



ZIGZAGING THROUGH

An architectural research project that examines how the proposed hutongism building complex could create an architectural link between past and present in a historic run down area.

Master Thesis explanatory document
Supervisor: Kerry Francis, Bin Su, Krystina Kaza

Chen Zhang
1404568

A Research Project submitted in partial fulfilment of the requirements for the degree of Master of Architecture Professional.
Unitec Institute of Technology, 2015.

Acknowledgements

I would like to thank my supervisors Kerry Francis, Bin Su, Krystina Kaza, and also David Chaplin and Tony van Raat for their guidance, encouragement, and criticism. Their continuous support is integral to the development of this project. Furthermore, I am particularly grateful for the assistance, continuous love, and great confidence in me all through the years given by my family.

I would also like to give special reference to Brendan Smith for proof reading this lengthy document.

Abstract

The *hutong*¹ is a significant structure in Beijing ancient city, and could be a positive prototype for building complexes as well. The whole context of Beijing ancient city follows the logic of the *hutong*, and most urban life happens in this kind of linear space. However, with the growth of the modern city, the time-honoured *hutong* pattern is fast disappearing, so that local people feel the loss of street life and of community.

Commencing with an investigation that traces the evolution of the spatial, social and conceptual qualities of the historic *hutong* pattern, the key characteristics are possible to define further. Through in-depth analysis, a particular area, *Dashila*, has been identified as a place in which the essence of the *hutong* space can be clearly perceived. As a result, the potential relationships between a *hutong* space and a building complex can be explored, so that the strategies of *hutongism* can give guidance for certain building complexes. This architectural research project—*Zigzagging Through*, examines how a school building complex proposal might create an architectural link between past and present in a historic but run down area, and it uses *hutongism*² as a valuable way to help reform the identity of Beijing's ancient city.

In addition, the focus of this research project is also on designing a building that is particularly relevant to the context of Beijing's ancient city. Based on the study of relevant architectural precedents, education theories, and historical background, the Peking Opera School has been chosen as an ideal programme for the project. The proposed school not only links the disrupted historical context programmatically, but also takes advantage of context to assist students in showing their skills and struggles to a wider audience. This project uses *hutongism* as a catalyst in the quest for new ways of approaching the

1 *Hutong* is a type of traditional narrow streets or alleys in Beijing.

2 *Hutongism* is a proposed architectural strategy takes advantages from the phenomenon of *hutong*.

design of a contemporary school complex for the Peking Opera department of the Central Academy of Drama, which contains hybrid programmes and functions as a working, living and learning environment. Analytical drawing and modeling techniques will be used to distil, reinterpret, and test the underlying spatial and conceptual strategies of selected precedents to see if they can be used to develop *hutongism* in the Peking Opera School complex.

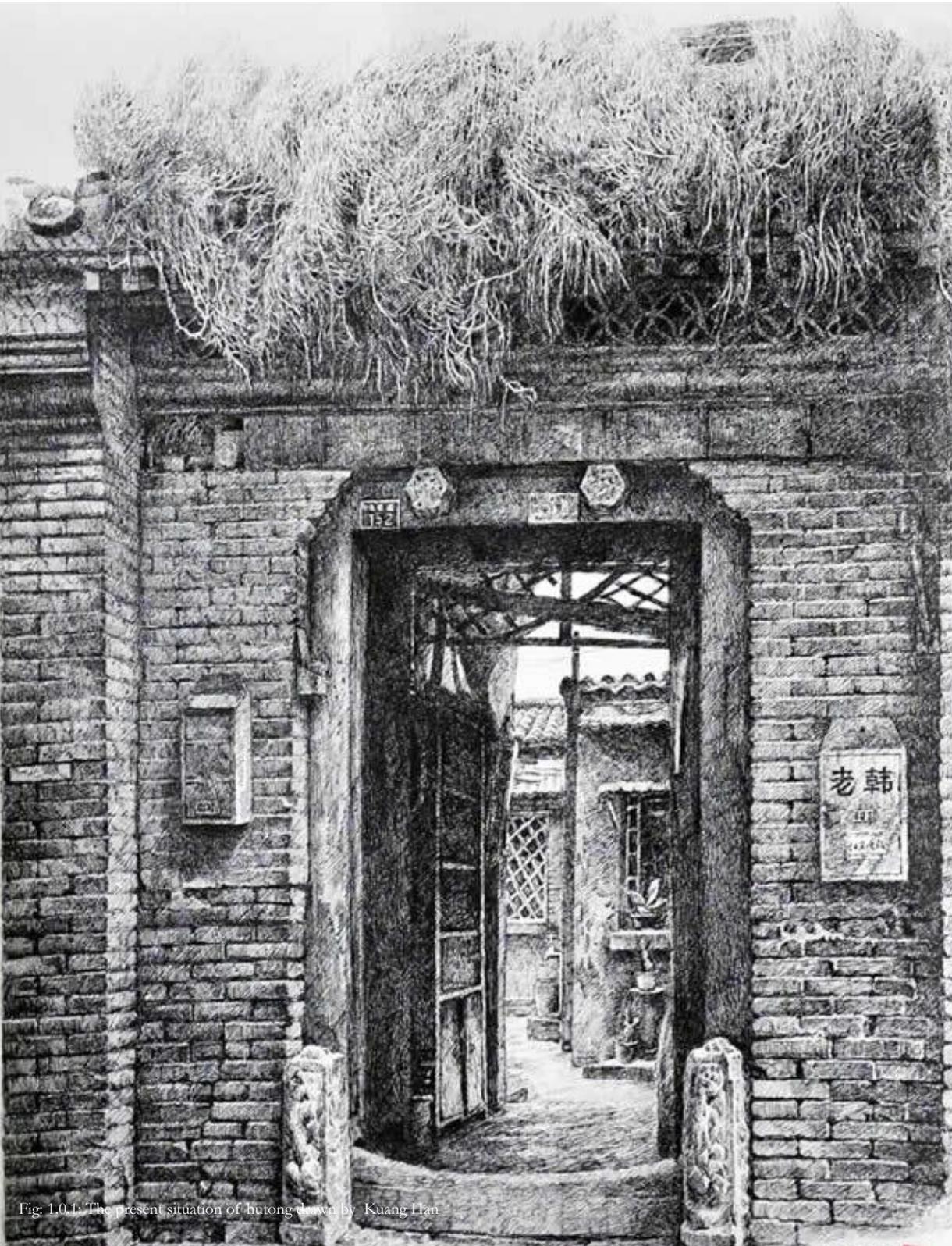
Contents

Acknowledgements

Abstract

1.0 Introduction	6
1.1 Background Information	7
1.2 Aims	9
1.3 Research Questions	10
1.4 Methodology	10
1.5 Scope and Limitations	13
2.0 Existing Knowledge and Precedents Study	14
2.1 Historical Context of Hutong's Evolution	16
2.2 Precedent Study: Anatomy of Typical Hutongs — Dashila	28
2.3 Concluding Hutong	52
3.0 Peking Opera	54
3.1 Beijing Opera	56
3.2 Design Programmes and Facilities	70
3.3 The design prototypes	74
3.4 Conclusion —the anchor point with hutong space	83
4.0 Physical Context	86
4.1 City Scale	88
4.2 Surroundings	90

5.0 Design Development	96
5.0 Outline of the Design Methodology	98
5.1 Exploration 1 – Urban Interference	100
5.2 Exploration 2 – Partial Design	102
5.3 Exploration 3 – Functional Development	122
5.4 Exploration 4 – 3D Space Layer Arrangment	127
5.5 Exploration 5 – Organizing different programme clusters	130
5.6 Exploration 6 – Structure	134
5.7 Exploration 7 – Materiality	135
5.8 Exploration 8 – Architectural Language	136
5.9 Exploration 9 – Developed Design	138
6.0 Conclusion	144
7.0 Bibliography	146
8.0 Appendix	150
8.1 Exploration 9 – Appendix 1	150
8.2 Exploration 9 – Appendix 2	156
9.0 List of Figures	180



“Old Beijing with the crowded *Hutongs*

Children playing in the blue sky

Young workers riding bikes with the ling ling sound

Old men playing chess in the shade of an old tree

There is still the noise of people bargaining in the street, as loud as a group of people protesting

This is a quiet and loud peaceful town

People are living joyfully

A few years later Beijing has changed

New Beijing is full of tall buildings instead of small courtyards

Rooms with air-conditioning instead of the shade of trees

Cars that go vroom instead of bikes that go ling ling

The children are playing with modern technology

Suddenly the sky turns gray

The gray skies cover Beijing

Have you ever thought whether the changes are worth it?”

