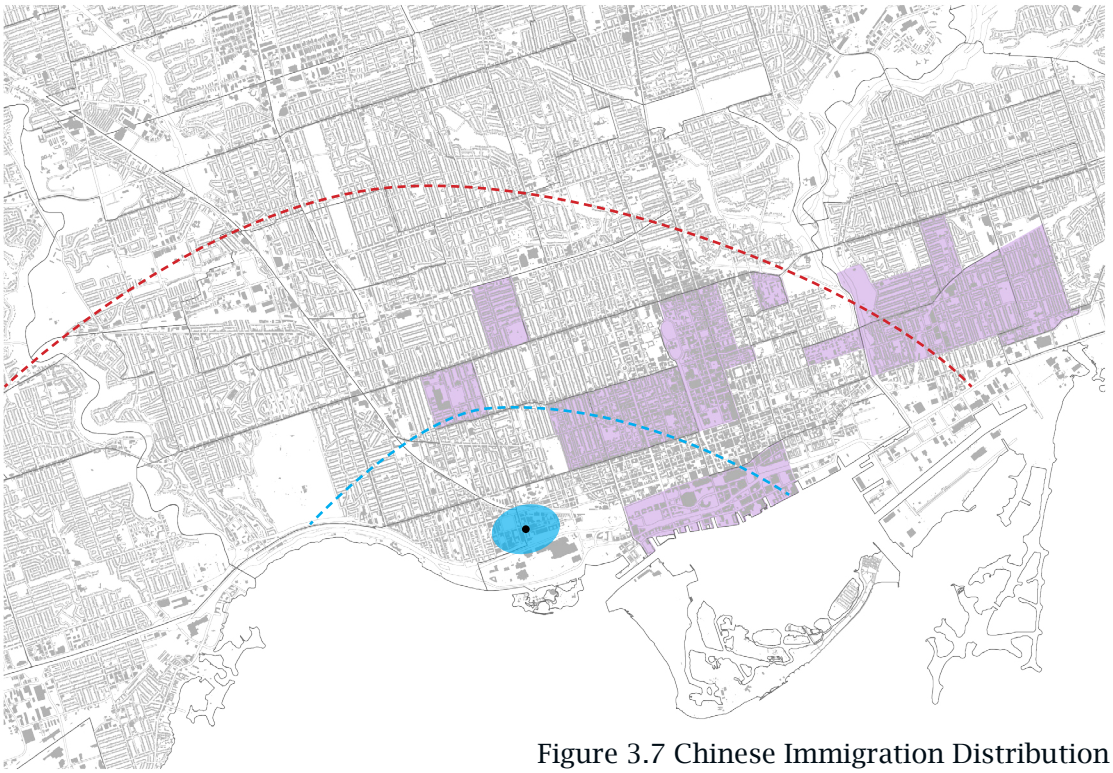


Figure 3.7 Chinese Immigration Distribution

Figure 3.8 Self-employment Distribution

>=10%

Figure 3.9 Retirement Population Distribution

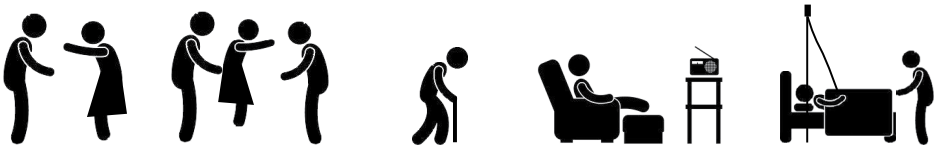
>=300

Scenario Design

GRADUATES: People from different backgrounds want to living together

SELF-EMPLOYED PROFESSIONALS: People from different vocationss want to have a live-work life with other professionals

IMMIGRANT FAMILIES: Young families want to find a flexible choice for changing lifestyle



SENIORS: People who enjoy a very active lifestyle trusting one another and trusting local institutions

Figure 3.10 Scenarios

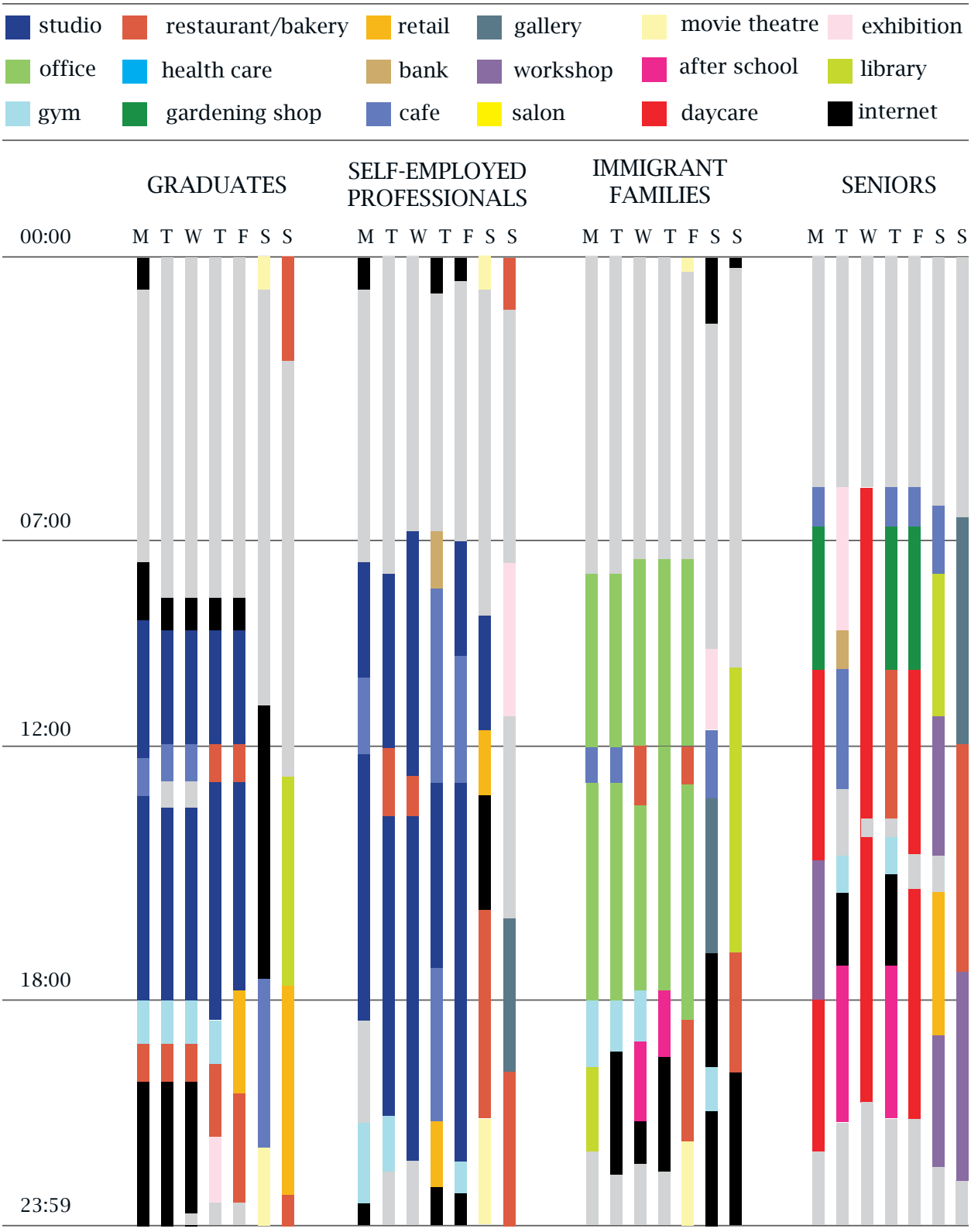
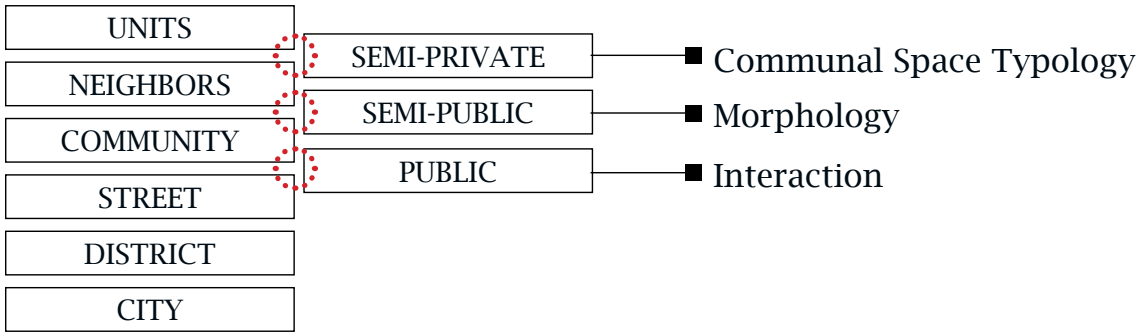


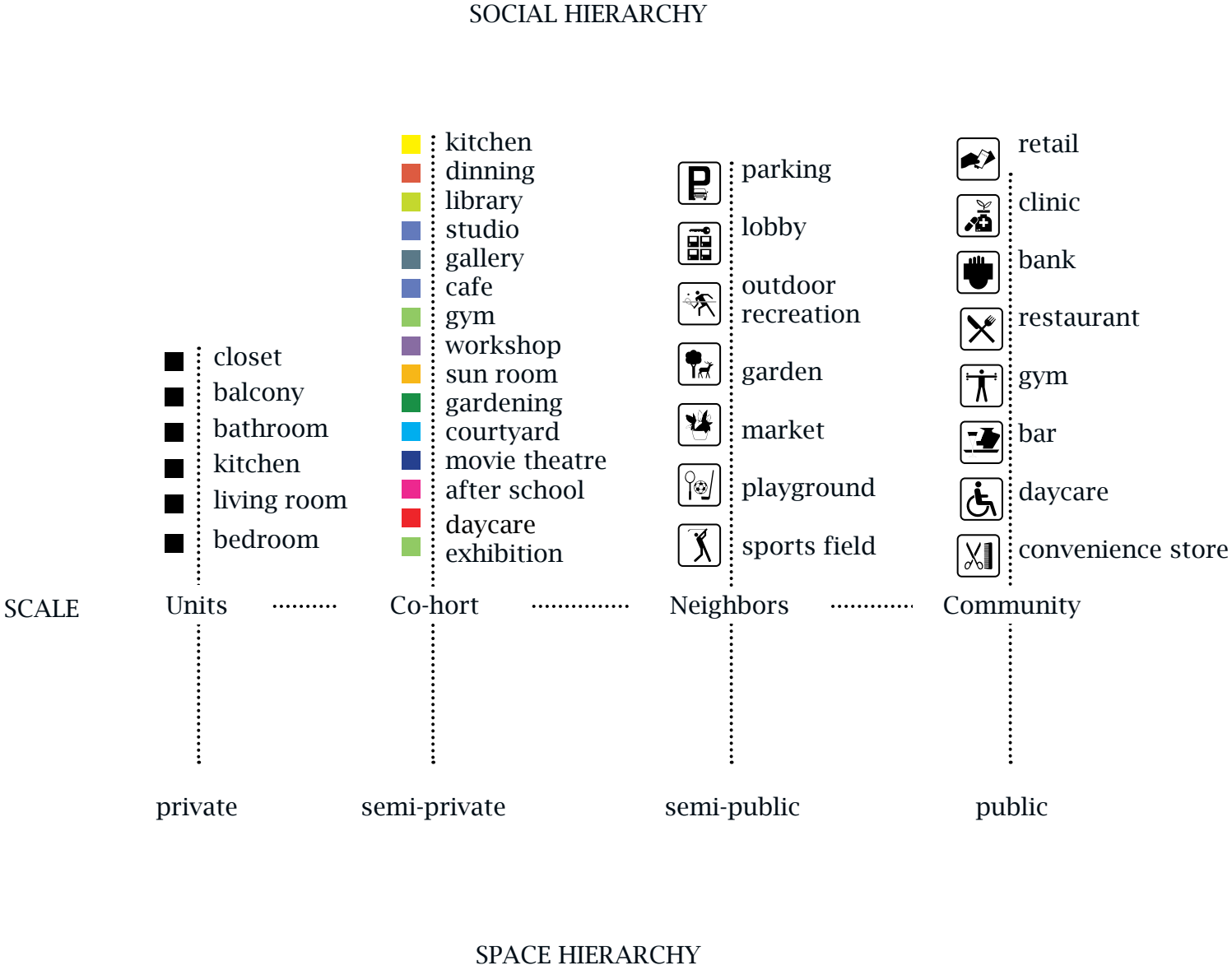
Figure 3.11 Daily Activities for Each Scenarios

Figure 3.12 Two parallel hierarchy should fit with each other. The program is the connection between these two hierarchy.



Program Hierarchy Design

Figure 3.13 Application of the activities programs in each special hierarchy is according to the spatial proportion.



PART IV
DESIGN PROPOSAL

4.1 DESIGN STRATEGY

Conclusion from Analysis

The structure of the community has been designed according to scenarios' demands in the last chapter. Through the spatial and social activity analysis in the previous part, we can conclude that the proportion of semi-public and semi-private space is the decisive factor that determines integration performance. In other words, the larger proportion of semi-private or semi-public space it contains, the more active and social this community is. Additionally, along the space organization from the exit of the community to the door of a private unit, the intersections turn into a hot spot of social gathering. For example, a lobby can be a cross of semi-public (stair case) and public space (open yard). Such an effect is especially evident in the mid-rise and high-rise residential projects, which usually have a more complex spatial organization. The quality of a community depends on the manipulation of these factors. After these key factors jumped out from the analysis, my design combined applications of these characteristics. This design explores the architectural implication from three aspects.

Increase the proportion of semi-private and semi-public space

By minimizing the private space and opening the floor plates, the communal space has been increased in both the cohort group and the neighbor group. The shared area can shoulder various in-house functions to relieve unit limitations. A shared kitchen can prepare a celebratory dinner for the group or guests, which literally extends the space limitation of a unit in the tower. It might be slightly more expensive to have communal space, but in the long run, residents can benefit from the extendible functions as a growing community.

Connect two hierarchical social groups

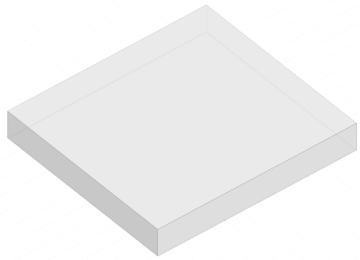
The public space connecting two hierarchies is not a physical form separating them. But, it links two hierarchies to let the residents access each other. In doing so, a clear boundary has been eliminated to embrace an open social and spatial mobility. For example, the residents living on a higher floor of a neighbor group have a visible connection to the core

sharing space. This can be realized by cutting down part of the floor plate.

Transform the space into either hierarchy

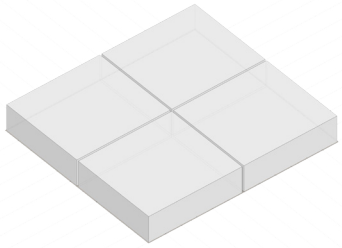
By employing a foldable structure on the physical form between a unit and the sharing space, the unit can have a direct connection with the communal space when it is required. And the space around this foldable structure can be transformed into either private space or semi-private space. This provides a flexible choice of space use for the residents, which enlarges their initiative to interact.

Application for Design



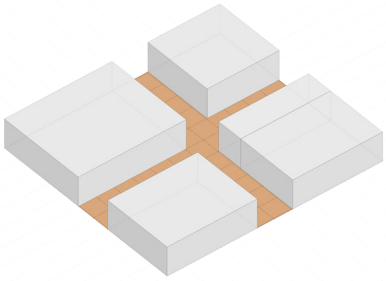
Step 1

grid
1.8m*1.8m



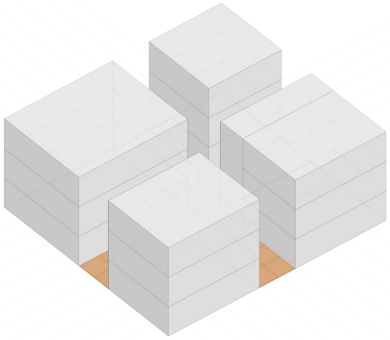
Step 2

units
The floor plate is devided into 4 equalized private units.



Step 3

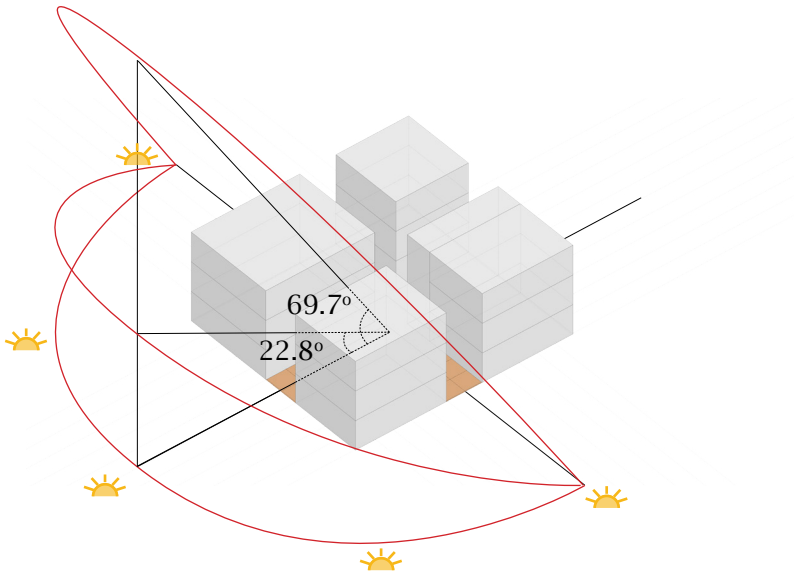
communal space
By seperating variable private units area the communal space is defined as a cross hallway.



Step 4

The neighbor group is consist of three cohort groups which have 12 private units.

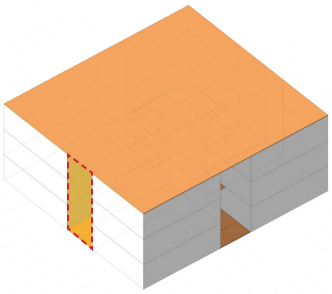
Figure 4.1 Design Process



Jun 21		Hours of Illumination:	
Sunrise:	4:36	Sunrise to Sunset:	15.45
Local Noon:	12:19	Civil Twilight:	1.20
Sunset:	20:03	Total:	16.66

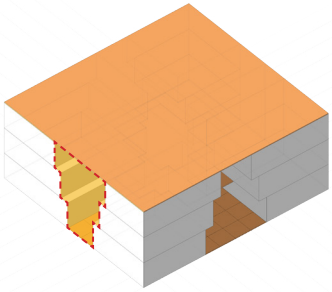
Dec 21		Hours of Illumination:	
Sunrise:	7:48	Sunrise to Sunset:	8.92
Local Noon:	12:16	Civil Twilight:	1.10
Sunset:	16:43	Total:	10.01

Figure 4.2 To achieve a higher density and accommodate climate changes in Toronto, enough sunshine penetrating to the central area is the essential factor for a comfort interior environment.