-Steven Zheng, *Changes of Beijing*³

³ Margherita Orsini, *Dashilar Hutong*, (Milan: Politecnico di Milano, 2014), 20, pdf.

1.0 Introduction

1.1 Background Information:

Hutong refers to an arrangement of narrow streets or alleys and is commonly associated with northern Chinese cities, most prominently Beijing.⁴ They are indispensable spaces for those Beijingers who live in the ancient city. Since the mid 20th century, the number of *hutongs* has decreased dramatically because of various revolutions, changes of policies, the influence from the West and a high population density. *Hutong* evolved and expanded over eight centuries, arriving at a flamboyant pattern in the past eight centuries. In order to better understand this project and the context in which *hutong* arose, some information about Beijing and its ancient city is necessary.

The city of Beijing has a long and rich history that dates back over 3,000 years.⁵ For centuries it was the capital of the ancient states or provinces. Beijing's historical centre is clearly marked off by the city walls, which date to the *Ming Dynasty*. In spite of the fact that these ancient bastions have since been succeeded by the Second Ring Road, this centre still conserves its ancient urban layout.⁶ Around these monumental structures, the low expanse of *hutong* and *sibeyuan*⁷ extends, now reduced to a third of their original dimensions and punctuated by incongruous buildings from the 1960s and 1970s. They are enclosed by the frontrunners of the tall buildings that have heralded, since the 1980s, the growth of the modern city.⁸ Now, a large number of them have been demolished to make way for new roads and buildings. People have to get into a car to get anywhere, which is a big economic, environmental and social

4 Ibid., 44.
 5 "History of Beijing," last modified September 13, 2014. http://en.wikipedia.org/wiki/History_of_Beijing
 6 Claudio Greco and Carlo Santoro, *Beijing: the New City*, (Milan, Italy: Skira, 2008), 158.
 7 *Sibeyuan* is a Chinese courtyard house.
 8 Greco and Santoro, *Beijing*, 158.



Fig 1.0.2: The influence from the policy, economic, and industry

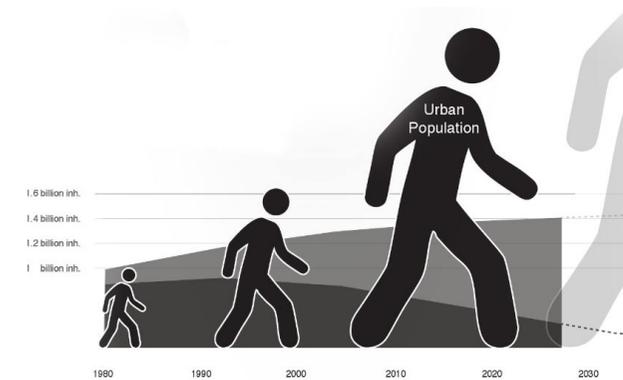


Fig 1.0.3: The growth of urban population in China



Fig 1.0.4: The new buildings in Beijing designed by western architects

cost, because many big building blocks have been inserted into Beijing's ancient city without consideration of the existing context, isolating people in a very high density area. Communities are being broken up and people have less and less interaction. Aside from a handful of restored neighborhoods reclaimed by the elite, the vast majority of the settlements suffer from being irreparable, unsanitary, over-populated, and often with slum-like conditions to the point that demolition is the only viable and sensible solution.⁹

Furthermore, during the 20th century, there were two main trends where the Western style was followed in China. First, in 1911, the Republic needed structures that could contain the new functions that represented modern needs. This was achieved with foreign architecture, but that was not enough, as they also had to reveal a representative image of the new republic.¹⁰ Also, after 1980, economic liberalization and the new freedoms gained stimulated people to seek what had been lost in the Maoist period. Everything that came from abroad was considered to be innovative and free, a goal to aim for.¹¹ However, the way that Chinese designers tried to balance the relationship between the East and the West involved either attaching ancient-style facades onto a big building block or adding curved roofs onto the Western architecture, thus creating the classic image of an Eastern version of Europe.

As a result, it is clear that the current dilemmas facing Beijing's ancient city are the loss of street life and community, and the fact that many of the modern buildings copy foreign architecture mechanically, without considering

9 Alexander Morley, *The Informal Formal*, http://issuu.com/adavinmorley/docs/final_final_draft_pgs

10 Pier Alessio Rizzardi, *The Condition of the Chinese Architecture: Elaboration of a critical approach*, (Beijing: China Architectural and Industry Press, 2014), 217.

11 Ibid.



Fig 1.0.5: The decrease of *butong* -- the pattern of it largely destroyed for "modern" architectures

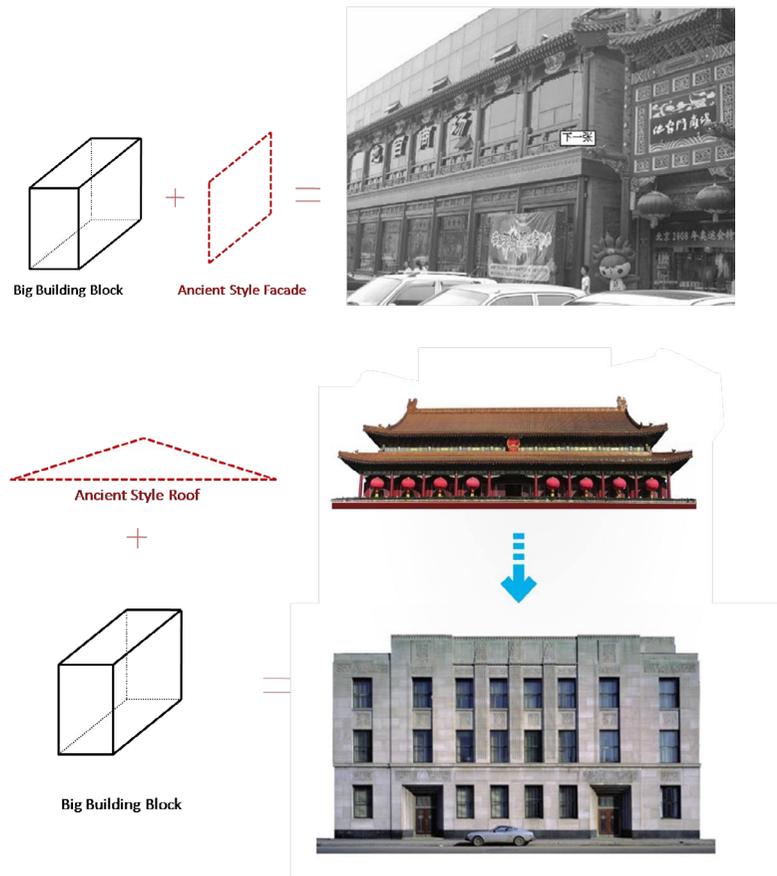


Fig 1.0.6: How the "historical" building to be created in modern times

regionalism in Beijing. As Peter Calthorpe said, "I don't think that just picking the American dream and transferring it to China is appropriate or is even going to work. The Chinese have a much stronger tradition of street life, they love to spend time on the street."¹²