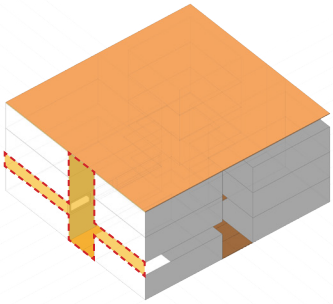
Prototype

original neighbor group
units: 16
private living area: 855.9m^2
height: 9m



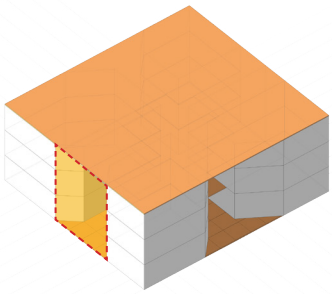
Phase 1

extended vertical voild space
units: 16
private living area: 722.5m^2
height: 9m



Phase 2

extended horizental void space
units: 16
private living area: 855.9m^2
height: 10.5m



Phase 3

angle cut void space
units: 16
private living area: 806.7m2
height: 9m

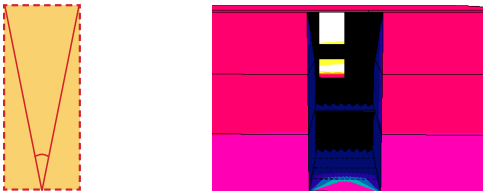
Figure 4.3 By expanding a wider exposed translucent wall a better interior environment can be approached.

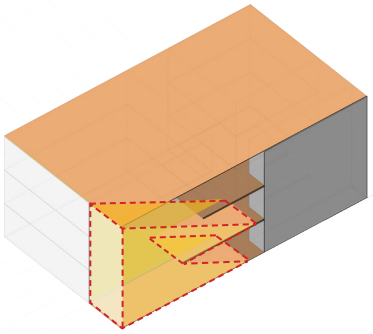
Figure 4.4 By comparing the sun light efficiency and the losing private area compared with the prototype design, a better solution can be determined.

Examination_Shadow Test

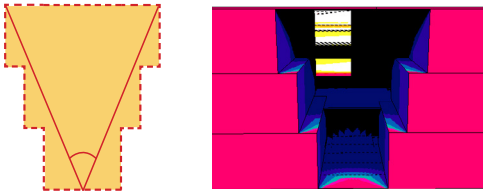
Phase 0 is the original form of space as the reference. By comparing the sun light efficiency and the losing private area compared with Phase 0, a better solution can be determined.

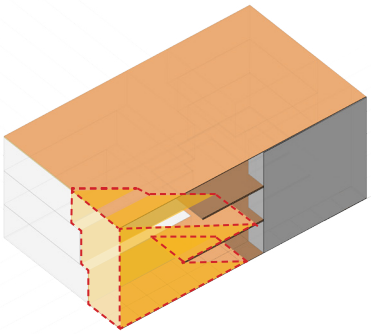
Prototype
sun light efficiency VS
losing private area



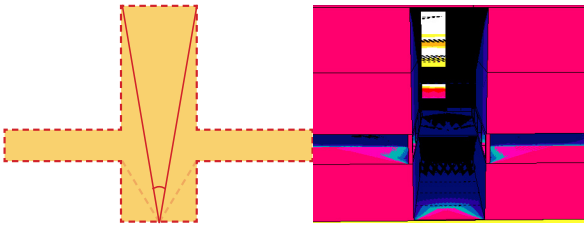


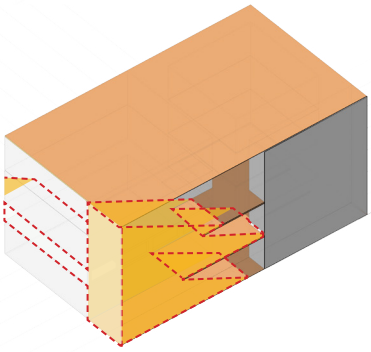
Phase 1
losing private area: 133.4m²



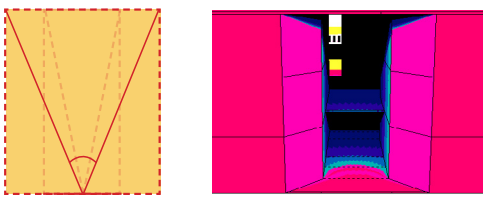


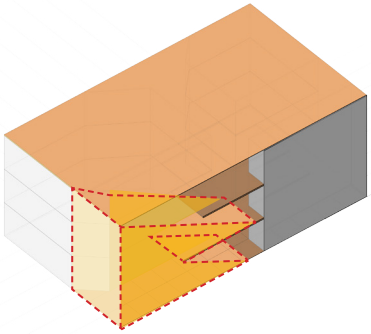
Phase 2
losing private area: 92.4m2





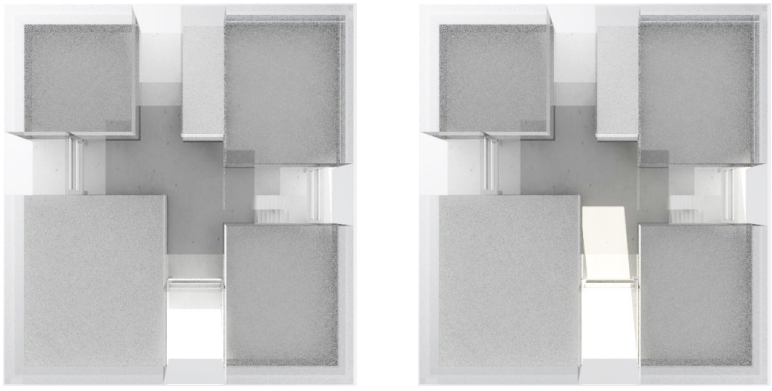
Phase 3
losing private area: 49.2m2



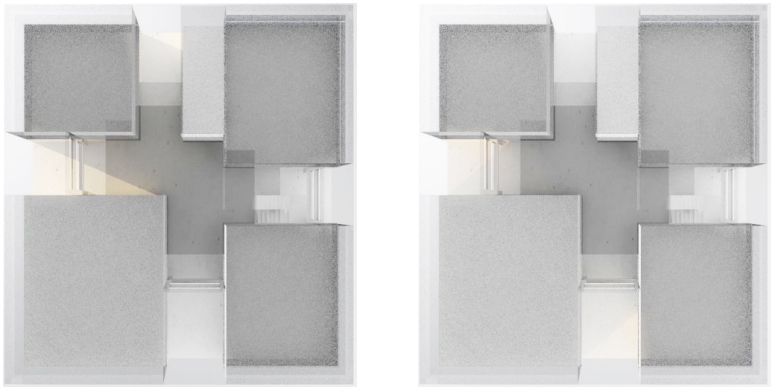


Prototype

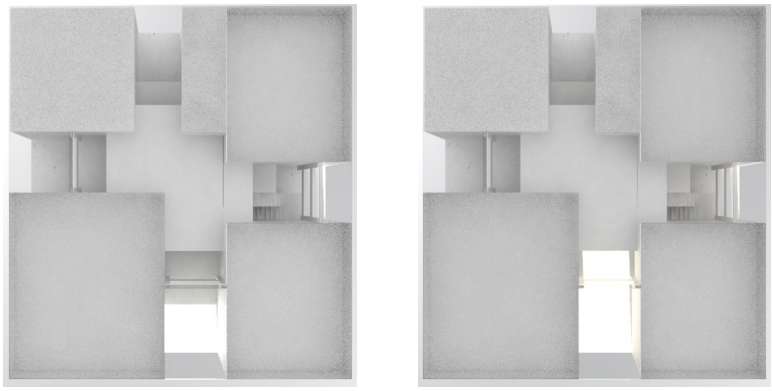
21st Jun. 21st Dec.



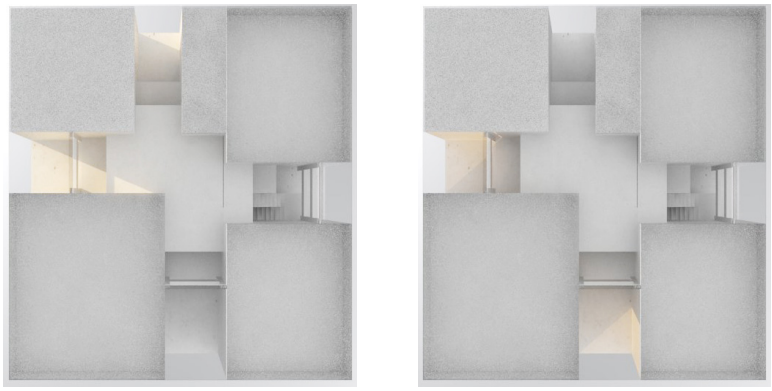
First Floor Noon



First Floor Afternoon



Third Floor Noon

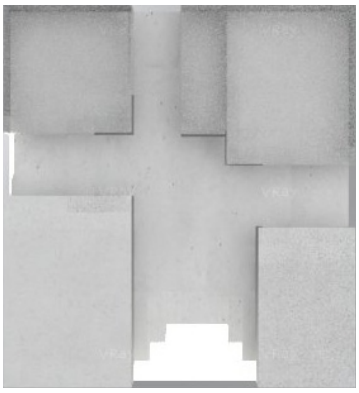
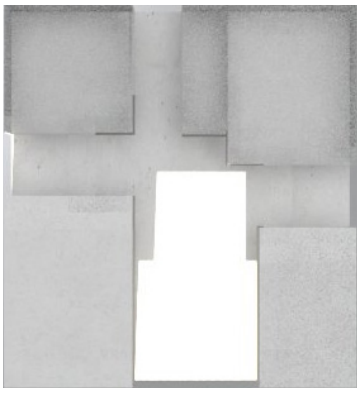
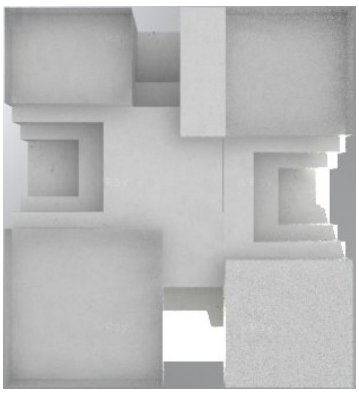
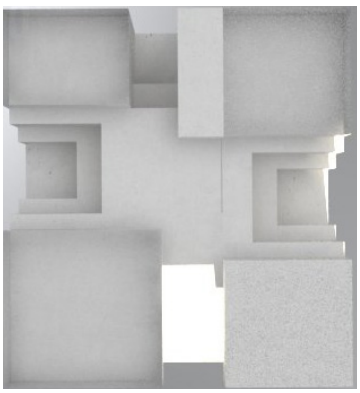
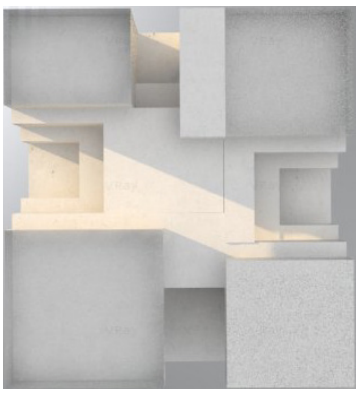
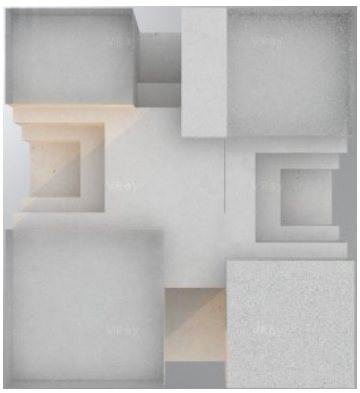


Third Floor Afternoon

Figure 4.5 The equality of cross hallway dimension makes sure that the sunshine can get into the central area from all directions except the north. This is the original form of shadow test.

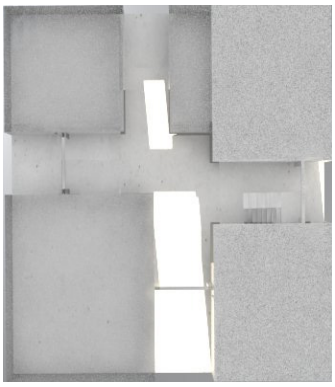
Figure 4.6 In phase one, At the south direction, the hallway is extended from the third floor to the first floor, while, it is pulled back at east and west directions from the first to the third floor in Phase 1. Form the result this change can obviously let more sunshine penetrate to the common space on the first floor of this group. But it will lose the maximum living area in one group.

Phase 1

	21st Jun.	21st Dec.
First Floor Noon		
First Floor Afternoon		
Third Floor Noon		
Third Floor Afternoon		

Phase 2

21st Jun. 21st Dec.



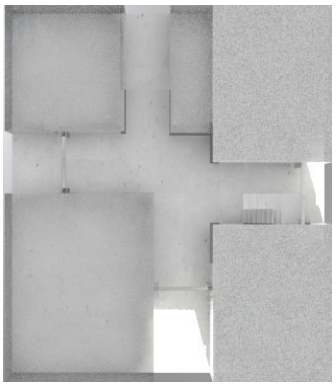
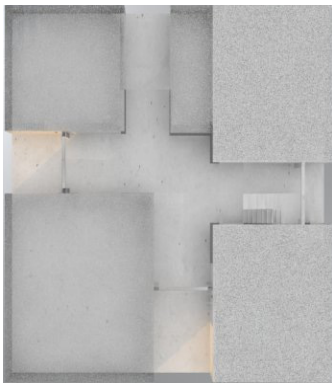
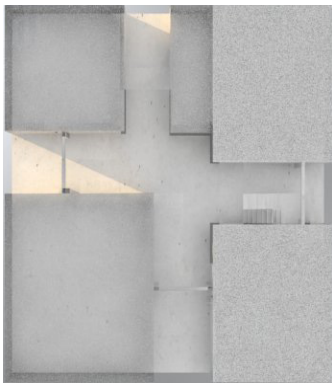


Figure 4.7 Phase Two

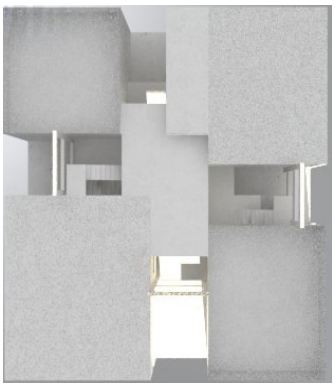
Because of the horizontal void space as the result of lifting up half floor height, the sunlight can go deeper into the center. However, the reason is not the horizontal void but the higher south exposed fa□de in the cost of losing less area than phase one.

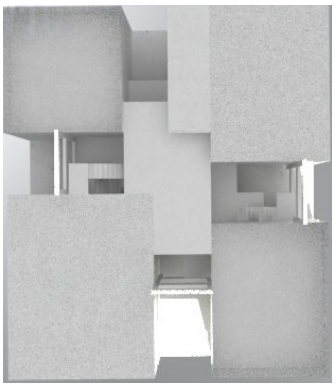
First Floor Noon



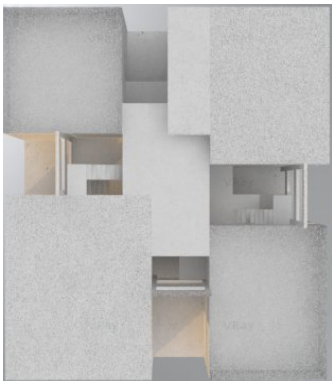


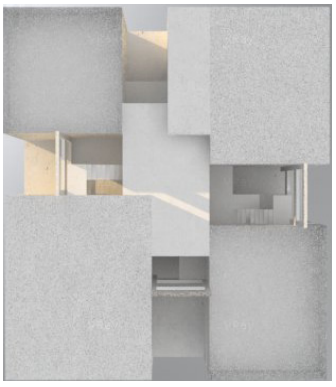
First Floor Afternoon





Third Floor Noon

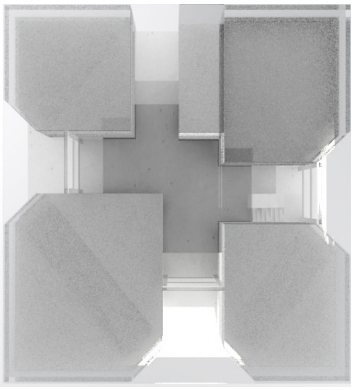
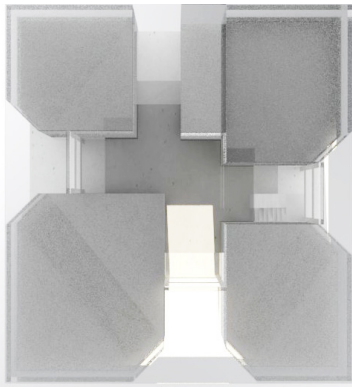
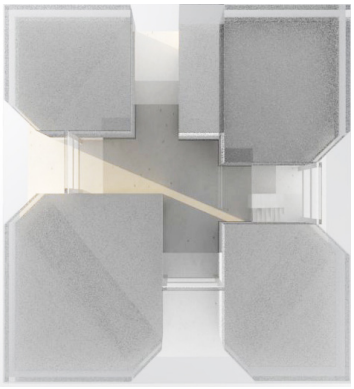
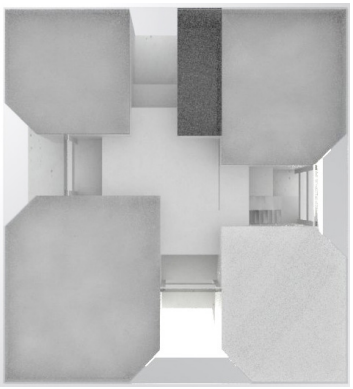
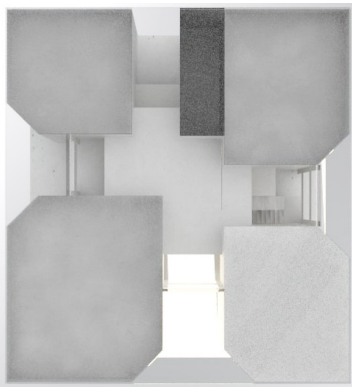
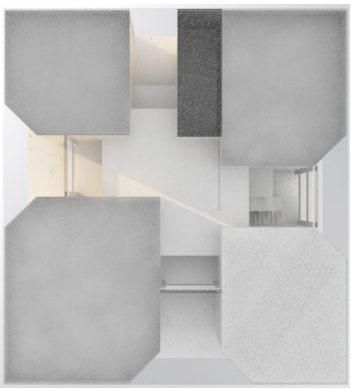




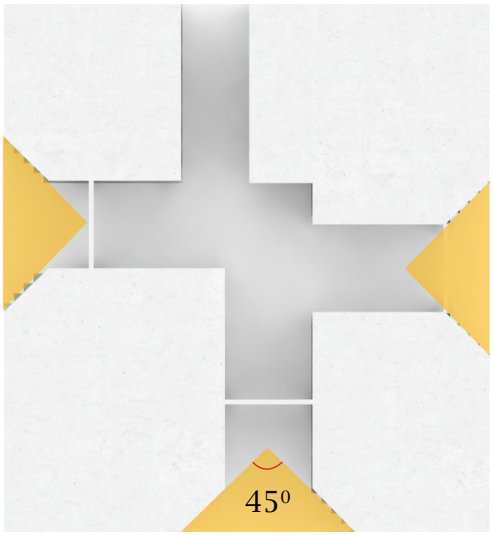
Third Floor Afternoon

Figure 4.8 Phase Three has the minimize private area difference to the prototype by cutting the outside corners. As a result, the sunlight in the center can stay longer than the other phases. Therefore, Phase 3 is the ideal solution.