1.2 Aims:

In order to solve the dilemmas above, the primary objective is therefore to maintain the vitality of urban life in the Beijing ancient city, through reviving the *hutong* system in a historic but run down area. In this way, it could be shown that although it is inevitable that the ancient city fulfills the needs of new urban life in terms of higher land requirements and new functions, it is possible to balance these two aspects. Also, an unexpected social and cultural encounter that *hutong* can give us, when the ancient city meets modern society. It is not the inability of the *hutong* to adapt and endure in today's environment, but rather the fact that China currently pushes an urban policy that says, "You cannot exist."¹³

In addition, this project examines the theories and precedents for *hutongs* and discovers their potential value for building complex designs such as the Peking Opera School complex, which would blend a performing arts school into people's lives, and vice versa. A mutual benefit could be achieved. For one thing, the *hutongism* living and learning scenario could help the students in terms of communication, multidisciplinary cooperation, research and innovation. For another, the complex programmes and functions involved in the Peking Opera School, which are largely based on the context of the ancient city, would provide a much richer experience for both local residents and visitors.

¹² Tom Levitt, "Chinese Cities Feel Loss of Street Life and Community", *Reimagining China's Cities: Towards a Sustainable Urbanisation*, 57. http://issuu.com/chinadialogue/docs/reimagining_chinas_cities_journal

¹³ Morley, *The Informal Formal*.

Consequently, this proposed Peking Opera School complex linked to the time-honoured *hutong* pattern and located in the historical area, not only fulfills a functional need, but also fulfills the task of linking old Beijing with new Beijing through bringing together the isolated ancient urban context and new urban life.

1.3 Research Questions:

Based on the aims of this project, there are two research questions that need to be solved:

Firstly, what exactly are the architectural characteristics of a hutong, and do these relate to the nature of the space in a building complex? If they do, how does that work?

Secondly, does the nature of the space of a *hutongism* building complex give clues to ways of designing a space for the Peking Opera School in modern society?

1.4 Methodology

Through researching existing knowledge, recollecting past life in the *hutongs* and investigating the sites, the strategy, *hutongism*, is generated. While many texts focus on the art and historical aspects of the *hutong*, the following are of particular relevance to this project in that they look more deeply into the formation, evolution, and spatial qualities of *hutong*, as well as its possibilities and complexities: *Study on Typology of Beijing Hutong Sibeyuan* by Yuehong Li and *The Informal Formal* by Alexander Morley. In these studies, the nature of the *hutong* is made clear, which is that a *hutong* is not only a traffic alley, but also a complex driven by tradition and the habits and social life of local residents. The multi-functioning and organic linear system connects Beijing's ancient city, making it a whole, rather than separating the city into different blocks following the nature of functionalism.

To understand *hutongs* in depth, a selected precedent was analyzed --*Dashila*. Based on the thesis *Dashila Hutong*, by Margherita Orsini, and on a detailed investigation into the available data about all the *hutongs* in Beijing's ancient city, held by the Beijing University of Civil Engineering and Architecture, the research continues with a close analysis of the spatial, social, and representative characteristics through illustrations from the *Dashila*. A study of the images reveals the physical characteristics of the *hutongs* and looks for clues to the desires of their creators, how the local residents saw their spaces or wished them to be seen, and what the implications might be. At this stage, analytical drawings showing plans and sections were used as research methods, and the 12 derived characteristics of the *hutongs* were concluded as key factors influencing further design. In this way, the potential value of the *hutong* for certain building complex designs becomes clear.

Moreover, there is a need to find a proper programme that facilitates the potential value of the *hutongs*. The school complex design is a good choice. Considering the site would be in the Beijing ancient city and take advantage of the *hutong's* nature, this complex would be highly relevant, so the Peking Opera School complex should be an appropriate programme. Through studying the texts that describe the process, the teaching-learning methods and the discipline of the Peking Opera education, such as *Drama Kings: Players and Publics in the Re-creation of Peking Opera* by Joshua Goldstein, and modern performing art school precedents including The Laban Dance Center, Reed College Performing Arts Building, and the Logan Center for the Arts, the relevant programmes and facilities required for performing, researching, learning, accommodation, trading and communicating could be analyzed and defined.

In considering the limitations of the site and the complexity of the proposed Peking Opera School, it becomes clear that the *hutong* space should be developed into three-dimensions, in order to get more clear study models for further design. Based on the principles concluded from *hutong* spaces in general, a new spatial relationship and a set of partial models with similarities to the *hutong* have been developed. These models could be interpreted, synthesized, and used in different scales and contexts in relation to the design project.

Finally, through the emphasis on pragmatic research, the strategy chooses segments from different architectural precedents with a similar scale and essential functional features, and uses the new *hutongism* models that have been derived or reprogramme, redefine, restructure and condense ideas to create a new hybrid Peking Opera education space and venues, plugged in and hybridized to one of the existing historical run down areas in the Beijing ancient city. In this way, the Peking Opera teaching and learning methods and the three-