Phase 3

	21st Jun.	21st Dec.
First Floor Noon		
First Floor Afternoon		
Third Floor Noon		
Third Floor Afternoon		

Phase 3 Interior Environment



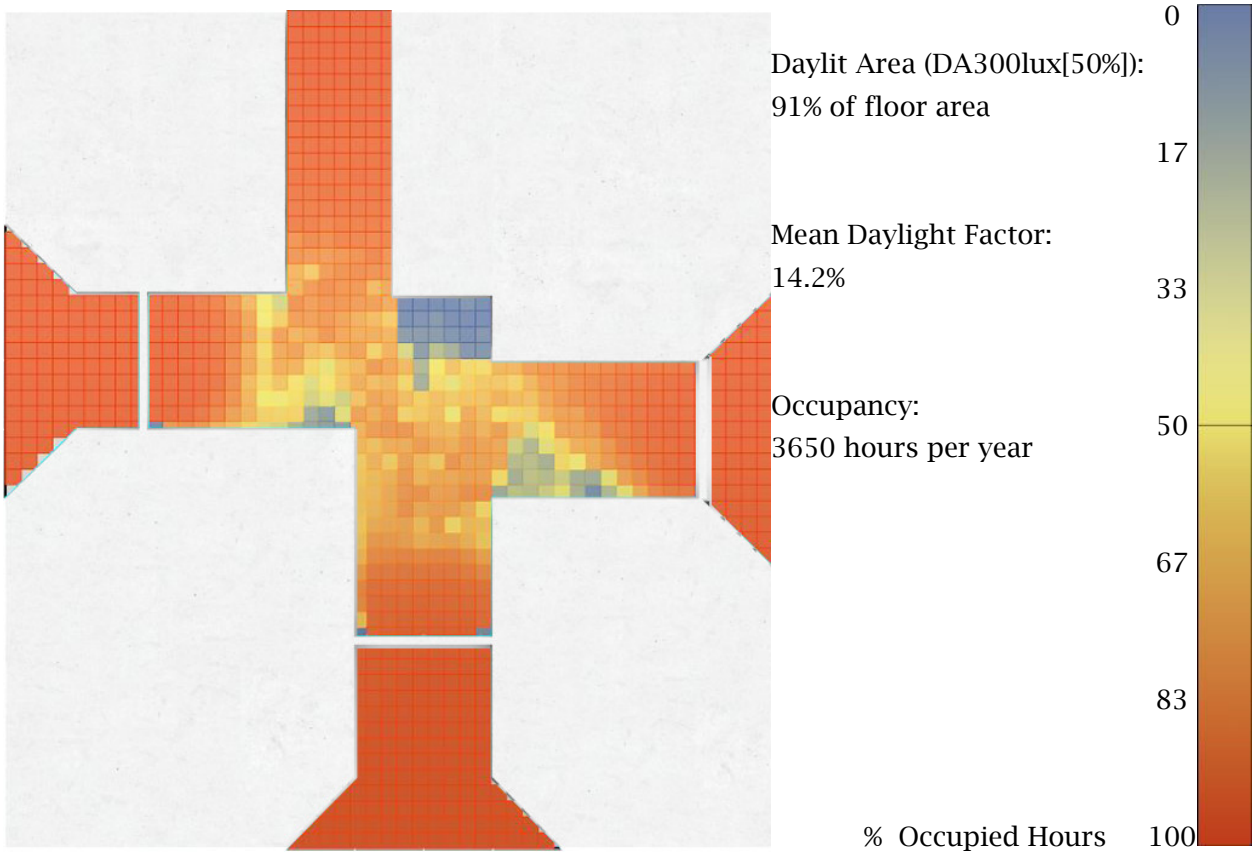
This research shows the prediction of luminous quantities using the climate based illuminate autonomy: the contiguous daylight totality of the sun and sky data for a full year[1].

In this case, the percentage of annual daytime hours that above ground illumination level in the 60⁰ cut design is higher than the 45⁰ cut, which means its performance is better in the 60⁰ cut design.

1. John Mardaljevic, “Climate-Based Daylight Analysis for Residential Buildings,” (2008).

Figure 4.9 45⁰ CUT

Climate Based Illuminate Autonomy



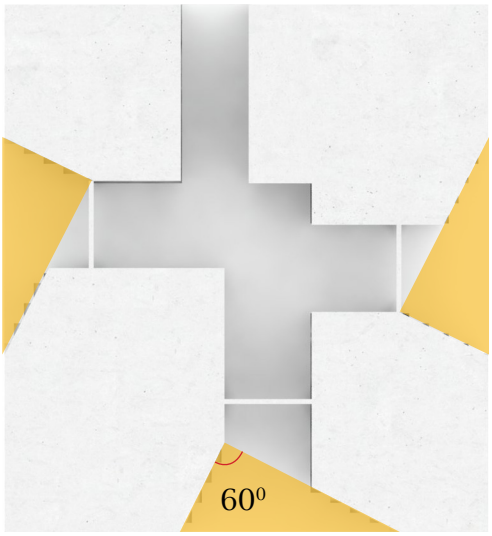
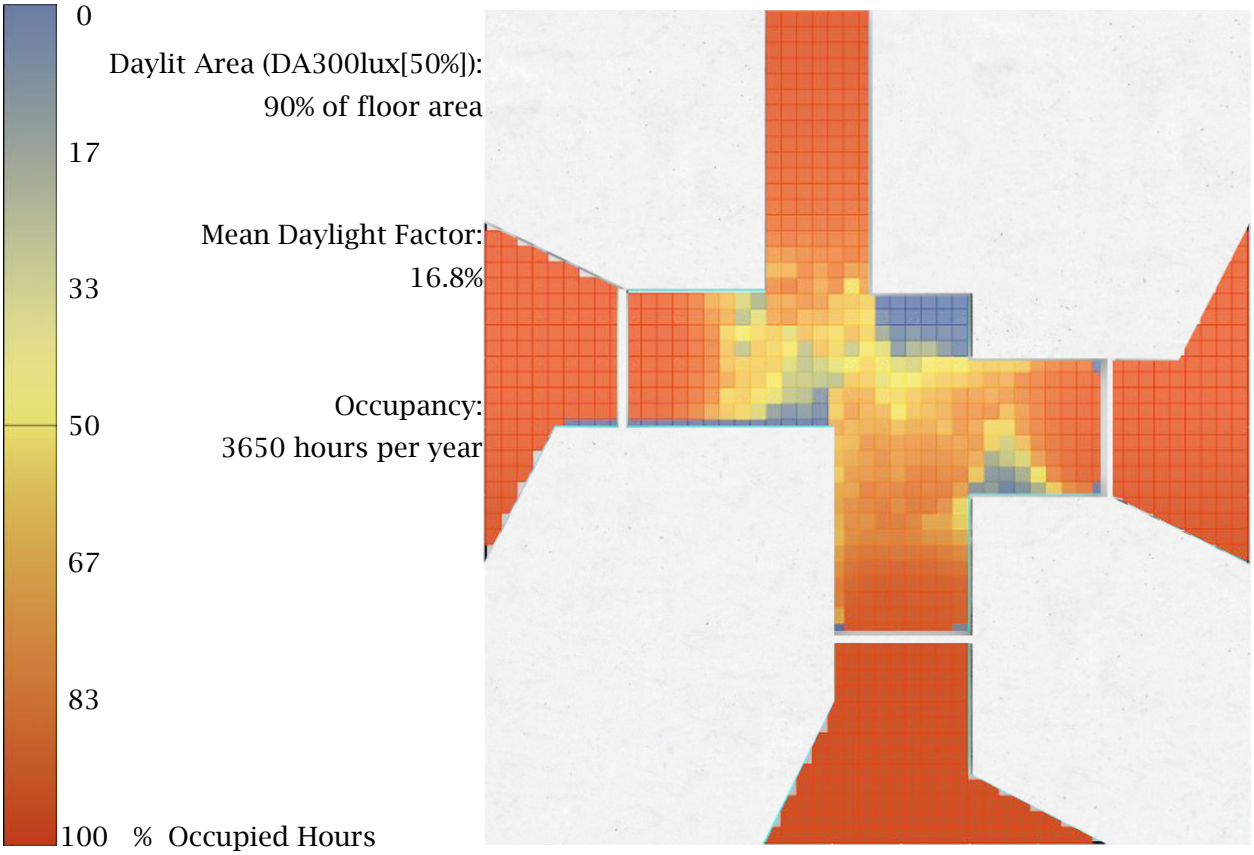
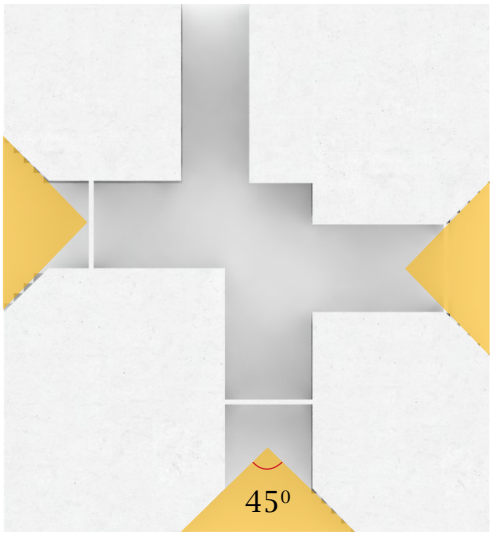


Figure 4.10 60⁰ CUT
Climate Based Illuminate Autonomy

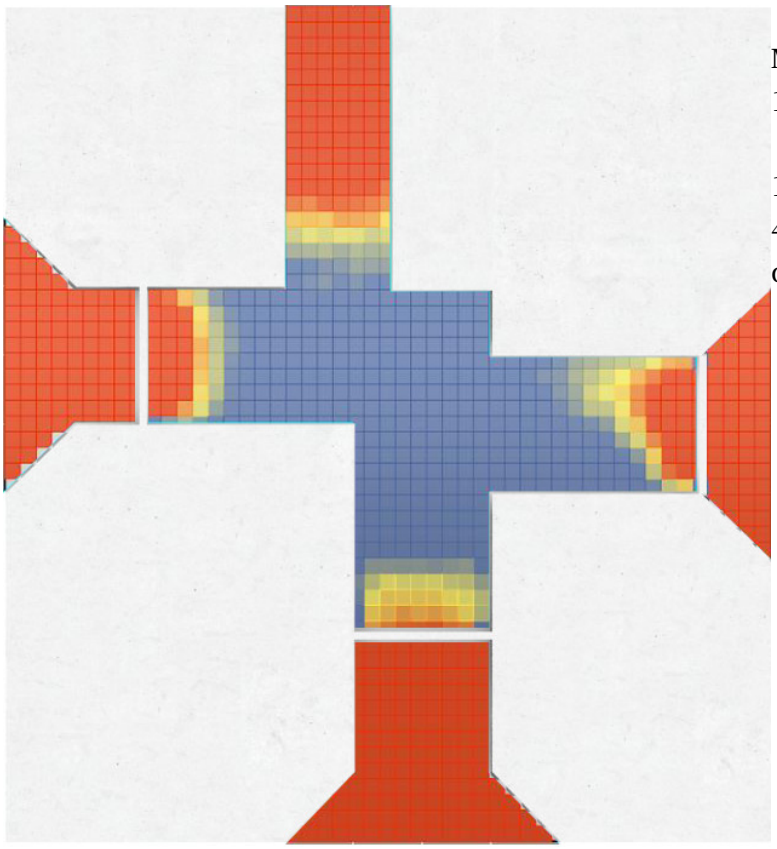




Daylight Factor is a ratio that represents the amount of illumination available indoors relative to the illumination present outdoors at the same time under overcast skies.

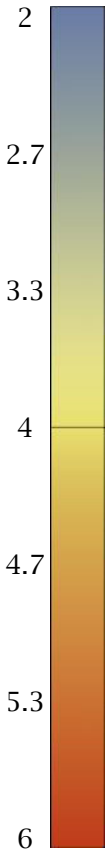
As it shows in the diagram, under overcast skies, the illumination performs in the 60⁰ cut design(16.73%) is slightly better than it in the 45⁰ cut design(14.07%).

Figure 4.11 45⁰ CUT
Daylight Factor Nodes Analysis



Mean Daylight Factor:
14.07%

18% of Area between 2 & 6
48.5% of Area > 6 %; 33.5% of Area < 2 %



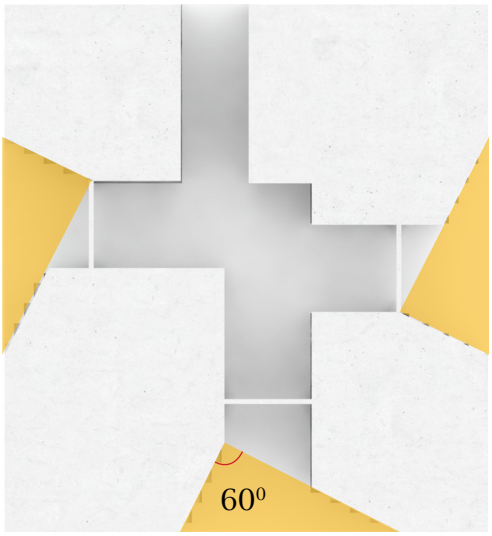
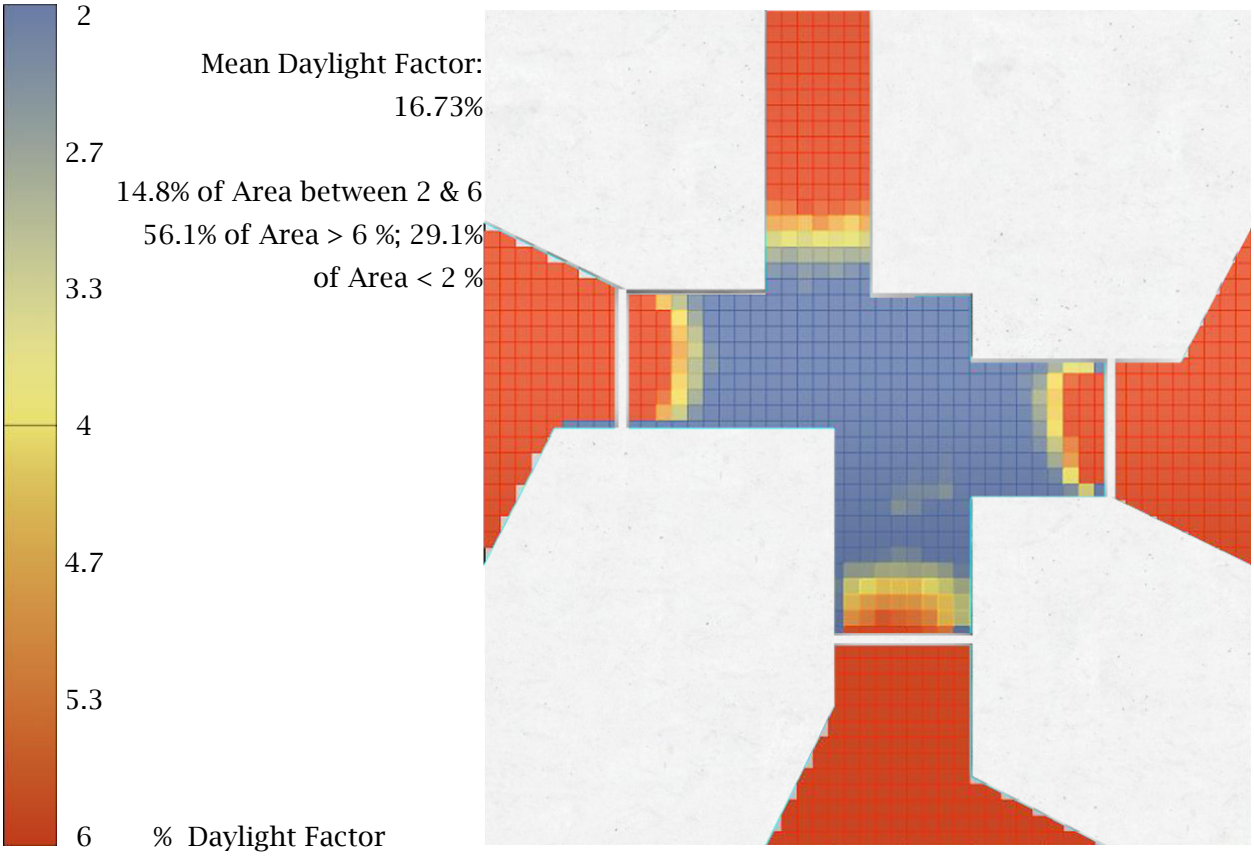


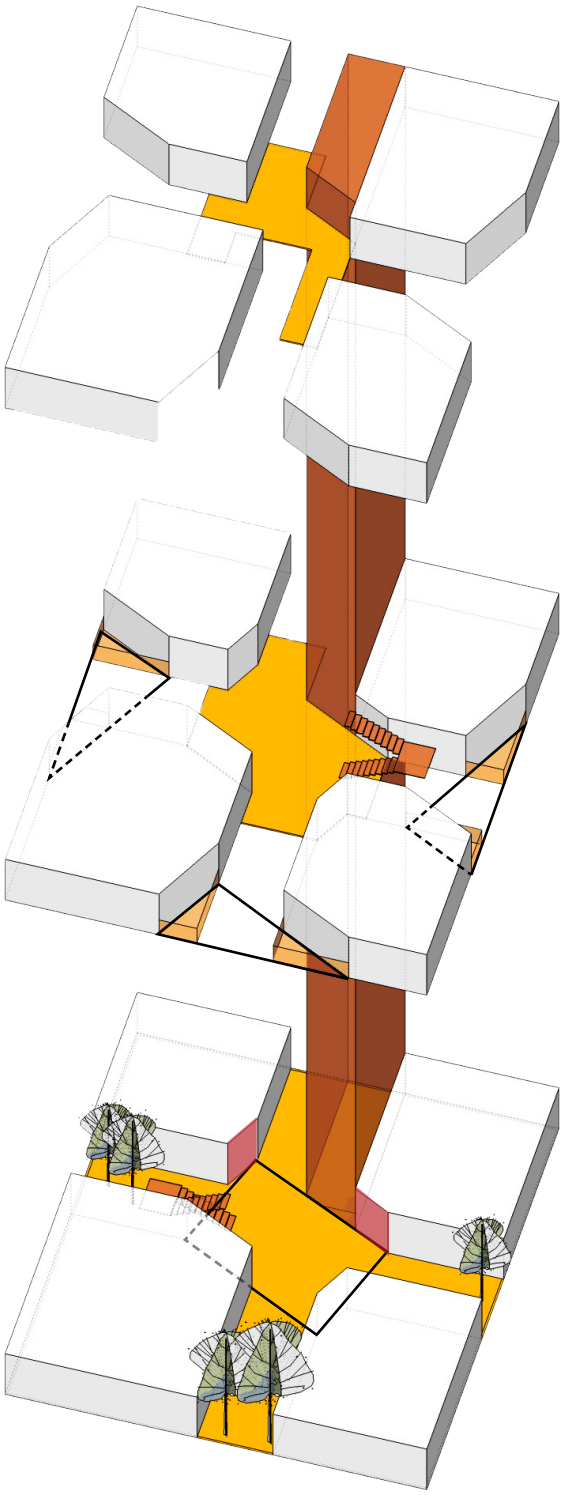
Figure 4.12 60⁰ CUT
Daylight Factor Nodes Analysis



Neighborhood Group

This design explores the architectural implication from three aspects coming from the precedents research.