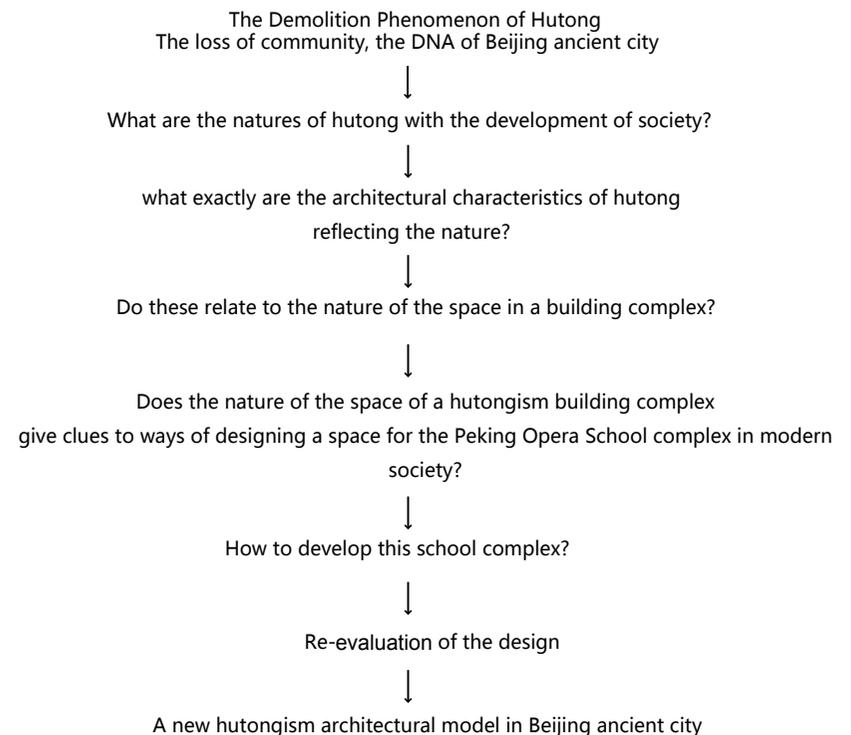
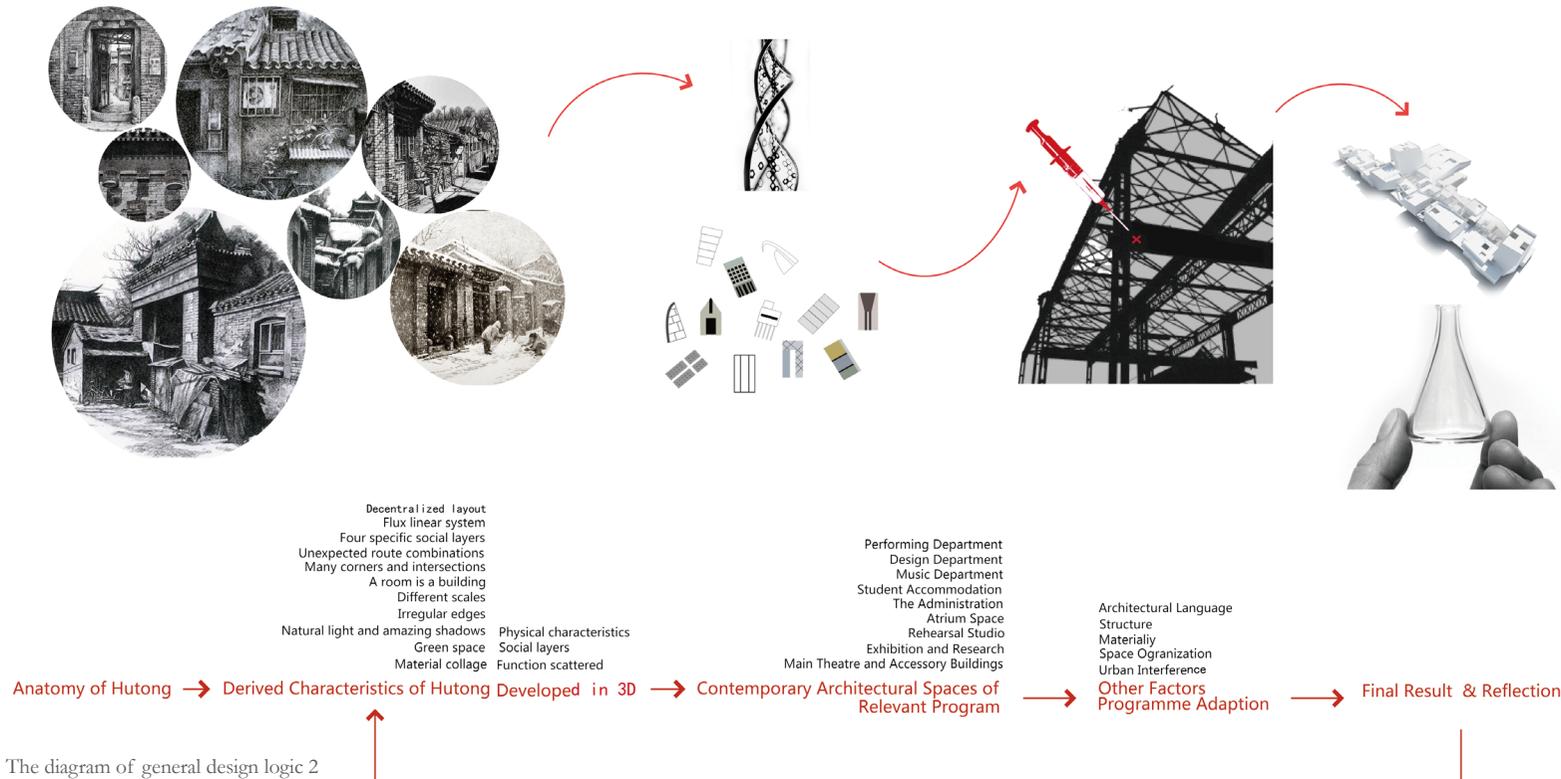


Fig. 1.0.7: The diagram of general design logic 1

dimensional *hutong* network could be merged together to function as social mixers or blenders. Relevant models and comparison diagrams have been created as well, to assist a better understanding of the final result.



1.5 Scope and Limitations:

Due to the scale of this research project it cannot be fully conclusive as to all the characteristics and implications of the *butong*; rather, it is an indication of possible directions for future research.



Fig 2.0.1: The present situation of Dabaishun hutong in Dashila area drawn by Luo Yafeng

38
2010

2.0 Existing Knowledge and Precedents Study

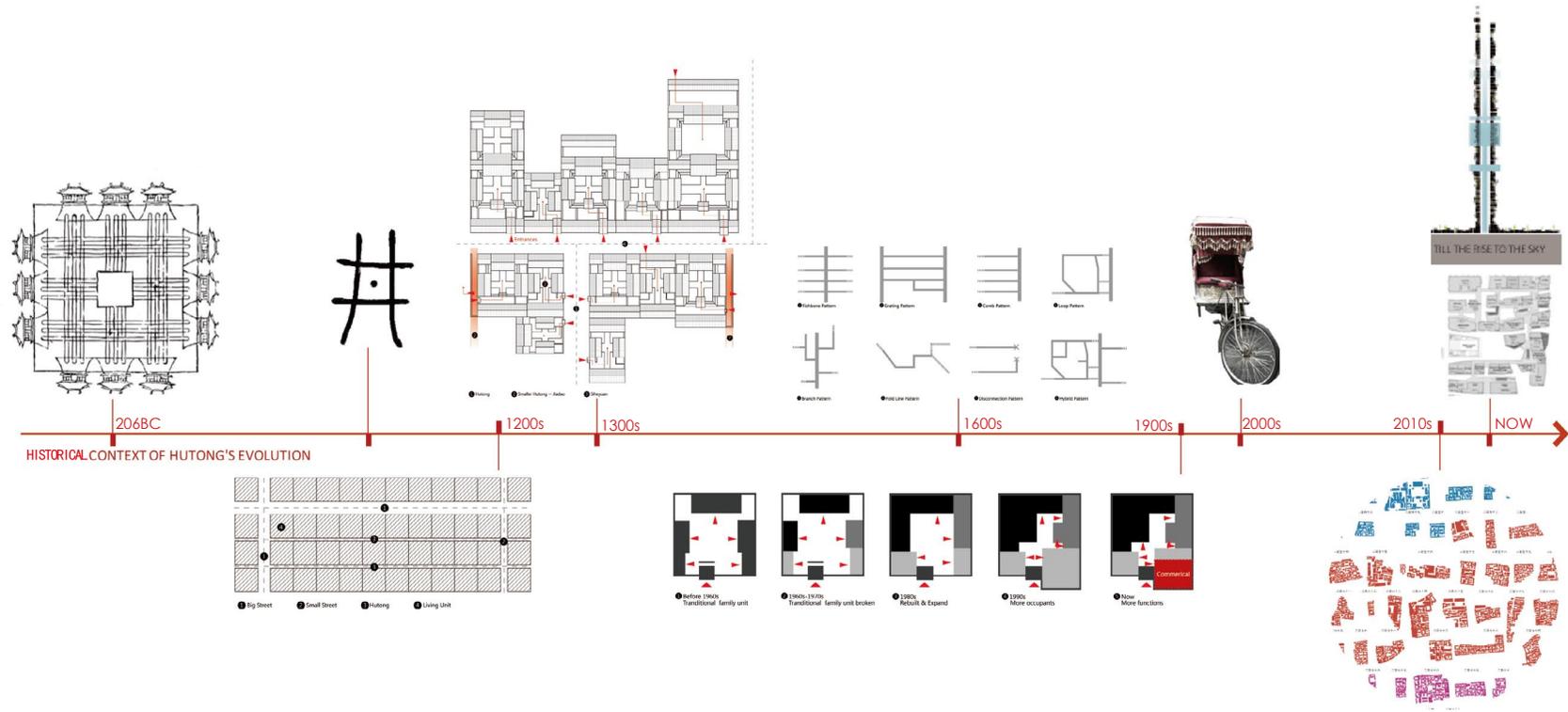


Fig 2.0.2: The timeline of *hutong's* evolution

2.1 Historical Context of *Hutong's* Evolution

2.1.1 The Origin of *Hutong* and Early Evolution (1260-1368) –*Hutong* as traffic, communication, fire protection, ventilation, lighting space

The word *hutong*, meaning “narrow lanes”, was established during the Yuan Dynasty in the 13th century when Genghis Khan’s Mongols occupied Beijing. In 1260 Kubla Khan, grandson of Genghis Khan, established the Yuan Dynasty and chose Beijing as his capital.¹⁴

There are several theories behind the origin of the name, the most popular being that it means "water well" in Mongolian.¹⁵ The reason is that, for the Mongols, in the old time, with new wells came new communities.¹⁶ Those communities shared the water from the well, and water wells became the potential communication media for neighbors, which is similar to the potential function of *hutong* (fig 2.1.1). Later *hutong* was referred to as narrow streets, or lanes formed by quadrangles.¹⁷

The basic nature of *hutong* is a traffic space. During the takeover by the Mongols the old city had been largely demolished, and was rebuilt in 1267. The basic structure of the city follows the ideal layout for a royal capital as recorded in the *Kaogongji* (“artificers' record”) during the Western Han dynasty (206BC-220AD)(fig. 2.1.2).When the new city was finished, there were clear definitions of streets, lanes and *hutongs*. All of them formalized traffic and the connection structure of the city. There are three kinds of street in the city: big streets (around 37.2m wide), small streets (18.6m wide) and *hutongs* (9.3m wide). Big and small

¹⁴ “Beijing Hutong & Siheyuan”, accessed September 1, 2014. <http://www.tourchina.com/travel-beijing/hutong-siheyuan.htm>

¹⁵ Ibid.

¹⁶ “Beijing Hutong & Siheyuan”, accessed September 1, 2014,<http://www.tourchina.com/travel-beijing/hutong-siheyuan.htm>

¹⁷ Ibid.



Fig 2.1.1: Well-the ancient Chinese character

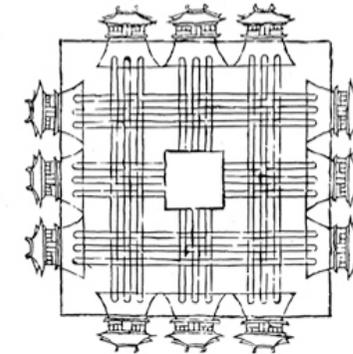
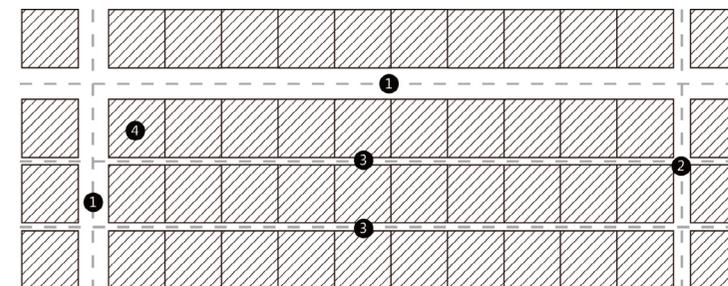


Fig 2.1.2: The ideal layout for a royal capital as recorded in the *kaogongji*



1 Big Street 2 Small Street 3 Hutong 4 Living Unit

Fig. 2.1.3: The basic street structure in Yuan dynasty (Redrawn from Yuchong Li, *Study on Typology of Beijing Hutong Siheyuan*)

streets mostly ran North-South, while *hutongs* mostly West-East.¹⁸ (fig 2.1.3)

Hutong was also called “fire alley” during the Yuan Dynasty, because it acted as an interval space between buildings. It was a pathway for citizens at ordinary times, and a fire protection facility as well, halting the spread of a fire, while also providing space for patrol and fire fighting.¹⁹ Moreover, *hutong* space is a highly exterior structure opening to sky, so it provided ventilation and lighting for interior spaces along it.

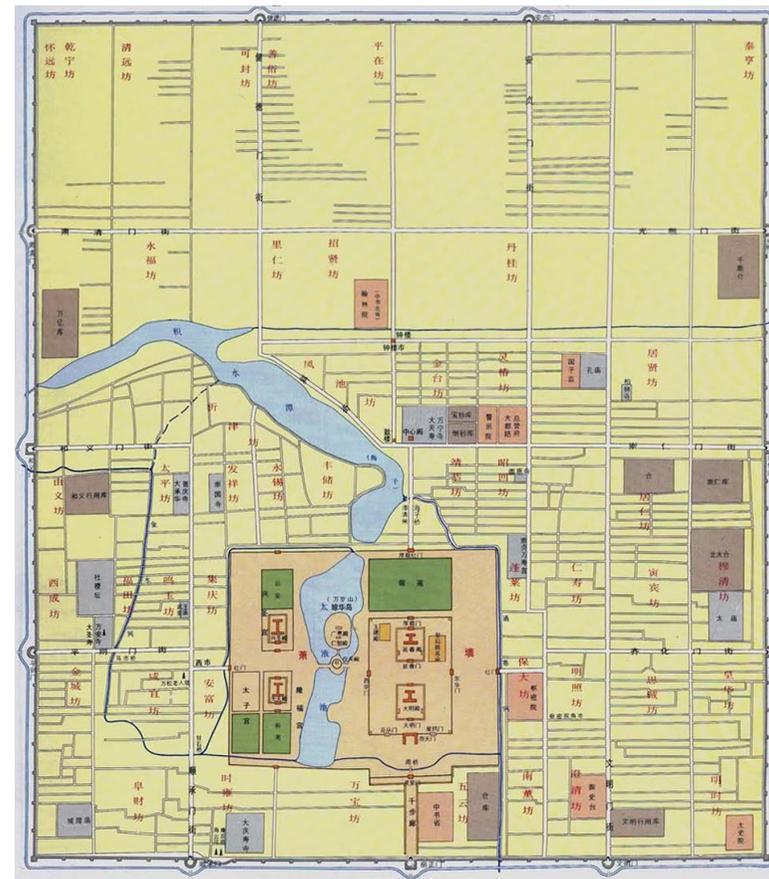


Fig. 2.1.4: The map of Beijing ancient city in Yuan dynasty

18 Margherita Orsini, *Dasbilar Hutong*, 44

19 Yuehong Li, *Study on Typology of Beijing Hutong Sibeyuan*, Beijing : China Building Industry Press, 2009, 64

2.1.2 The Evolution of *Hutong* in Ming and Qing Dynasty (1368-1911) – More Integrity and Clearer Pattern

Throughout the Ming (1368-1644) and Qing (1644-1911) Dynasties the *hutong* system developed further. The Qing emperors made some modifications to the Imperial residence but, in large part, the Ming buildings and general layout remained unchanged.²⁰ Most of the *hutongs* we see today were built during the Ming and Qing eras.²¹ The reason is the formation and development of *sibeyuan* in Beijing and the new urban plan strategy for ancient Beijing during these periods largely affected the pattern of *hutong*, gave the pattern of *hutong* more integrity and clarity (fig 2.1.5).