First, by minimizing the private space and opening the floor plates, the communal space as a semi-private space has been increased in both the cohort group and the neighbor group. Second, The public space connecting two hierarchies is not a physical form separating them. But, it links two hierarchies to let the residents access each other. the residents living on a higher floor of a neighbor group have a visible connection to the core sharing space. Third, according to the courtyard form of Siheyuan, the central area of each group's ground floor is cut out as a courtyard space.



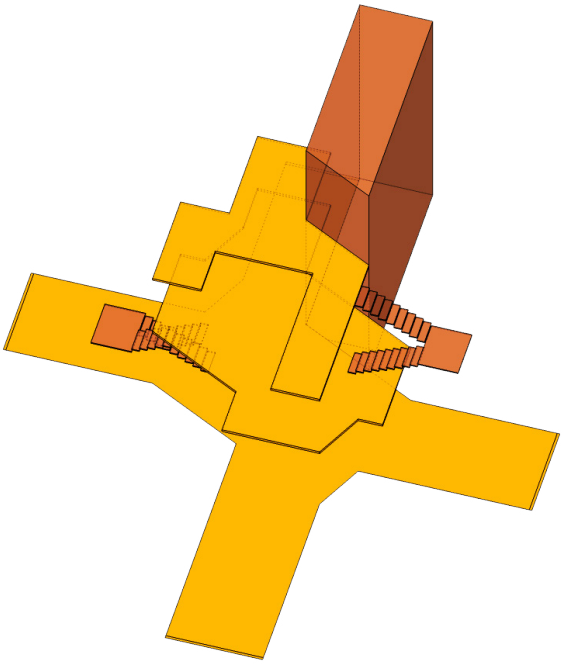


Figure 4.13 Design of Group Communal Space

Courtyard facing wall

By employing a foldable structure on the physical form between a unit and the sharing space, the unit can have a direct connection with the communal space. And the space around this foldable structure can be transformed into either private space or semi-private space. This provides a flexible choice for the residents, which enlarges their initiative to interact.