Yuan Dynasty is the early stage for the formation of *sibeyuan*, but Ming and Qing are the most important periods for the spread and popularization of *sibeyuan*'s final pattern. The very complex hierarchy of the rational Chinese family is perfectly mirrored in the *sibeyuan*'s layout, just as the urban organization of the whole city of Beijing, reflects the social hierarchy of ancient China.²² The courtyard in *sibeyuan* is the origin concept of *yuan*, one of the most important spatial models for ancient Beijing. Architecturally speaking, the court is a negative space, a void contrasting the masses of the building and the enclosing walls (fig. 2.1.6). The number of courtyards shows the wealth and prosperity of a family, and the maximum layers of courtyards for one *sibeyuan* compound is nine (fig. 2.1.7). The relationship between *hutong* and *sibeyuan* is interdependency, because *hutong* link individual *sibeyuan* together, forming the

20 "Beijing," last modified September 10, 2014. http://en.wikipedia.org/wiki/Beijing#Ming_dynastyw

21 "Beijing Hutong & Siheyuan," accessed September 1, 2014. <http://www.tourchina.com/travel-beijing/hutong-siheyuan.htm>

22 Margherita Orsini, *Dasbilar Hutong*, (Milan: Politecnico di Milano, 2014), 56, pdf.

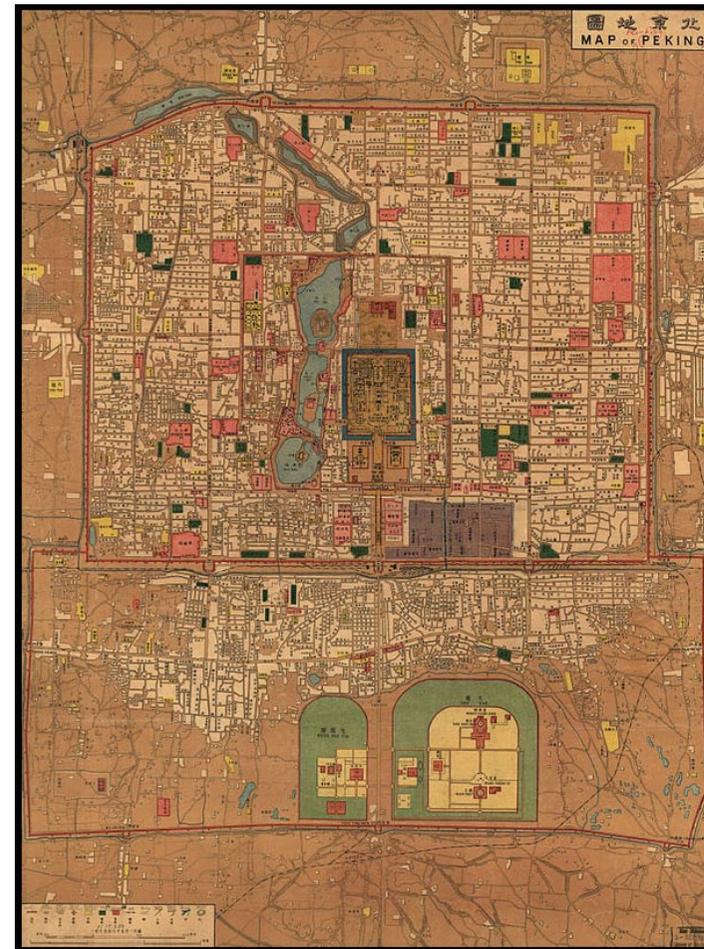


Fig 2.1.5: The map of Beijing ancient city in the early 1990s

whole context of Beijing's ancient city. In general, *hutong* highly affected the set of entrance, layout, and orientation of *sibeyuan*. All of the main entrances of *sibeyuan* face to *hutong*, resulting in *hutong* becoming positive communication and connection spaces for different families. Alternatively, based on the hierarchy of the ancient society, the direction of most of the main axis of *sibeyuan* is South to make sure the master rooms were situated in the North facing to the South.²³ When *sibeyuans* were located in the South, East, and West of *hutongs*, many smaller scale *hutongs* were created to avoid breaking the rules of the traditional layout of *sibeyuan*.²⁴ In this way, more layers of space were generated in *hutong*, between the public layer and the private layer. (fig 2.1.8)