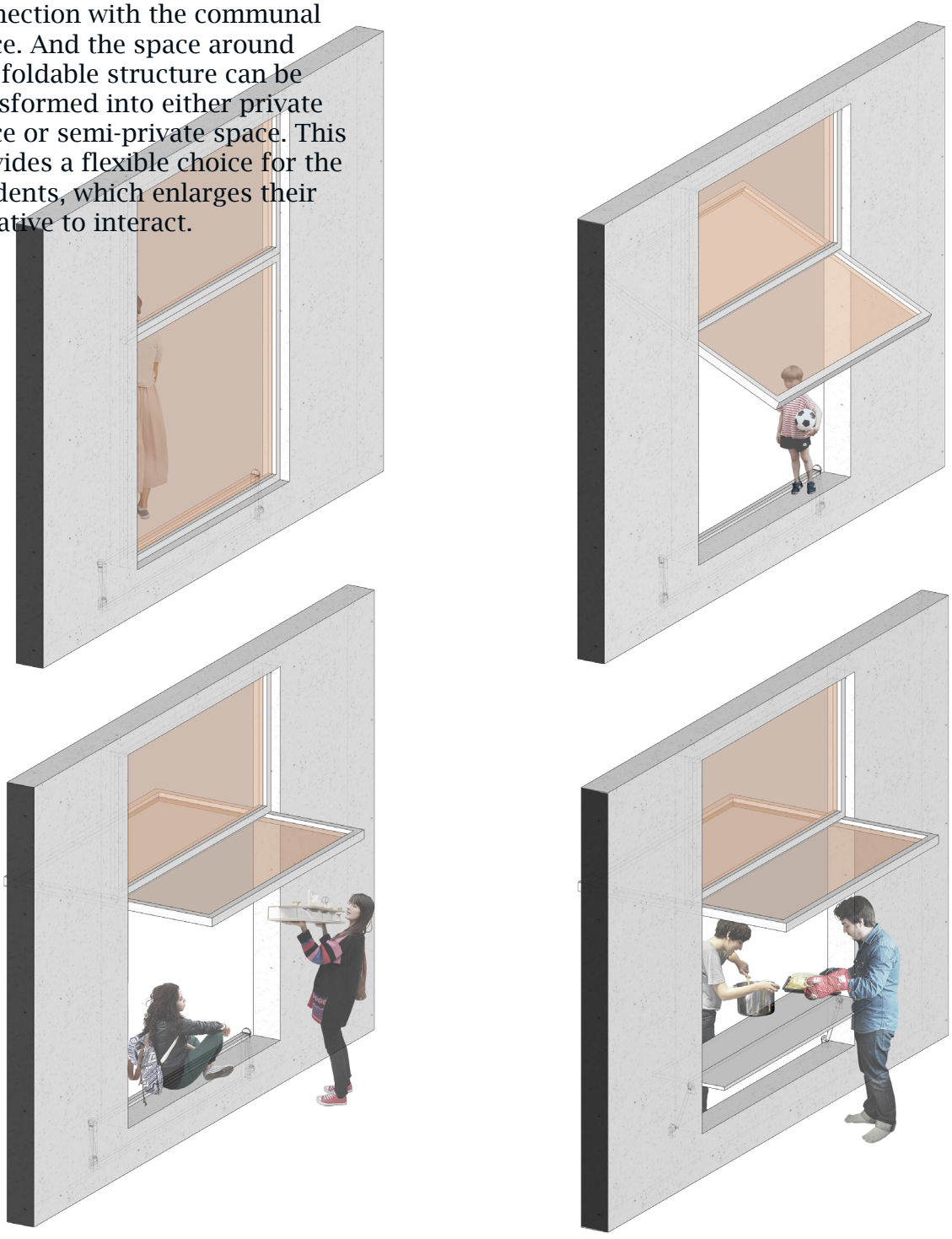


Figure 4.14 Foldable Window Facing toward Communal Space

Space Hierarchy

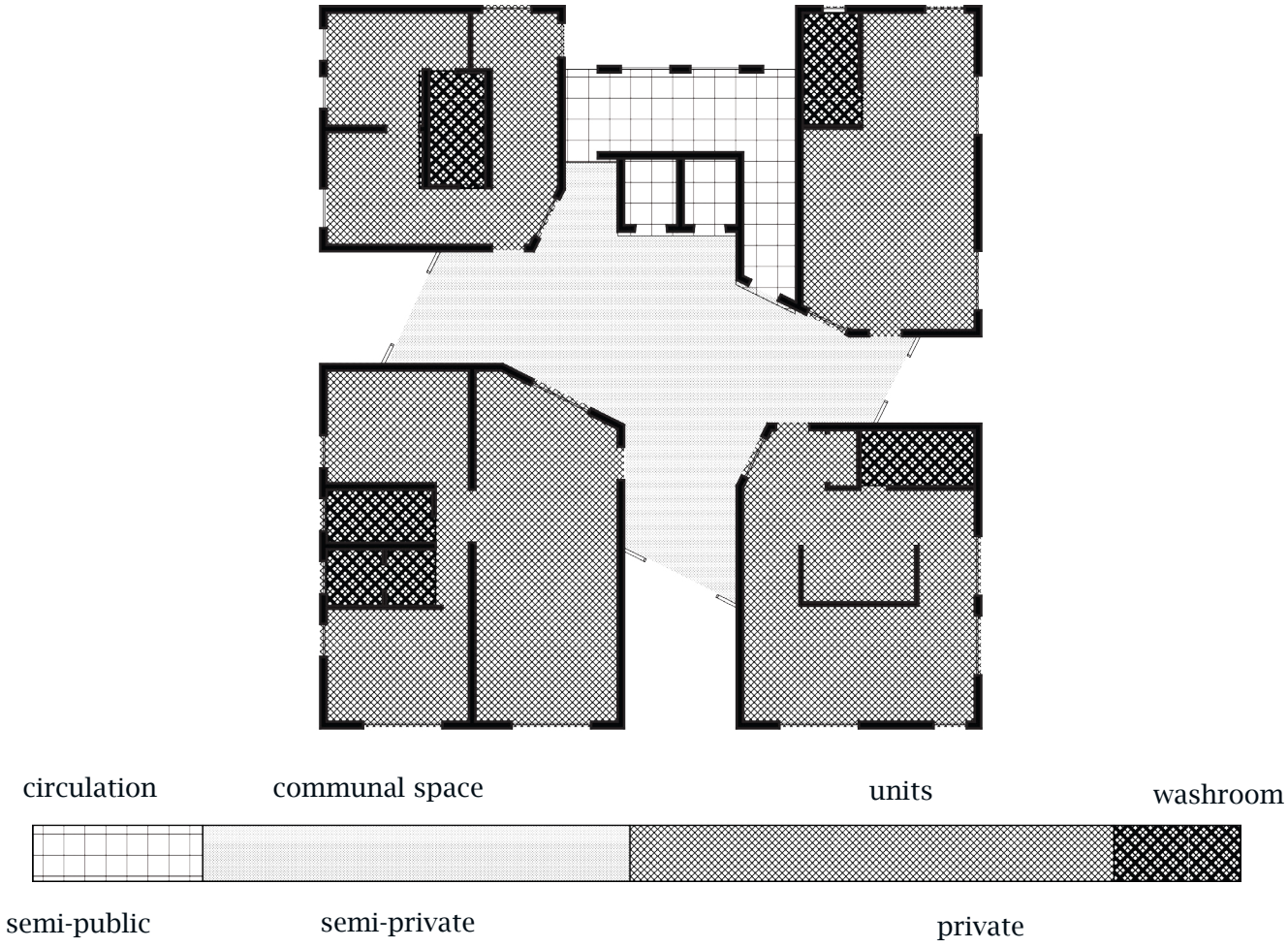


Figure 4.15 First Floor Space Hierarchy of A Neighbor Group

First Floor Plan 1:150

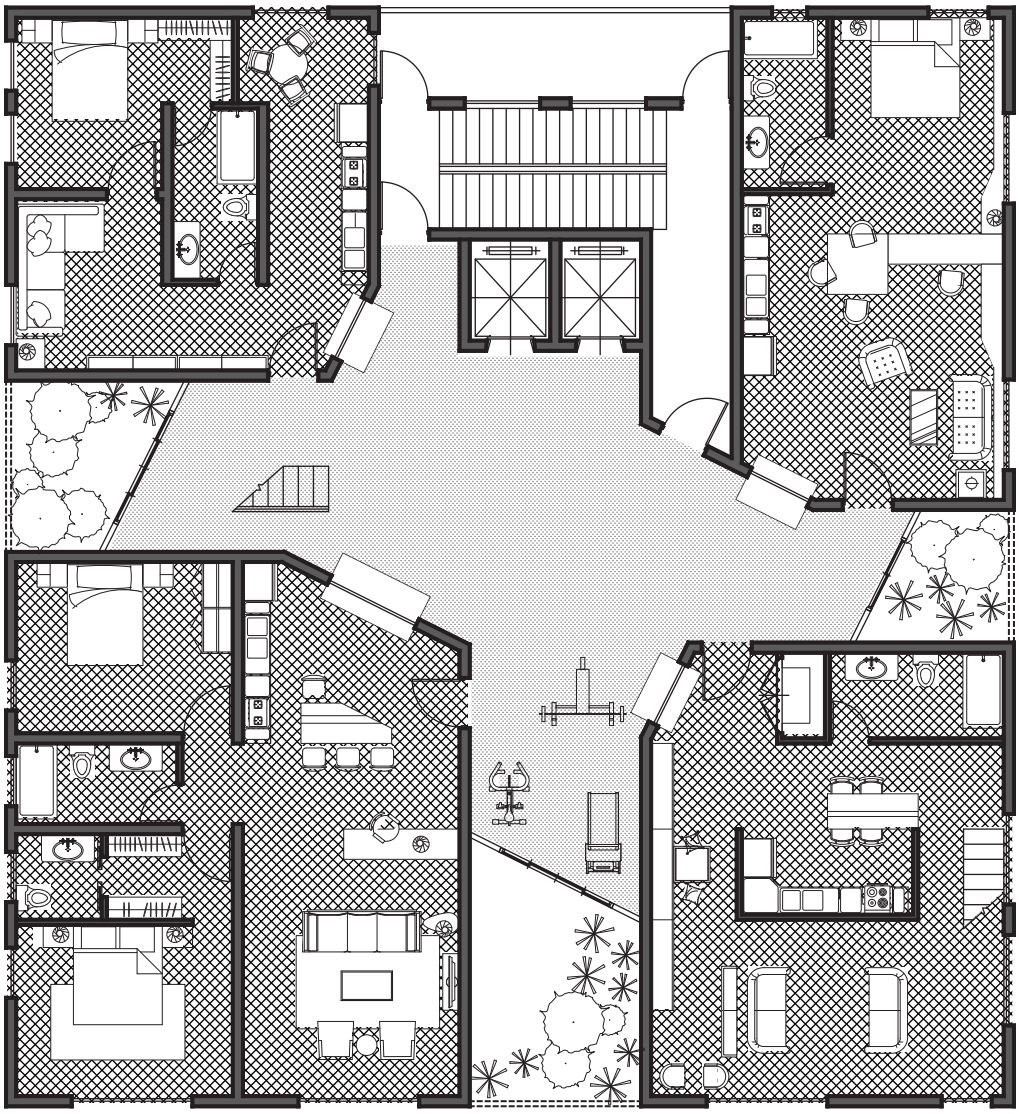


Figure 4.16 First Floor Plan of A Neighbor Group

Second Floor Plan 1:150

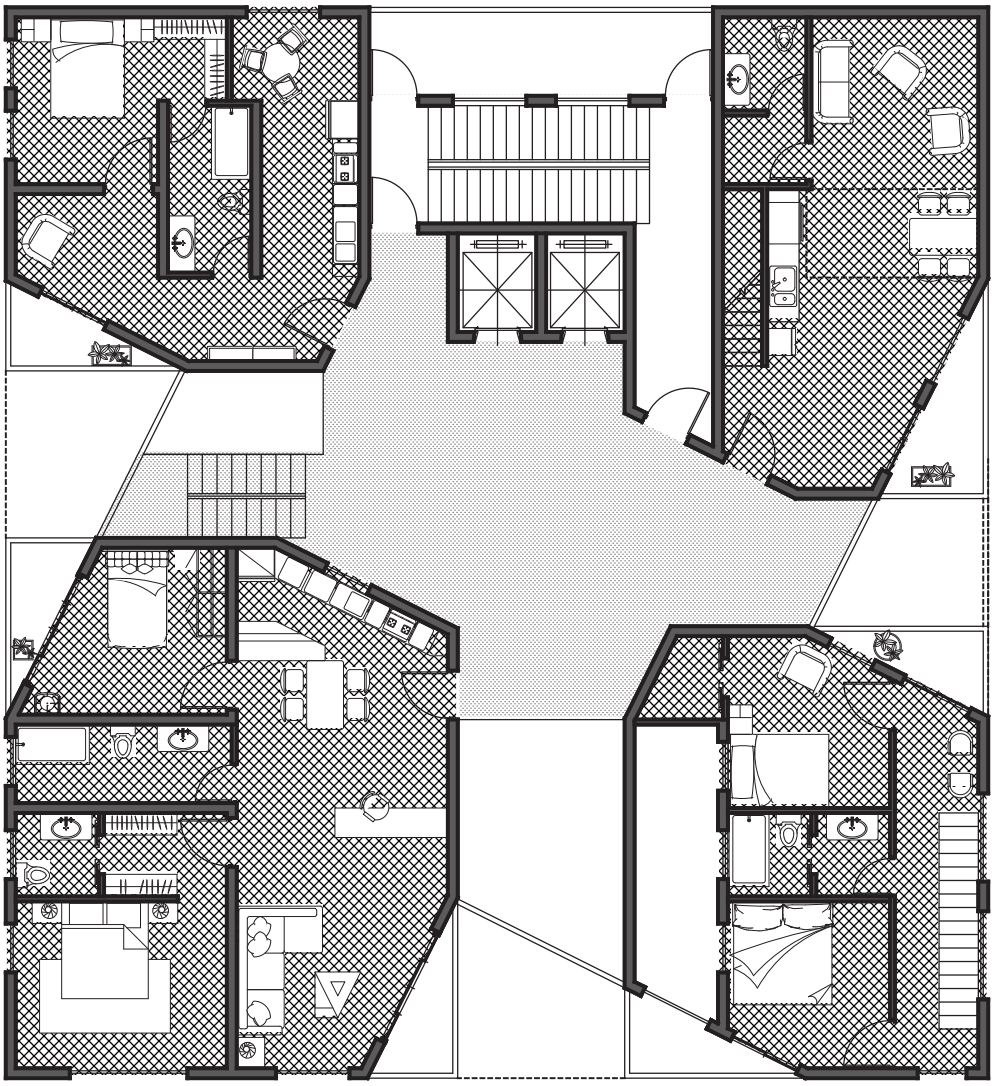


Figure 4.17 Second Floor Plan of A Neighbor Group

Third Floor Plan 1:150

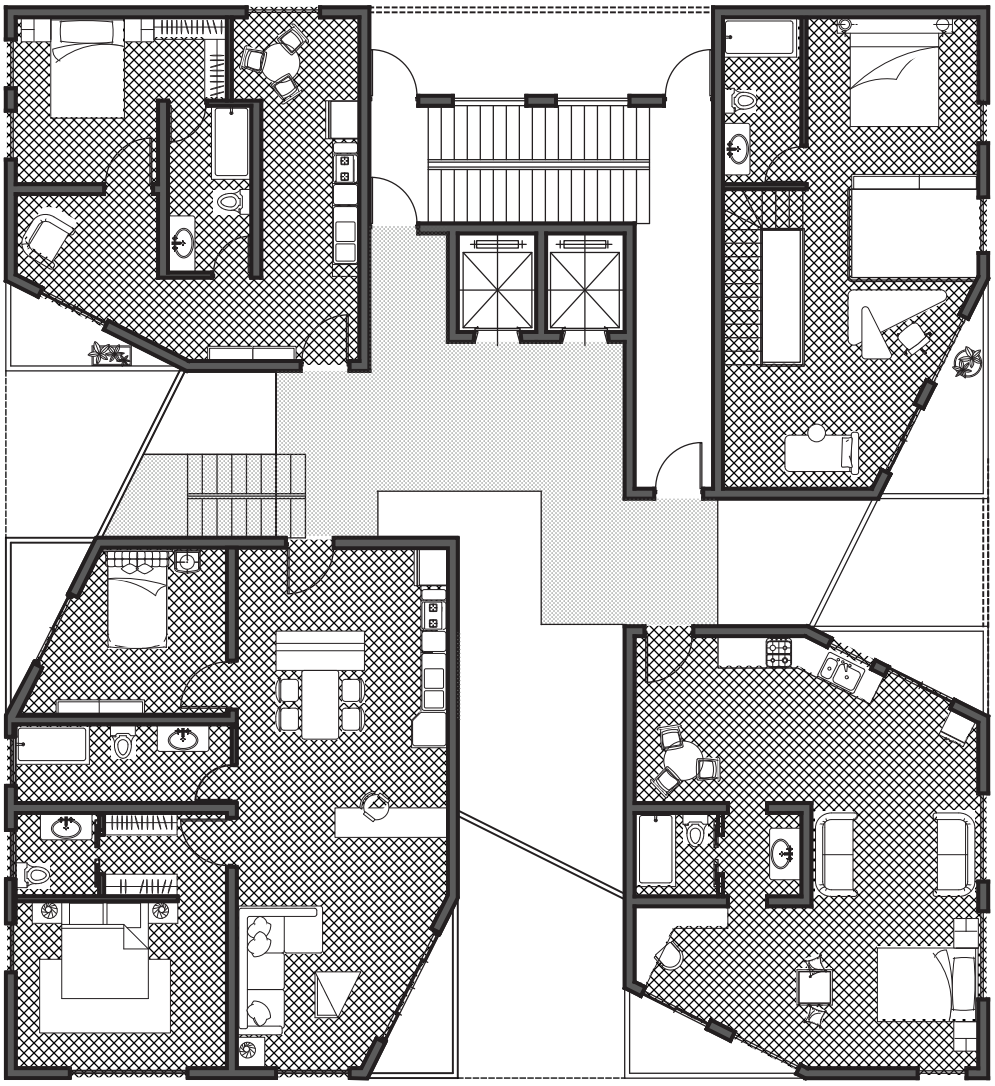
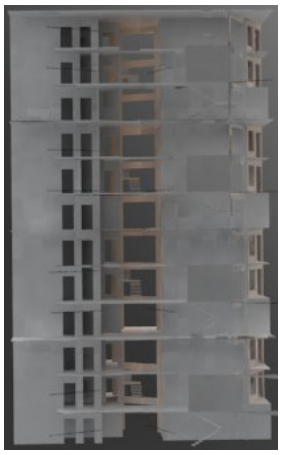
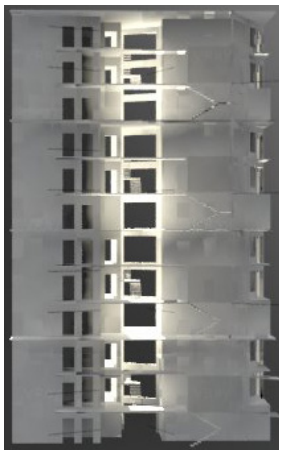
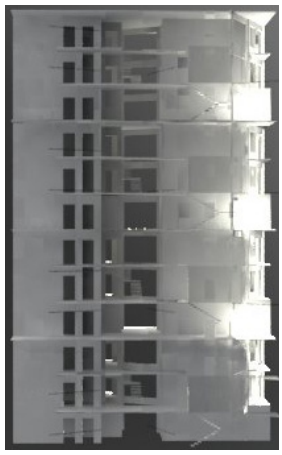
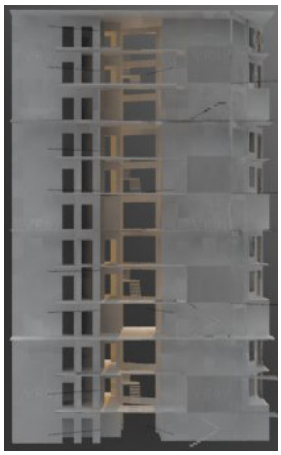
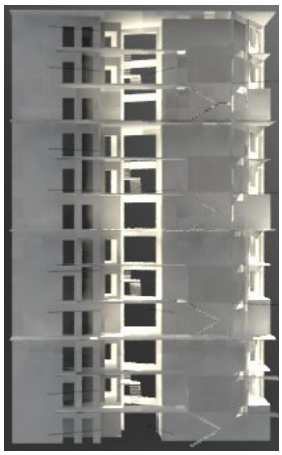
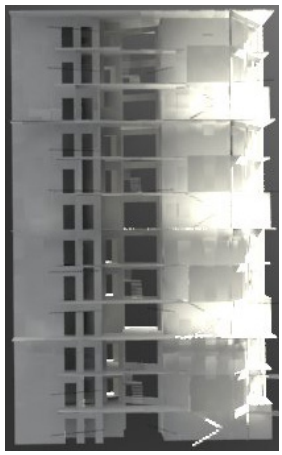
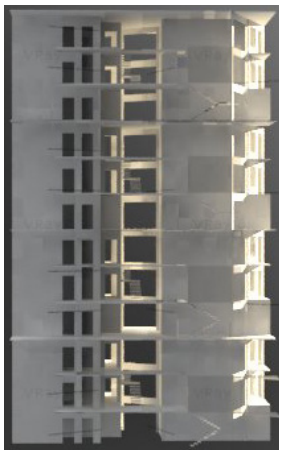
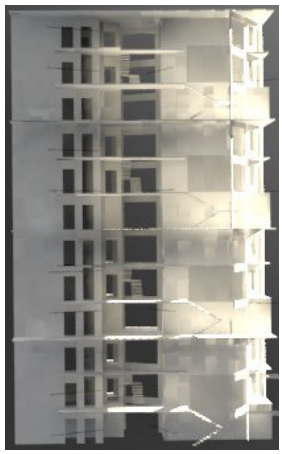


Figure 4.18 Third Floor Plan of A Neighbor Group

Section Illumination Test

	1H after sunrise	3H after sunrise	Noon
21st Jun.			
21st Mar.			
21st Dec.			

3H before sunset

1H before sunset

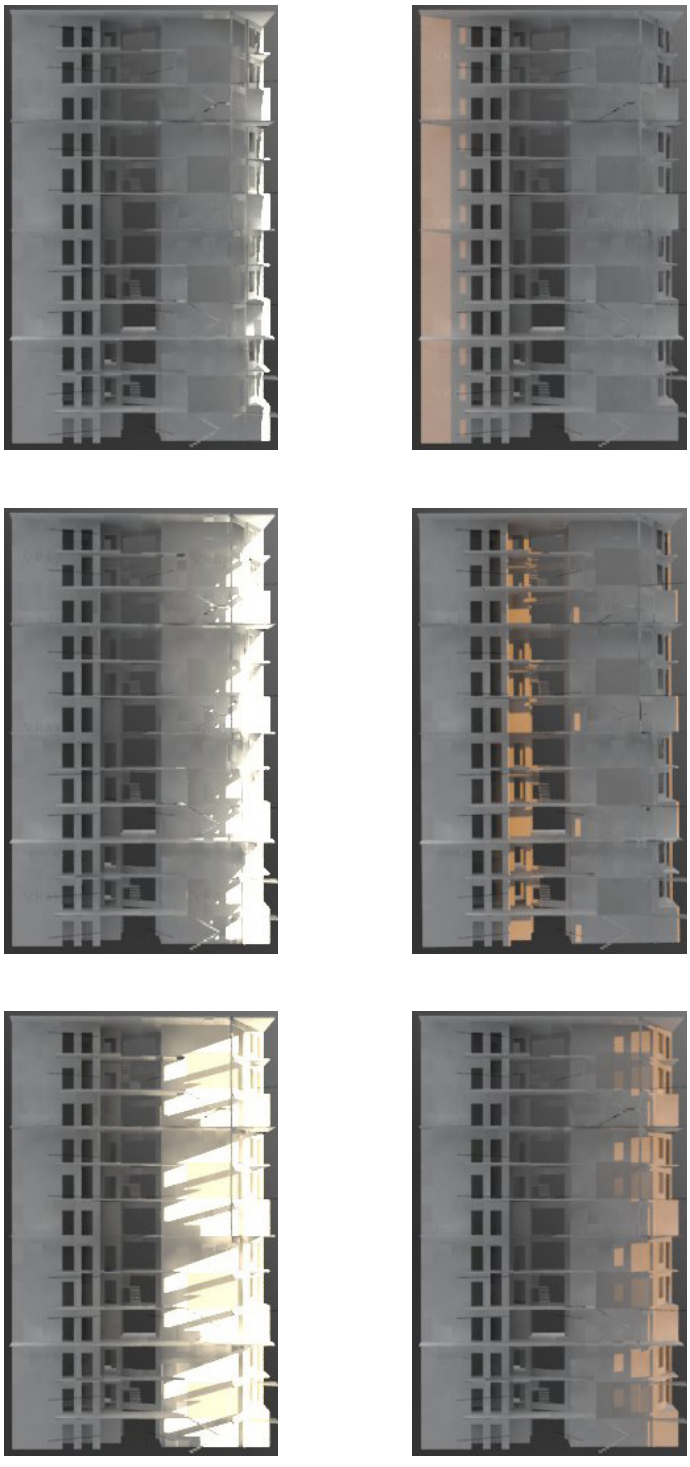
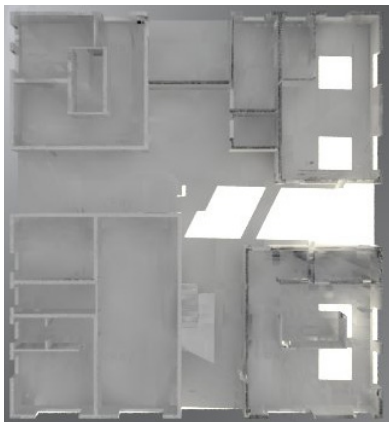
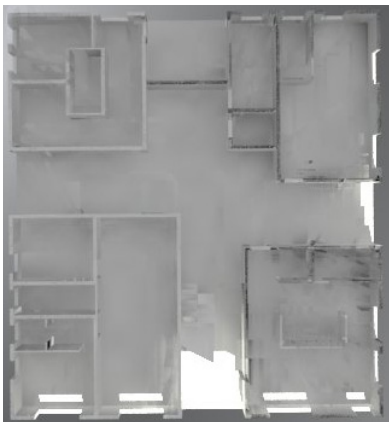
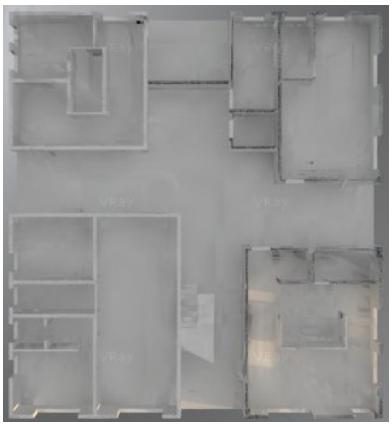
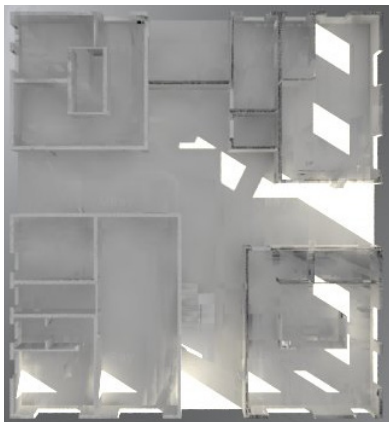
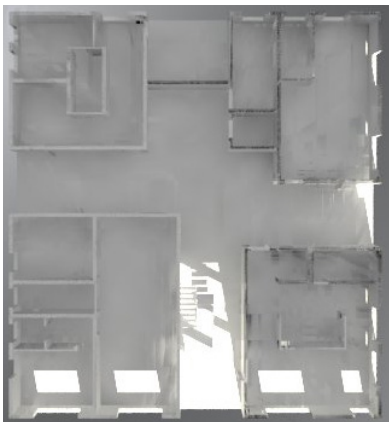
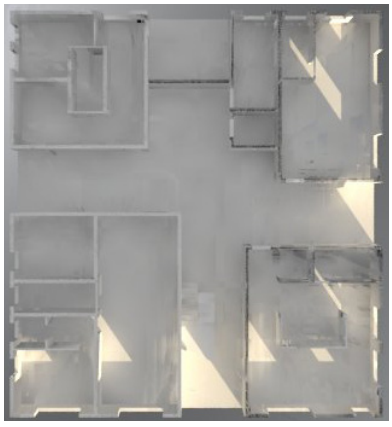
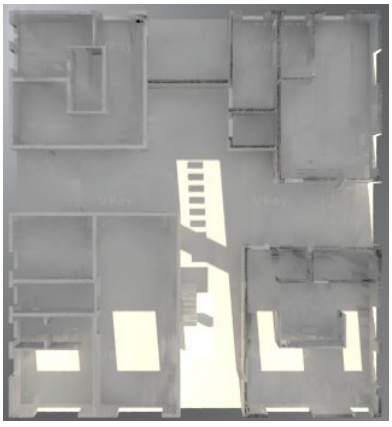


Figure 4.19 Section Shadow Test
Form the shadow test we can see the first floor of a neighbor group has a better illuminate condition than the second and third floor from all three directions.

First Floor Illumination Test

	1H after sunrise	3H after sunrise	Noon
21st Jun.			
21st Mar.			
21st Dec.			

3H before sunset

1H before sunset

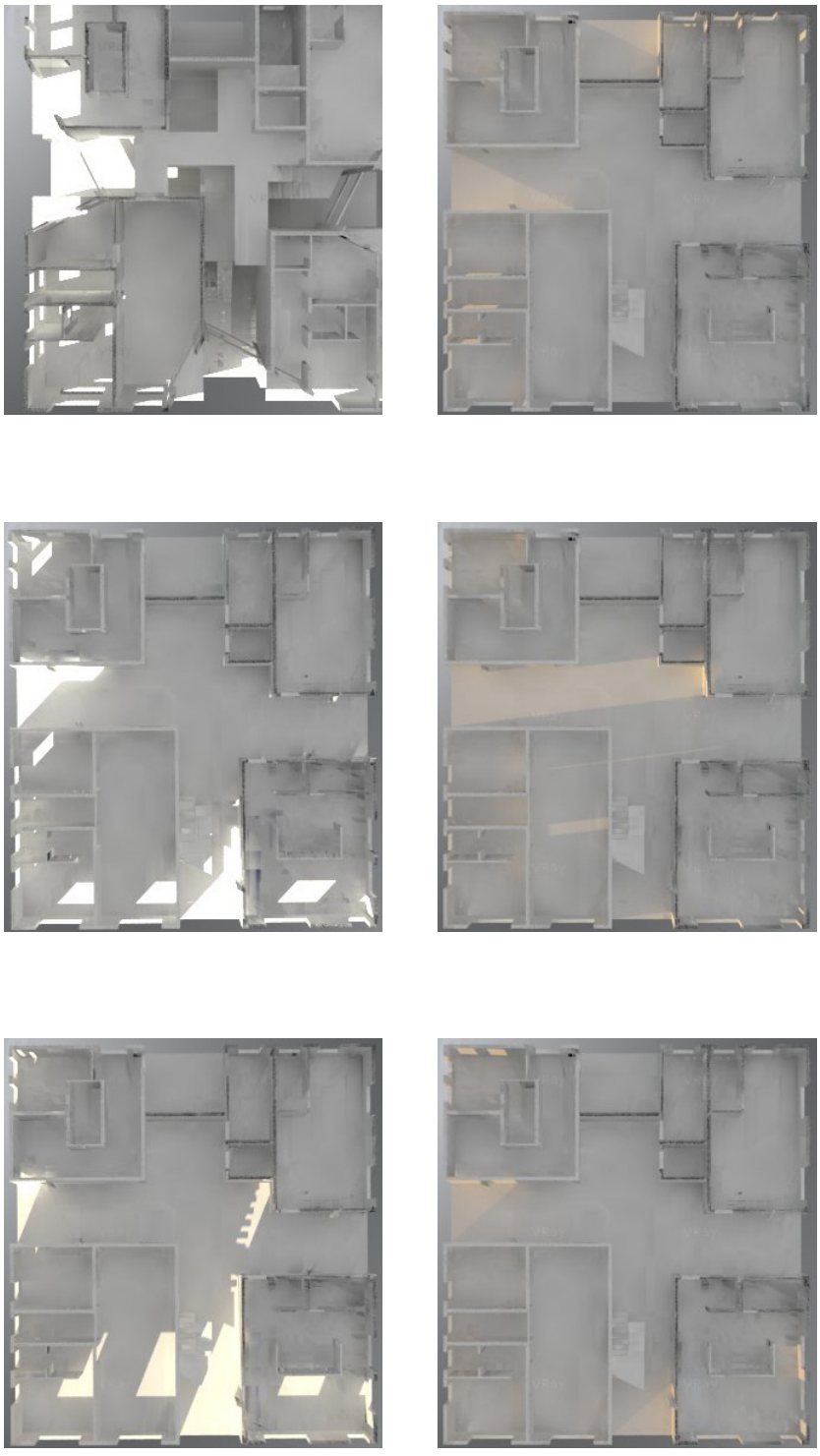
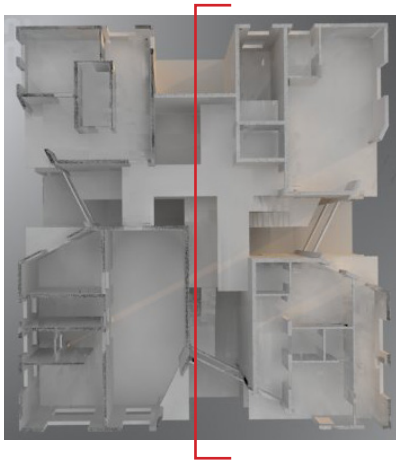
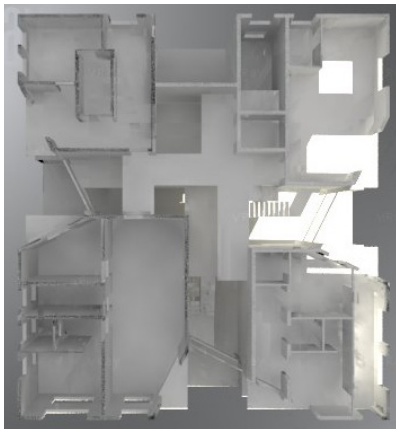
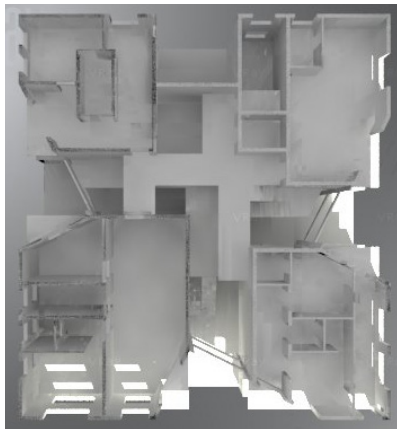
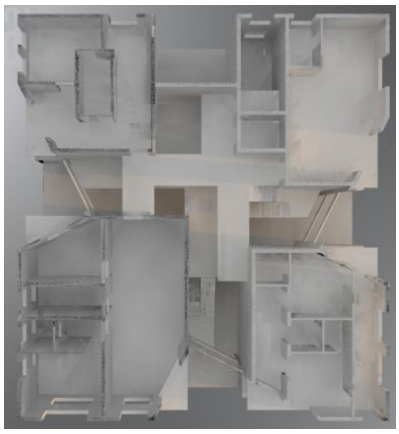
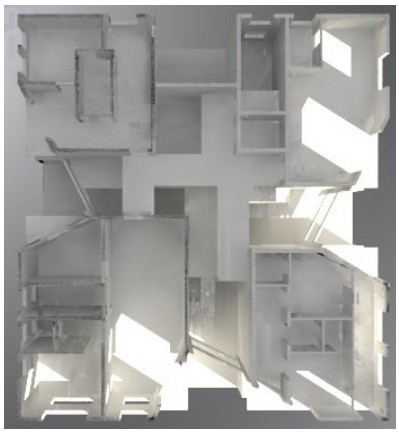
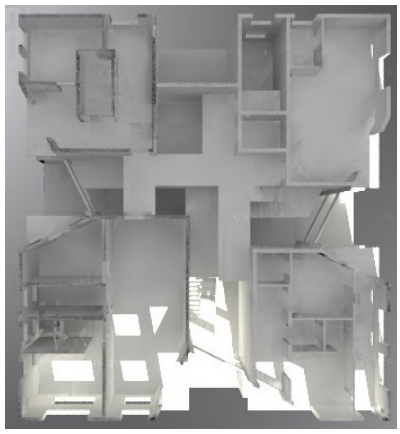
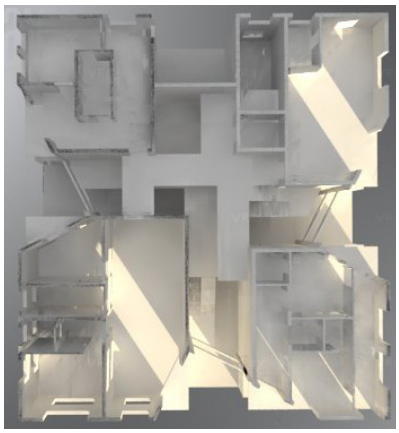
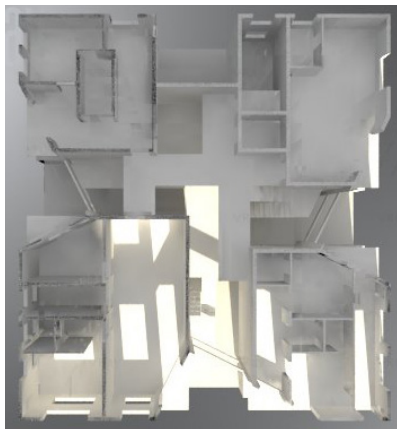