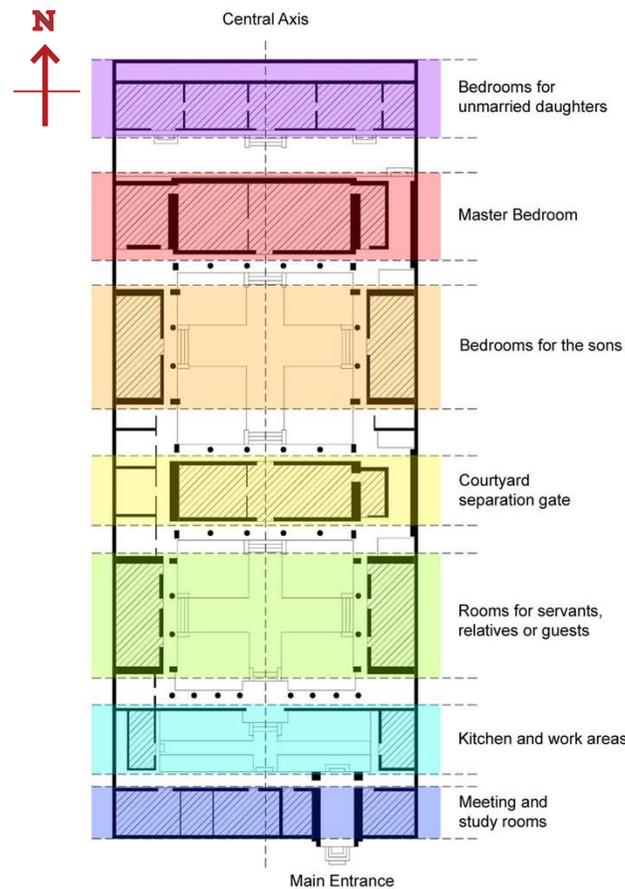


Fig 2.1.6: The typical courtyard house in Beijing

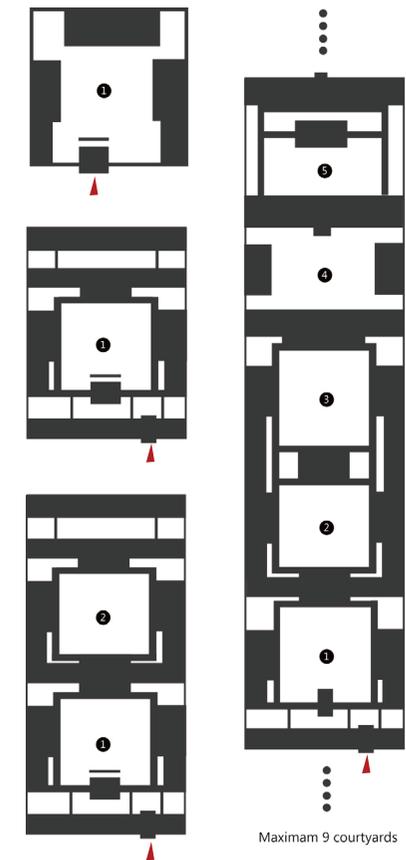


Fig. 2.1.7: Examples of different numbers of the courtyards

23 Yuehong Li, *Study on Typology of Beijing Hutong Sibeyuan* (Beijing: China Building Industry Press, 2009), 124.

24 Ibid.

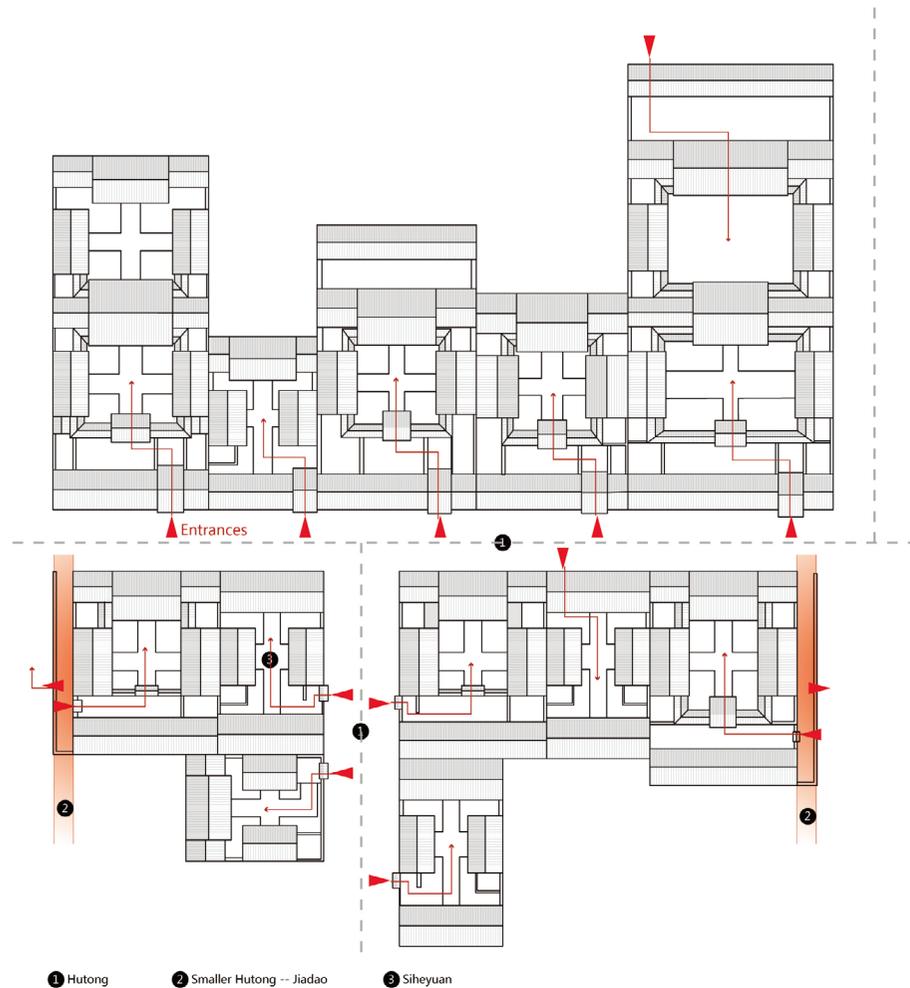


Fig 2.1.8: More layers of space in order to get the better orientation of the courtyard houses

Based on the new urban plan of the Ming and Qing dynasties the commercial and service spaces in *hutongs* developed. At first, they centralized in Drum Tower and Bell Tower areas, based on a traditional urban plan layout – the market should be located to the North of the Forbidden City. In the middle of Ming dynasty, they also developed in the South of the city around Zhengyangmen. In the Qing dynasty, they were already scattered everywhere in the city.²⁵ During this period, to meet the citizens' needs, there were lots of temporary and flexible stalls appeared in *hutongs* as well. (fig 2.1.9) As a result, the connection and communication nature of *hutongs* are strengthened.

Influenced by factors of population, large public buildings or palaces, vehicles, river and lake systems, economy, social structure, and location, the diverse patterns of *hutong* developed. There are eight basic patterns of *hutong*: fishbone pattern, grating pattern, comb pattern, loop pattern, branch pattern, fold line pattern, disconnection pattern, and hybrid pattern. The first, second, and third are the main patterns (fig 2.1.10).

In the residential area most *hutong* buildings are *sibeyuans*. The building height is around three metres, and the width of *hutong* is between three to six metres. In the commercial areas, both the building height and the width of *hutong* are about 6 metres.



Fig 2.1.9: Temporary and flexible stalls in ancient china

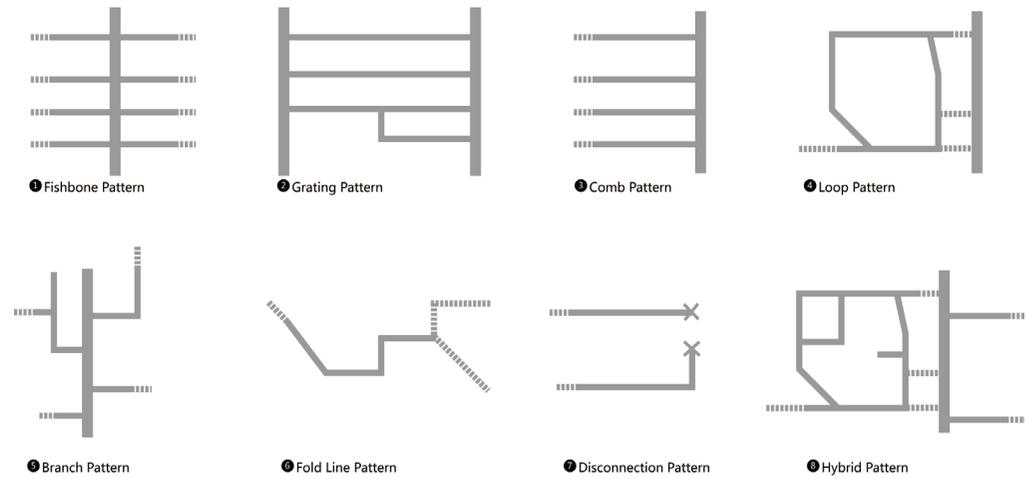


Fig 2.1.10: The patterns of *hutongs'* combination

2.1.3 The Evolution of Hutong in Modern Times (1912-2000) – More Complex and Spontaneous Space

The main factors influencing the evolution of *hutong* during this period were the replacement of feudal society by communist society, a higher population density, and the demise of traditional hierarchies. In addition, in modern society, the family relationship is not as tight and the family unit now consists of two generations, instead of three or even four generations.

The most significant evolution is that *hutong* replaced the status of courtyard, and to a large extent, became the main element forming the city context. Since 1949, following the strategy of redistribution of dwellings, *sibeyuan* previously owned and occupied by single families were subdivided and shared between many households, with additions tacked on as needed, built with whatever materials were available.²⁶ After the 20th century, many neighborhoods were formed by joining one *sibeyuan* to another, forming a *hutong*, and then joining one *hutong* to another.²⁷ More and more three to four generation family unit based *sibeyuan* were replaced by community based *hutong* spaces, and the word *hutong* is also used to refer to such neighborhoods, so that the meaning of *hutong* has become broader. An example of this is the evolution process in NO.13 Zhengjue Jiadao, Xinjiekou, Xicheng District, Beijing (fig 2.1.11-12). As a result, these narrow lanes, originally built to provide access to residential *sibeyuan*, have come to be considered as being quintessentially representative of Beijing.²⁸

26 “Hutong,” last modified August 18, 2014. <http://en.wikipedia.org/wiki/Hutong>

27 Ibid.

28 Margherita Orsini, *Dasbilar Hutong*, (Milan: Politecnico di Milano, 2014), 44, pdf.



Fig 2.1.11: The present situation of 13 *zhengjuejiadao* Beijing

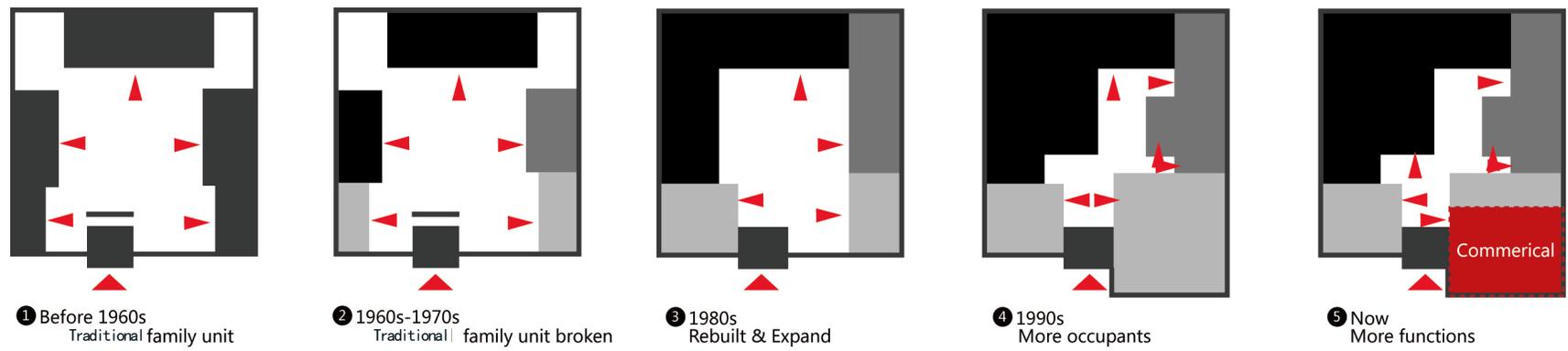


Fig 2.1.12: The transformation from the courtyard house into hutong community in 13 *zhengjuejiadao* Beijing