Figure 4.20 First Floor of Neighbor Group Shadow Test

Third Floor Illumination Test

	1H after sunrise	3H after sunrise	Noon
21st Jun.			
21st Mar.			
21st Dec.			

3H before sunset 1H before sunset

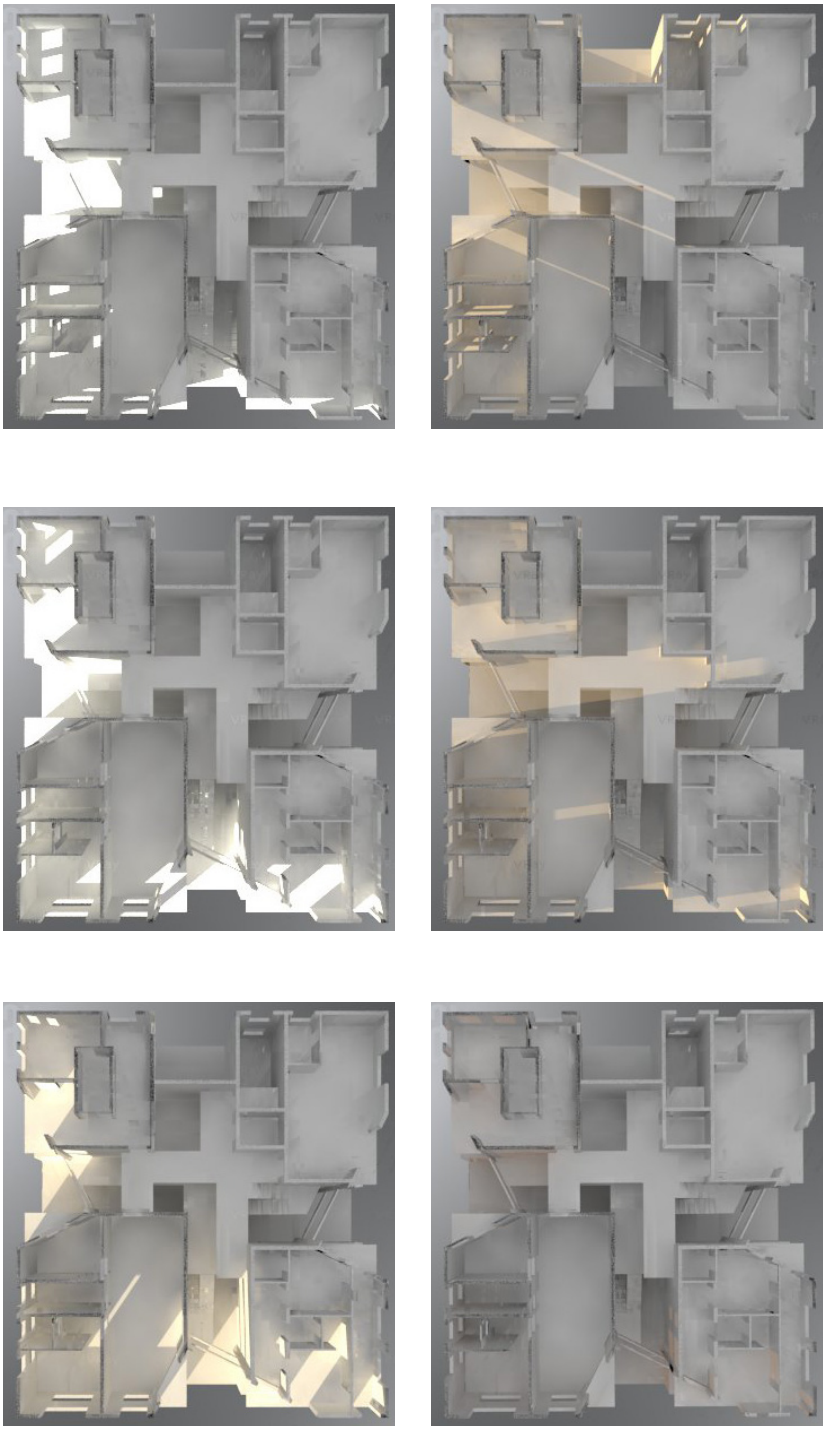
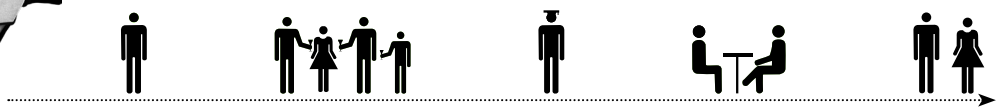


Figure 4.21 Third Floor of Neighbor Group Shadow Test

4.2 Live with Neighbors

SCENARIOS_Graduates



Floor occupied by graduates who need minimum living area can have even five units as a cohort, and the shared area can shoulder various in-house functions to relieve unit limitations.

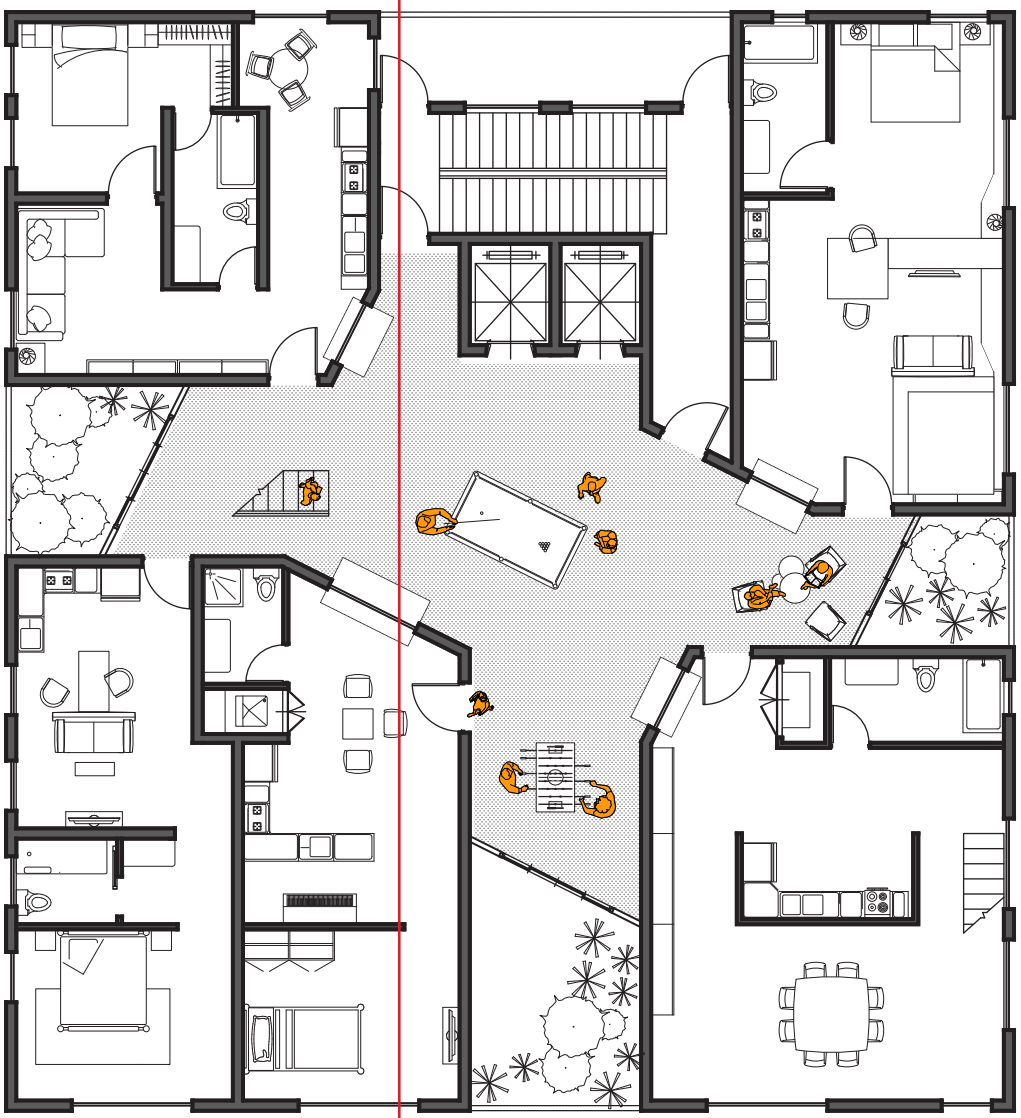


Figure 4.22 Graduates Scenario floor plan 1:150

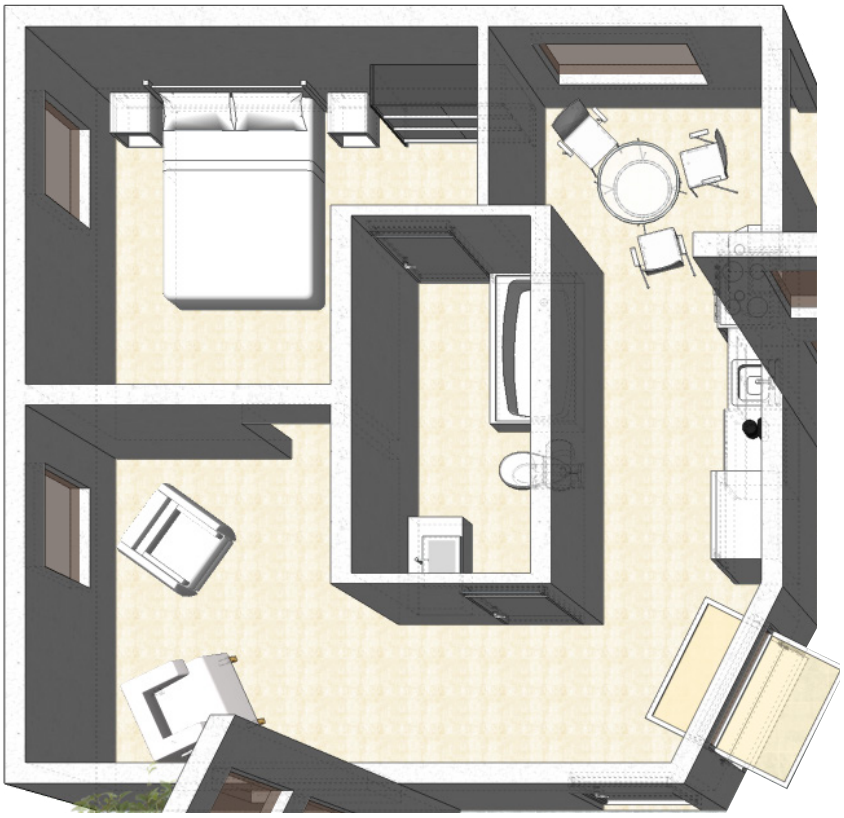


Figure 4.23 Graduate Unit Example

Figure 4.24 Graduates scenario section 1:150

SCENARIOS_Graduates

studio
movie theatre
internet
cafe
library

“I live in this building, and when I found out that a shop was availablel, I decided to develop this business with a selection of clothing, shoes and accessories.”

Figure 4.25 Graduates Scenario Life 1


adidas

Figure 4.26 Graduates Scenario Life 2

For self-employed professionals, exhibitions, internet working stations, and conference arear are welcomed in the communal space.

Figure 4.27 Professional Scenario floor plan 1:150

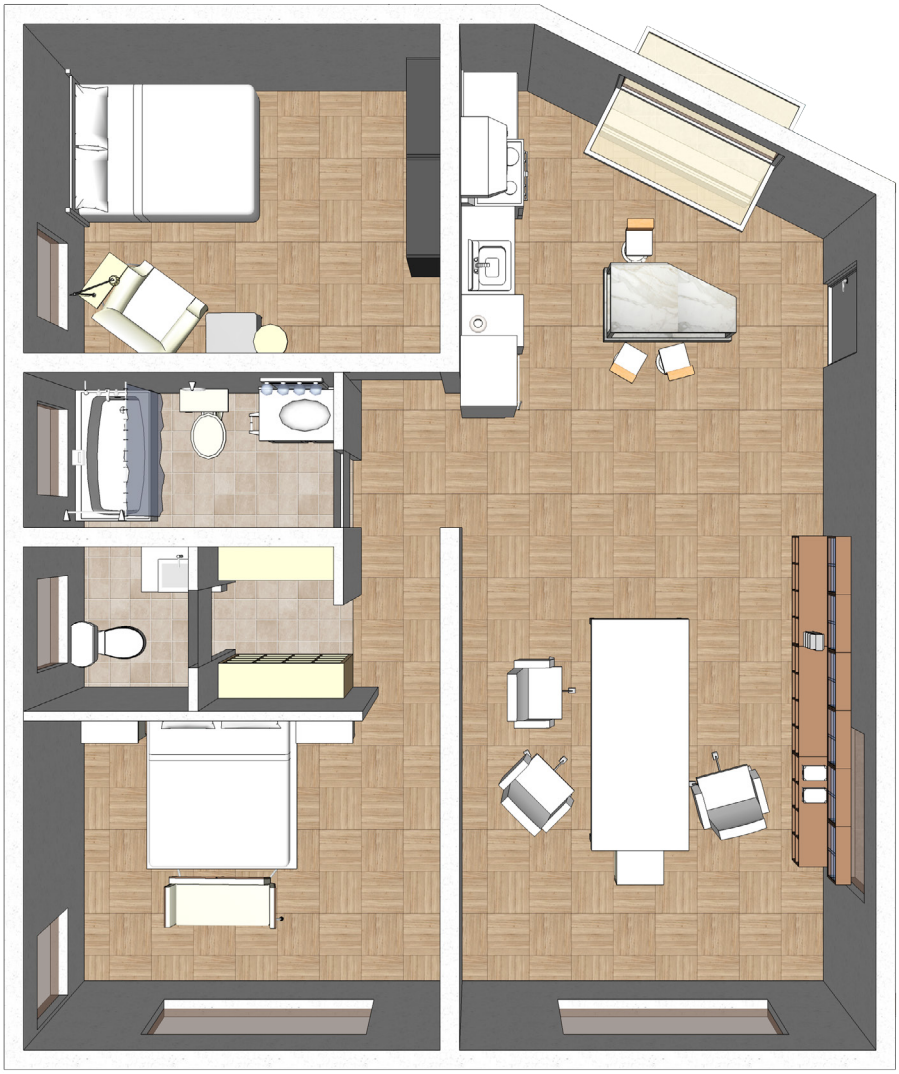


Figure 4.28 Professional Unit Example

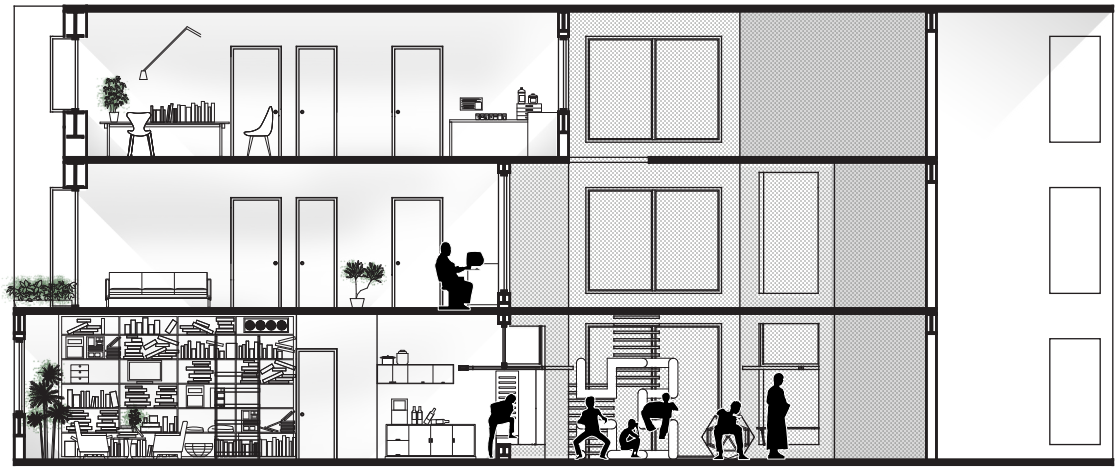


Figure 4.29 Professional scenario section 1:150

SCENARIOS_Professionals

studio
gallery
exhibition
gym
workshop
library

“I have a studio on our floor! For people who come here out of curiosity, our studio should be a little discovery. With its varied uses the scheme is based on a pioneering, seminal idea that will certainly be followed in other cities.”

Figure 4.30 Professional Scenario Life 1

Figure 4.31 Professional Scenario Life 2

SCENARIOS_Seniors

Seniors, who need a wider area in their units can have a barrier free continuous circulation both in units and communal space.

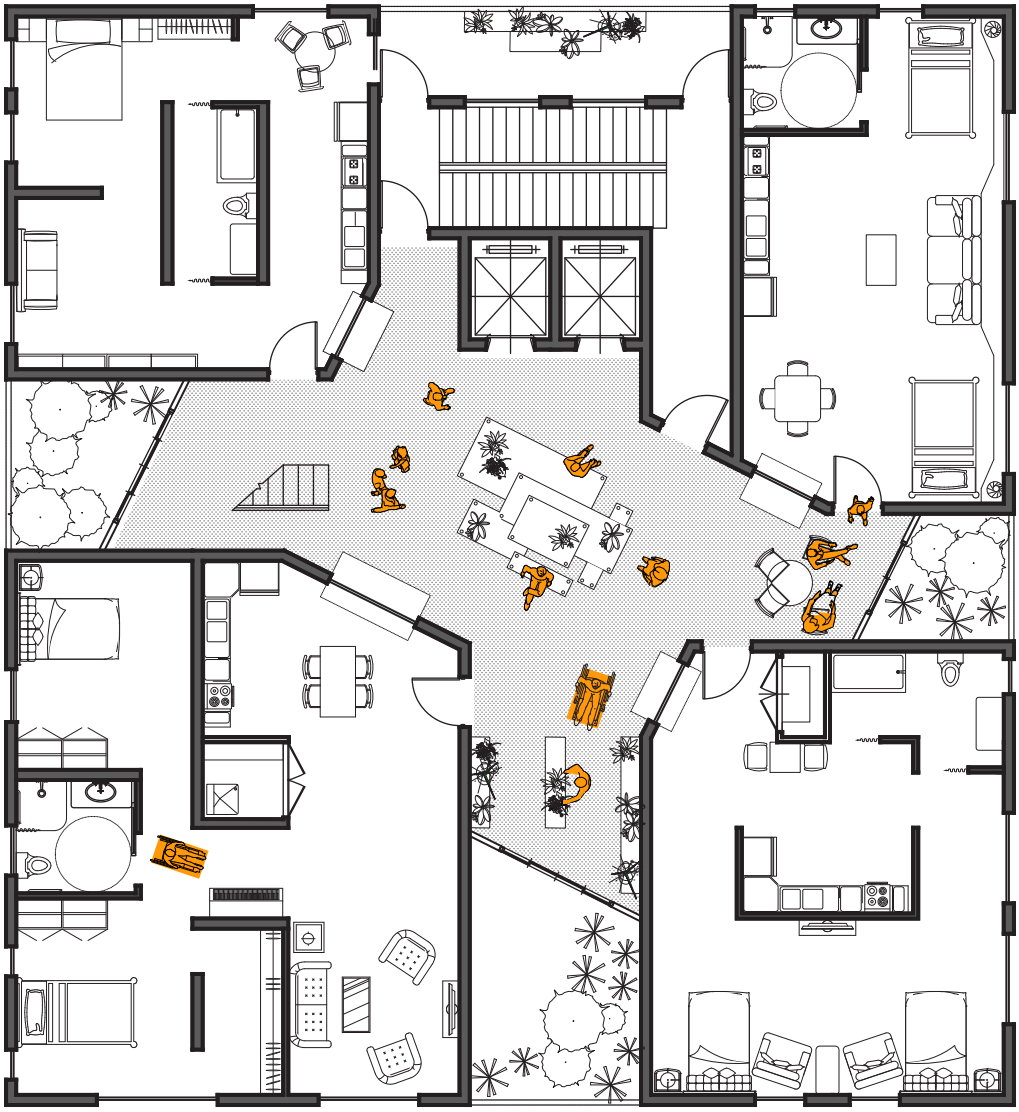


Figure 4.32 Seniors Scenario floor plan 1:150

Figure 4.33 Seniors Unit Example

Figure 4.34 Seniors scenario section 1:150

SCENARIOS_Seniors

- restaurant/bakery
- gardening shop
- library
- gallery
- cafe
- after school
- daycare

“For me, as a wheelchair user, many things were taken into account. Everything was discussed with me for my flat, and I feel very well here-- in the whole housing complex and as a resident of a cluster.”

Figure 4.35 Seniors Scenario Life 1

Figure 4.36 Seniors Scenario Life 2

SCENARIOS_Immigrant Family

For hundreds of years, extended families were the norm in Europe, as well as in Asia and Africa A shared kitchen can prepare a celebratory dinner for a culturally determined family group or guests, which literally extends the space limitation of a unit in the tower.

Figure 4.37 Immigrant Family Scenario floor plan 1:150

Figure 4.38 Immigrant Family Unit Example

Figure 4.39 Immigrant Family scenario section 1:150

SCENARIOS_Immigrant Family

“As well as our dwelling, there are many more useful rooms we can use: a sewing studio, a non-served cafe, various terraces and the couryard that my three-year-old daughter likes to visit. Some 250 people live here, many of whom I already know.”

Figure 4.40 Immigrant Family Scenario Life

4.3 Floor Design

Spatial Hierarchy Design

As it is mentioned in chapter 1.2, the static model stands for physical forms. The dynamic model discovers the “rules of the game”, which include social programs, such as social activities for different scenarios.

DYNAMIC SOCIAL HIERARCHY

sunbath

dinner table

sleep over

dinner party

after school

camp

day-care

movie night

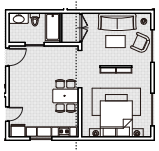
..strangers..... UNITS ..... similarities ..... COHORT GROUPS ..... pote

private living

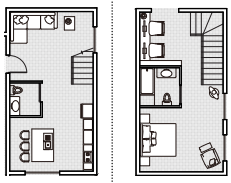
semi-private

STATIC SPATIAL HIERARCHY

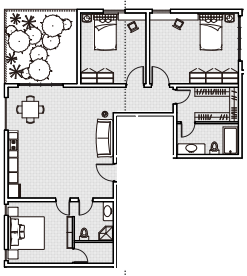
bachelor



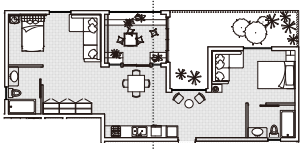
loft

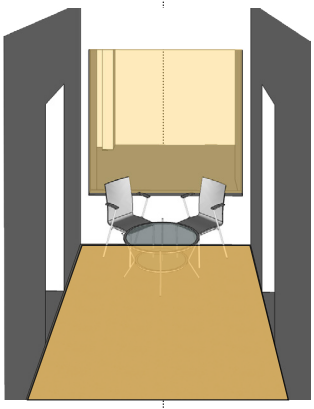


family living



senior living





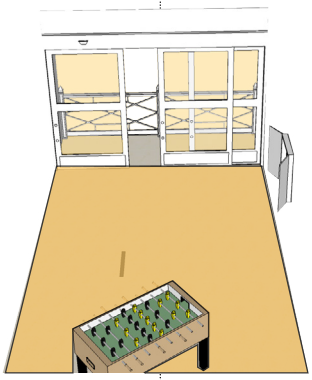
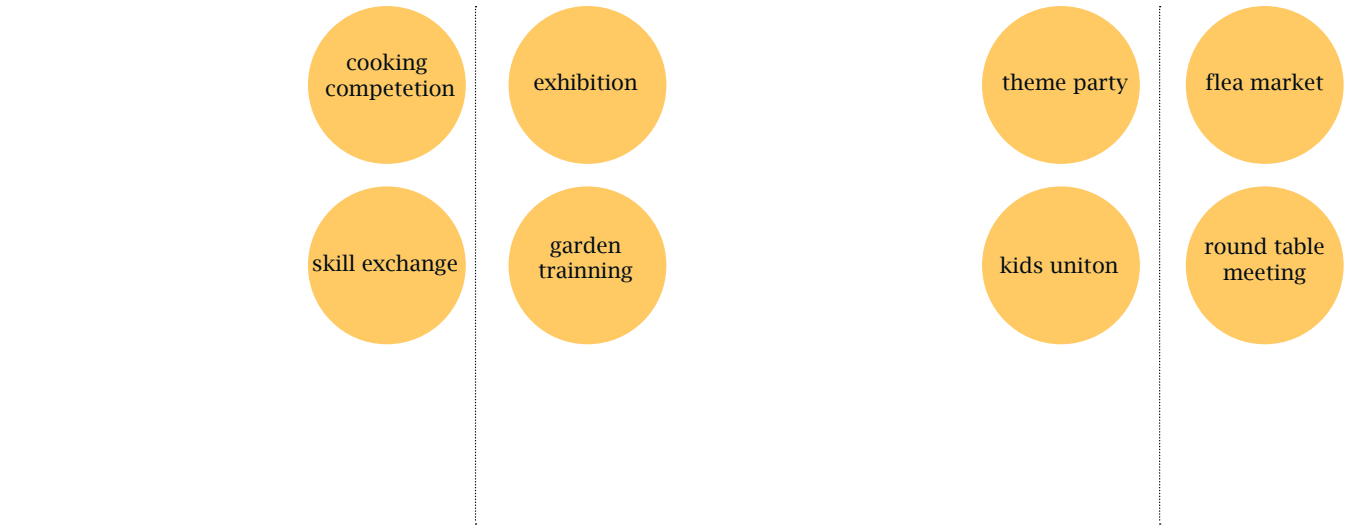
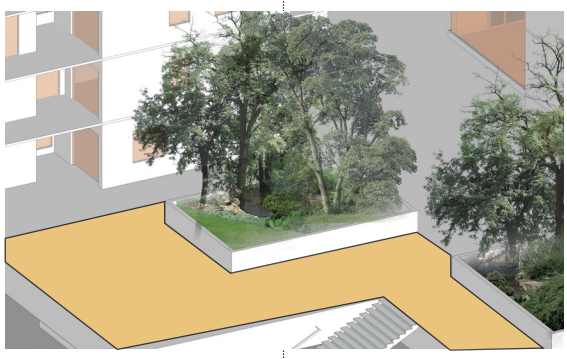
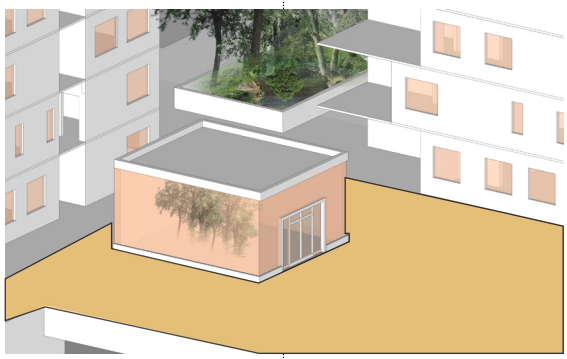
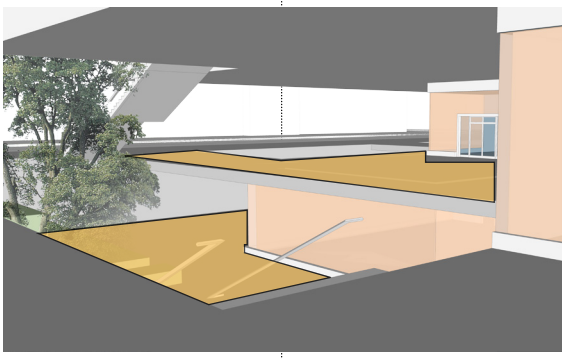


Figure 4.41 Residents in this community as a social notion, start form strangers to form similarities in a cohort groups, to developing potential relations in a neighbors group, finally to generating of socio-political relations.





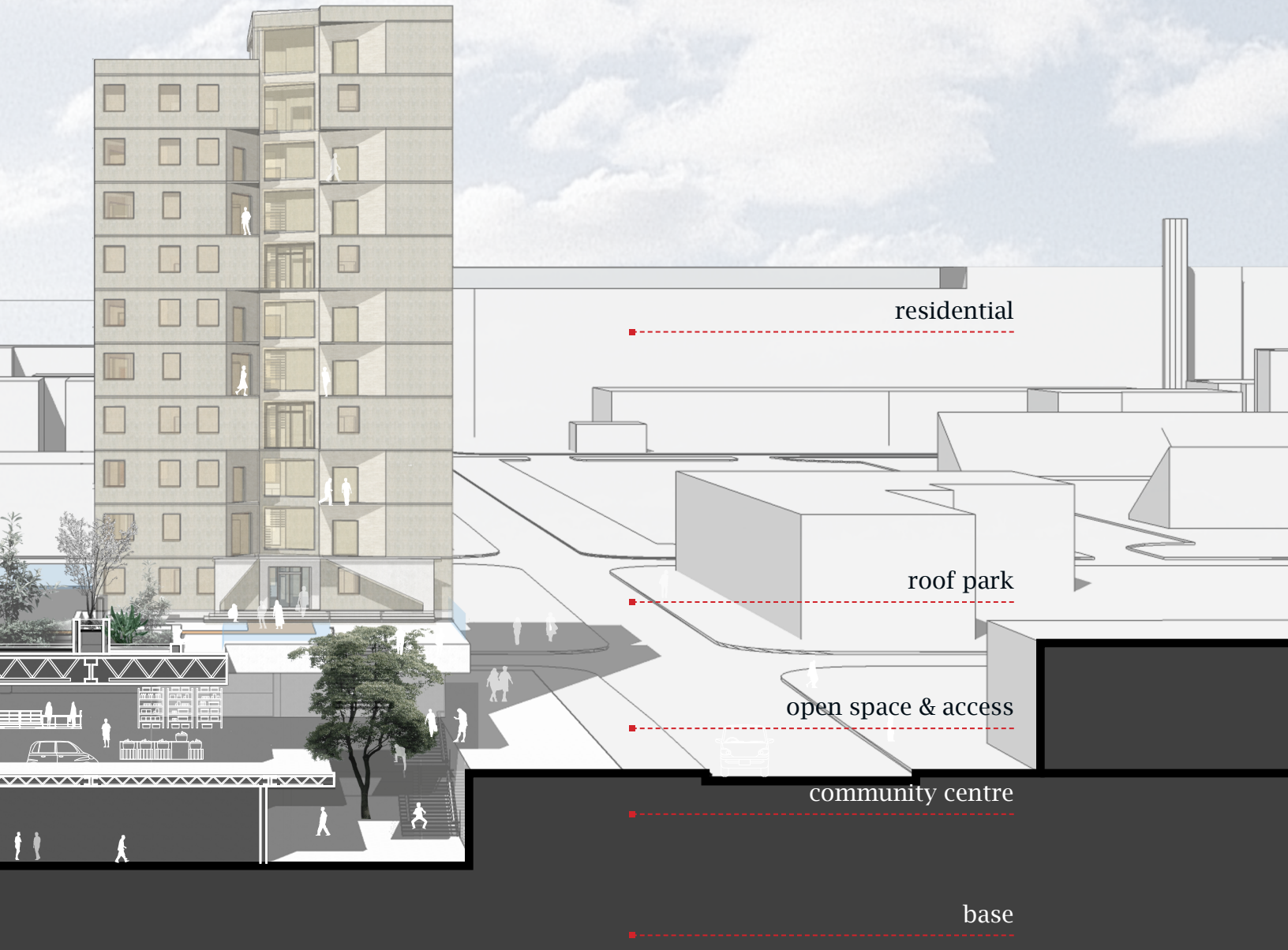


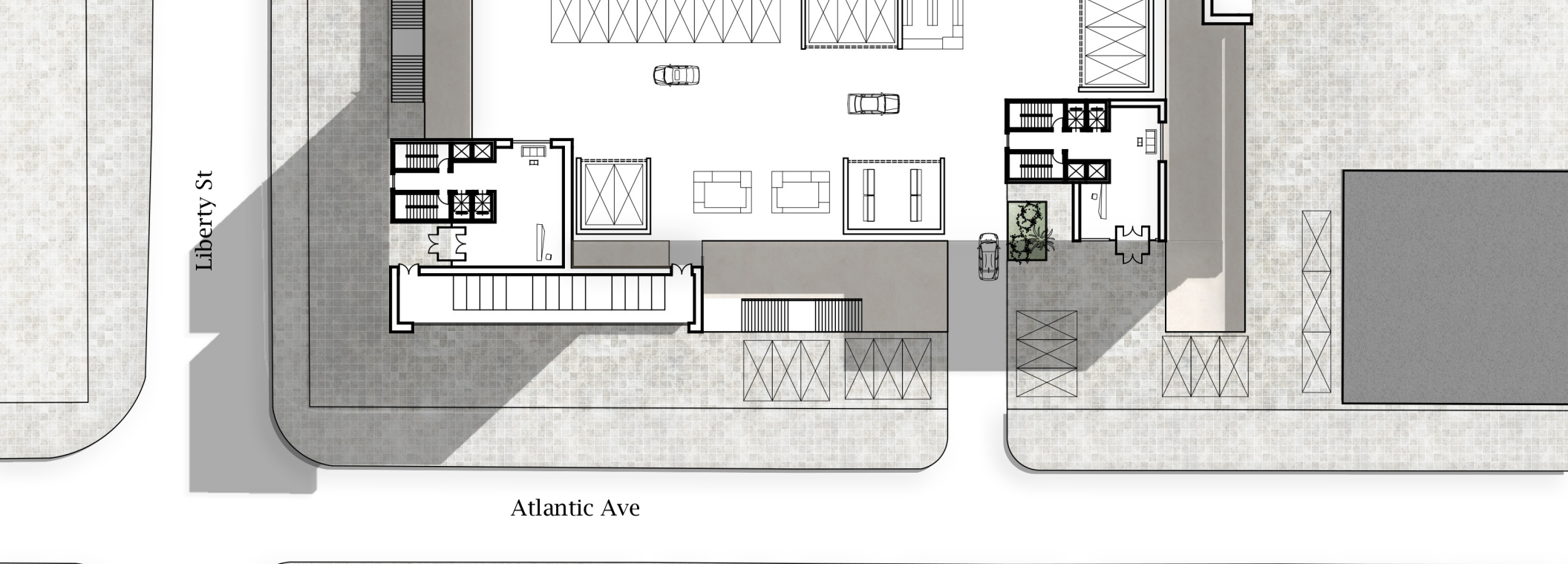


Section1-1 1:500

Figure 4.42 Community Section 1:500

Three residential buildings form a confident and distinct community together with the below grade community space. This community does not set themselves off like normal blocks, which usually hold their own territory from the context.





Ground Flool Plan 1:500

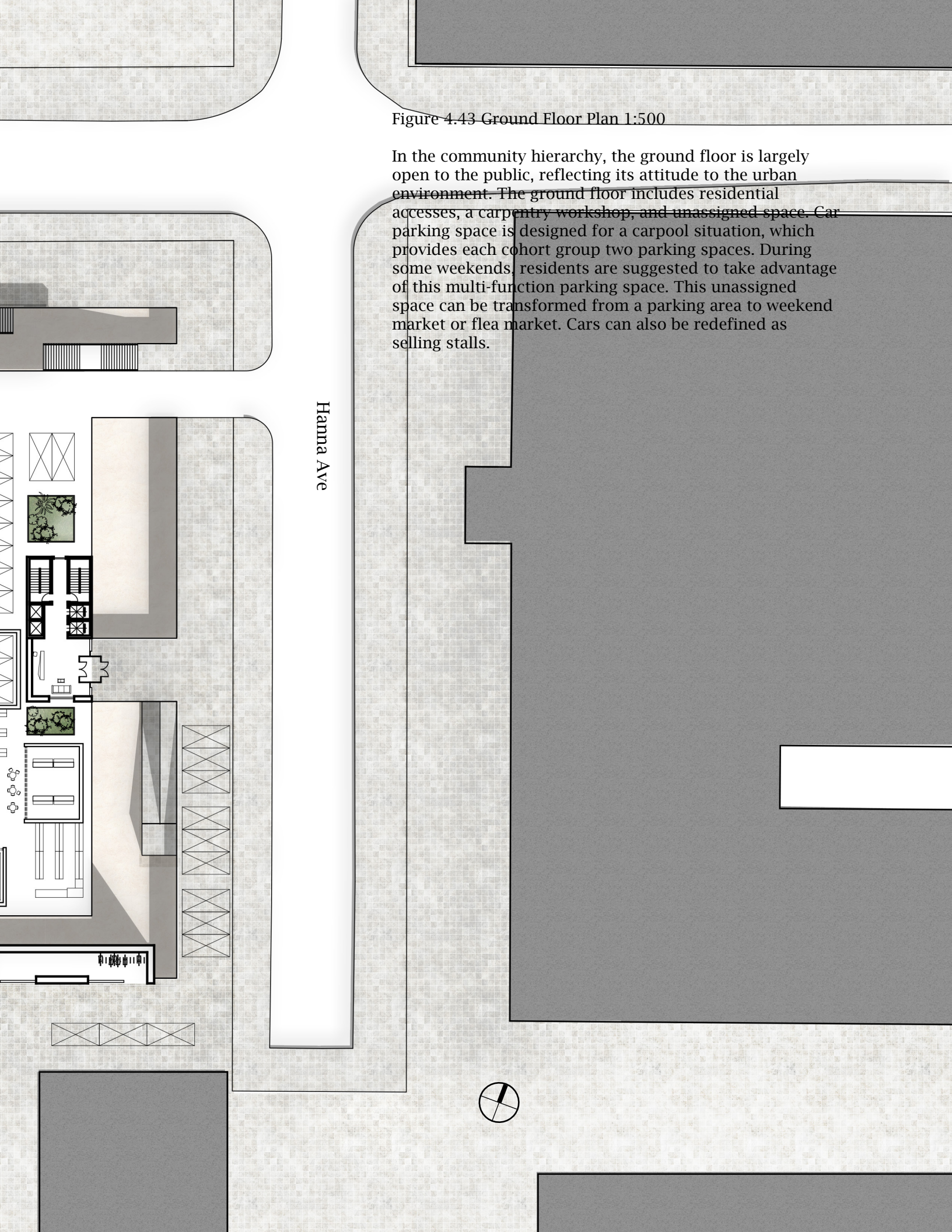


Figure 4.43 Ground Floor Plan 1:500

In the community hierarchy, the ground floor is largely open to the public, reflecting its attitude to the urban environment. The ground floor includes residential accesses, a carpentry workshop, and unassigned space. Car parking space is designed for a carpool situation, which provides each cohort group two parking spaces. During some weekends, residents are suggested to take advantage of this multi-function parking space. This unassigned space can be transformed from a parking area to weekend market or flea market. Cars can also be redefined as selling stalls.

Figure 4.44 Basement Flool Plan 1:500

Available to non-residents is a community center on the basement floor – a daycare center, gym, salon, and unassigned spaces for community, social, or cultural projects.

Figure 4.45 Roof Garden Floor Plan 1:500

Above the ground floor, a roof garden is open to the residents. Green house and an after school provide a more secured area for those who may not be able to take fully care of their kids.

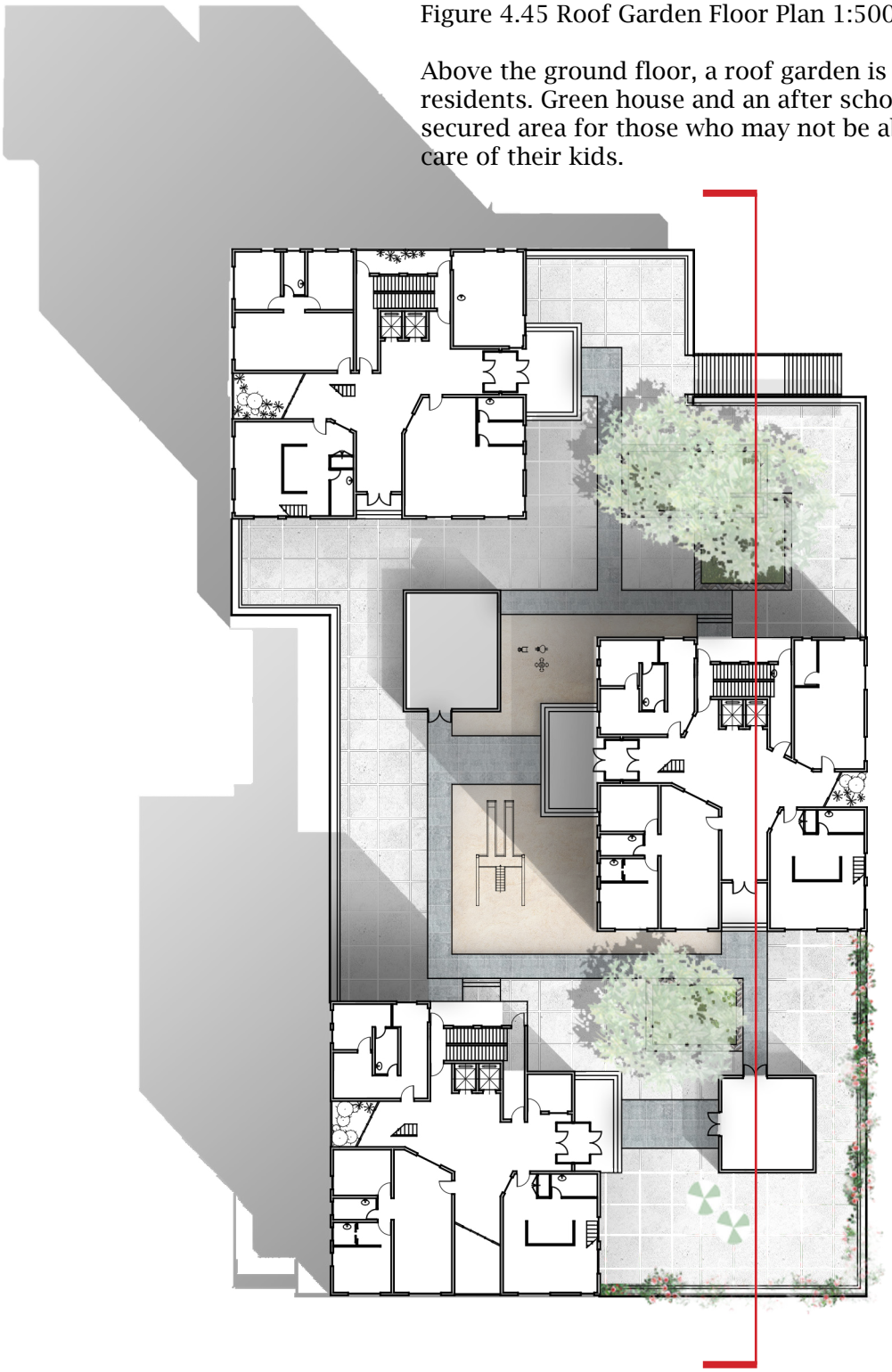


Figure 4.46 Master Plan


IMAGINE
CHILDREN'S
FESTIVAL
SOUTHBANK
CENTRE

Figure 4.47 Street Perspective View

Figure 4.48 Bird's Eye View

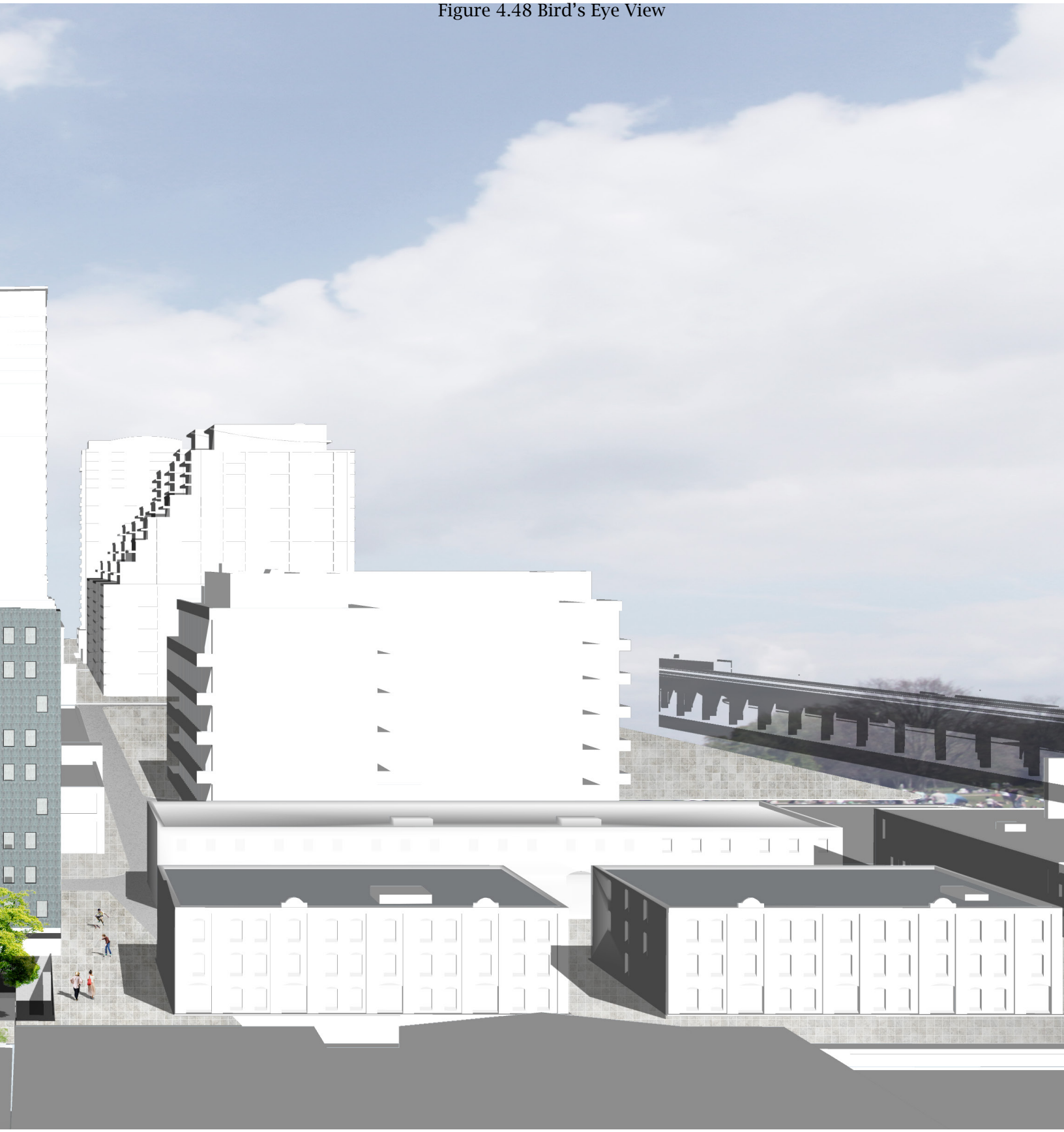


Figure 4.49 Roof Garden View

CONCLUSION

"Community is a form of association, bound around a place or social characteristics that generate a shared meaning and culture, forming the basis for, or some part of, the individual's identity.[1]"

This description comes from Michael Bounds's urban theory. This definition summarises the generating process of a community—a place or social characteristics are the foundation, a shared meaning and culture are the orientation, and self-identity is the final recognition of individuals. The preceding chapters have explored these factors and broken them down into hierarchical compositions in relation to each scale. This is not a simple hypothesis that removes the invisible wall between neighbors but a design that points to a more adaptable lifestyle which bridges a gap in the housing market. By sharing a communal space, a closer social relation bonds the residents living around it. This is the major hypothesis applied in each hierarchy. Through this bottom-up design strategy, an architectural foundation has been set up. Such an emphasis on the inventory of spatial hierarchy reveals a strict linear model which may cause tension in the social relation network, but the design has carefully resolved this problem by blurring the boundaries between each hierarchy. Indeed, integrating with neighbors is determined by the way this blurred area is occupied. Thus, social interaction is by an individual's choice. This is the absent consideration in modern living design. Or, in other words, it has been neglected or covered in pursuit of higher profit.

The design in my thesis provides a stage for a geography of agency as well as the responsibility that an individual enacts a social notion to maintain a healthy and orderly community. The integrated neighborhood of each hierarchy not only preserves internal social bonds but also stimulates connections

1 Michael Bounds, *Urban Social Theory : City, Self, and Society* (South Melbourne, Vic. ; Oxford : Oxford University Press, 2004). P.92

with the outside. The social process in parallel with spatial forms runs through the community approach together with the cultural, economic, and political process across the hierarchy. In addressing certain assumptions about the dynamic form, four scenarios offer possible target groups of residents in this design. Their social identifications have a higher willingness of integration so they can be a catalyst for minor social relations. A networked operation system of social relation has been developed on its corresponding architectural form. Last but not least, this community is an epitome of a city. The more complexity it maintains during the construction the more stable it could be. And living with our neighbors, giving it a shared meaning, is the first step to evolve our living environment.

BIBLIOGRAPHY

Broudehoux, Anne-Marie. *Neighborhood Regeneration in Beijing: An Overview of Projects Implemented in the Inner City since 1990.* Mcgill University, 1995.

Bounds, Michael. Urban Social Theory : City, Self, and Society. South Melbourne, Vic. ; Oxford: Oxford University Press, 2004.

Crampton, Jeremy W. and Stuart Elden. *Space, Knowledge and Power Foucault and Geography*. Aldershot, England ; Burlington, VT: Aldershot, England ; Burlington, VT : Ashgate, 2007.

Deleuze, Gilles and Félix Guattari. "1440: The Smooth and the Striated." *A Thousand Plateaus: Capitalism and Schizophrenia* (1987): 474-500.

Dunbar, R. I. M. (R. *How Many Friends does One Person Need? : Dunbar's Number and Other Evolutionary Quirks*. London: London : Faber and Faber, 2010.

Ekblad, Solvig and Finn Werne. "Housing and Health in Beijing: Implications of High-Rise Housing on Children and the Aged." *J.Soc.& Soc.Welfare* 17, (1990): 51.

Fincher, Ruth and Jane Margaret Jacobs. *Cities of Difference* Guilford Press, 1998.

Gehl, Jan. Life between Buildings: Using Public Space Island Press, 2011.

Hayden, Dolores. *The Grand Domestic Revolution : A History of Feminist Designs for American Homes, Neighborhoods, and Cities*, edited by Dendy, William. Cambridge, Mass.; Cambrdige, Mass. : Mit Press, C1981: Cambridge, Mass. : MIT Press, 1981.

Holland, John H. *Emergence: From Chaos to Order* OUP Oxford, 2000.

Henriksen, Ida Marie and Aksel Tjora. “Interaction Pretext: Experiences of Community in the Urban Neighbourhood.” *Urban Studies* 51, no. 10 (2014): 2111-2124.

Hill, John. *At Home in the World : Sounds and Symmetries of Belonging*. New Orleans, Louisiana: New Orleans, Louisiana : Spring Journal Books, 2010.

Hill, Russell A. and Robin IM Dunbar. “Social Network Size in Humans.” *Human Nature* 14, no. 1 (2003): 53-72.

Jackson, Ross. “The Ecovillage Movement.” Permaculture Magazine 40, (2004): 25-30.

Johnson, Steven. *Emergence: The Connected Lives of Ants, Brains, Cities, and Software* Simon and Schuster, 2002.

Jun Tang. “The Changing History of Physical Relation and Social Relationship in Beijing Courtyard 北京四合院物理空间与人际关系的历史变迁.” . http://www.curb.com.cn/pageshow.asp?id_forum=009961.

Lasner, Matthew Gordon. *High Life : Condo Living in the Suburban Century*. New Haven: New Haven : Yale University Press, 2012.

Lighthouse (Organization : Glasgow, Scotland). *Anatomy of the House*. Glasgow: Glasgow : The Lighthouse, 2002.

Marie Hartwell-Walker, Ed D. “How Many Friends do You Need?” 2015. http://psychcentral.com/lib/how-many-friends-do-you-need/.

Mardaljevic, John. “Climate-Based Daylight Analysis for Residential Buildings.” Impact of various Window Configurations, External Obstructions, Orientations and Location on Useful Daylight Illuminance (2008).

MVRDV, (Firm), Why Factory, and of Tomorrow Museum. *The Vertical Village : Individual, Informal, Intense*. Rotterdam: Rotterdam : NAI Publishers, 2012.

Pacione, Michael. *Social Geography : Progress and Prospect*. London; London ; Wolfeboro, N.H.; London ;New York: London : Croom Helm, 1987.

Ratcliffe, Peter and Ines Newman. *Promoting Social Cohesion Implications for Policy and Evaluation*. Bristol, U.K.; Bristol, U.K. ; Portland, Ore.; Bristol, UK ; Portland, OR: Bristol, U.K. : Policy Press, 2011.

Sandercock, Leonie. "When Strangers Become Neighbours: Managing Cities of Difference." *Planning Theory & Practice* 1, no. 1 (2000): 13-30.

Sandercock, Leonie and Peter Lysiottis. "Towards Cosmopolis: Planning for Multicultural Cities." (1998).

Soules, Matthew. *Future Social : Design Ideas, Essays and Discussions on Social Housing for the ‹Hardest-to-House›*. Vancouver, BC: Vancouver, BC : BLUE/IMPRINT, 2012.

Tonkiss, Fran. *Space, the City and Social Theory : Social Relations and Urban Forms*. Cambridge, U.K. ; Malden, Mass.: Cambridge, U.K. ; Malden, Mass. : Polity, 2005.

Urban Living : Berlin : Strategien für Das zukünftige Wohnen = Strategies for the Future. Berlin: Berlin : Jovis, 2015.