After the establishment of the Republic of China, the width of *butongs* became narrow, and more branches were generated. This occurred as that some of buildings in the city were repaired and expanded, and numerous new buildings were built in public *butong* spaces to meet growing requirements. It also led to the interfaces of *butongs* becoming more irregular, leading to more potential stop nodes defined by concave-convex spaces, contributing to flexible street activities (fig 2.1.13). As a result, *butong* developed as containers of a rich and unique street life.



Fig 2.1.13: The vibrant and flexible street activities

2.1.4 The Present Situation of Hutong and New Development (2000-now) – more possibilities of hutong space

Since the mid-20th century, the number of *hutongs* in Beijing has dropped dramatically as they were demolished to make way for new roads and buildings. Beijing University of Civil Engineering and Architecture has established that there are 1320 traditional *hutongs* in Beijing ancient city. One third of them are well protected; half of them keep the original pattern; others have been totally rebuilt.²⁹ More recently, some *hutongs* have been designated as protected areas in an attempt to preserve this aspect of Chinese cultural history.³⁰ In the historical protection areas, *hutongs* not only fulfilled the functional requirements of their occupants, but have also become important tourist attractions, where traditional aesthetics and historic values are emphasized. For example, the Nanluoguxiang, *Dashila*, and *the Drum Tower areas* have become famous historical attractions (fig 2.1.14).



Fig 2.1.14: The *hutong* bike journey (*Hou hai*)

The number of HUTONG in Beijing in different years

Year	HUTONG	Street & Alley	Total
Yuan Dynasty	29	384	413
Ming Dynasty	459	711	1170
Yuan Dynasty	978	1099	2077
1912-1949	959	2623	3582
1982	-	-	4450
1986	1316	4788	6104
1990	1320	4709	6029
2003	1928	-	1928
2005	1320	-	1320

Fig. 2.1.15 The changing number of *hutong* in Beijing

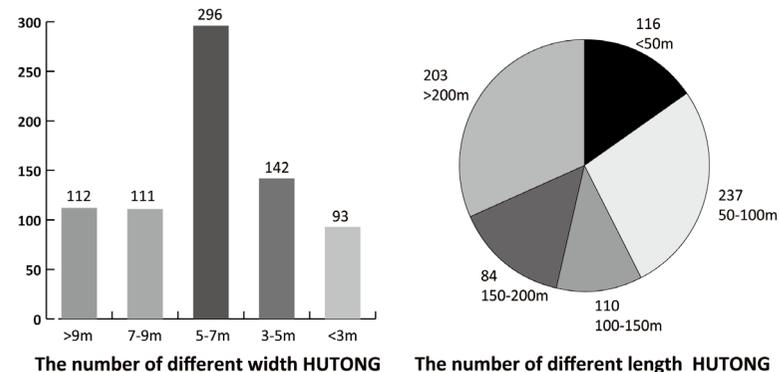


Fig 2.1.16: The number of different scale *hutong*

29 Li, *Study on Typology of Beijing Hutong Sibeyuan*, 73.
 30 “Hutong.” <http://en.wikipedia.org/wiki/Hutong>

In recent years, *hutong* contributed to the exploration of architectural spaces, and many modern buildings make use of their special features to create a series of spaces. The Sanlitun Village Shopping Centre in Beijing is an example of a new architectural solution arising from an unusual programme (figs 2.1.17-2.1.20). The design of the Village is inspired by the *hutongs*' physical characteristics. It was designed by a group architects led by the Oval Partnership from Hong Kong, and Japanese architect Kengo Kuma. The Village comprises two sites— the piazza (Village South) and the deck (Village North), a few minutes' walk from each other, with retail spaces and a 99-room boutique hotel. It comprises a mix of unusual shapes, textures and vibrant colors, blending Beijing of the past with its cosmopolitan present.³¹ The 'open-plan' development, with Taikoo Li Sanlitun consisting of 19 separate buildings, interspersed with gardens, courtyards, and twisting alleys, helps to create an inviting environment, where visitors can mix indoor and outdoor activities throughout the day.³² The internal urban alleys are animated by small retail, functioning as multi-level, open-air circulation. In each alley, a rhythmic system of scaffolding-like metal frames is wedged between the buildings, adapting to the varying width of the alley's cross-section.³³ Also, the varied use of vibrant colors and irregular lines emphasize the use of more natural materials, in effect bringing about a modern design distinct to Beijing.³⁴

31 "Sanlitun South / LOT-EK Architecture & Design", last modified January 14, 2013, <http://www.archdaily.com/318090/sanlitun-south-lot-ek-architecture-design/>

32 "Architecture and Design," accessed September 4, 2014, http://www.taikoolisanlitun.com/eng/about_the_village/Pages/index.aspx

33 "Sanlitun South / LOT-EK Architecture & Design."

34 "Architecture and Design," http://www.taikoolisanlitun.com/eng/about_the_village/Pages/index.aspx



Figs 2.1.17-2.1.20: Perspectives of the outdoor areas in-between the buildings in *Sanlitun Village*

Another building proposal – *Hutong Manifesto*, also takes cues of the community life in the old Beijing *hutong* neighborhood, and proposed a new space relationship in three dimensions. The *Hutong Manifesto* imagines spreading the rich and unique *hutong* urban tissue to the CBD area. It aims to change the contemporary two dimensional pattern of Beijing ancient city into vertical by keeping the original relationship between *sibeyuan* and *hutong*: continuous clusters of *sibeyuan* define the unique urban tissue of the old *hutong* neighborhood, in order to keep the rows of common spaces the strong community life around the courtyards remained untouched (fig 2.1.21).

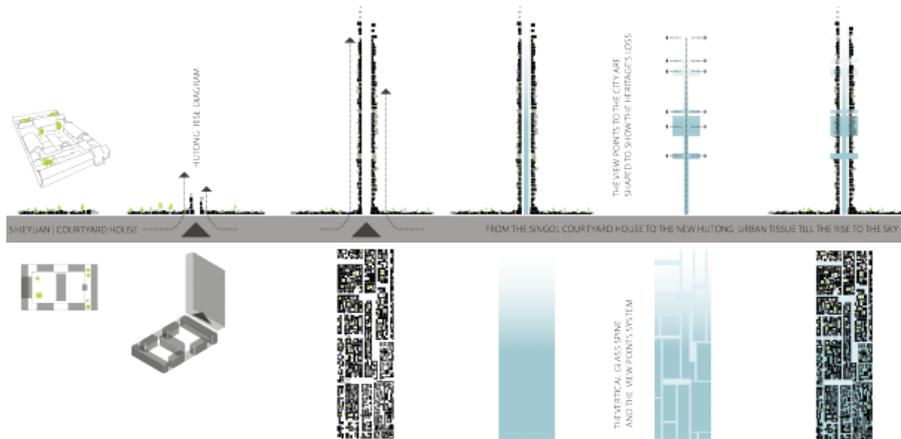


Fig 2.1.21: The 3D development idea from *Hutong Manifesto*

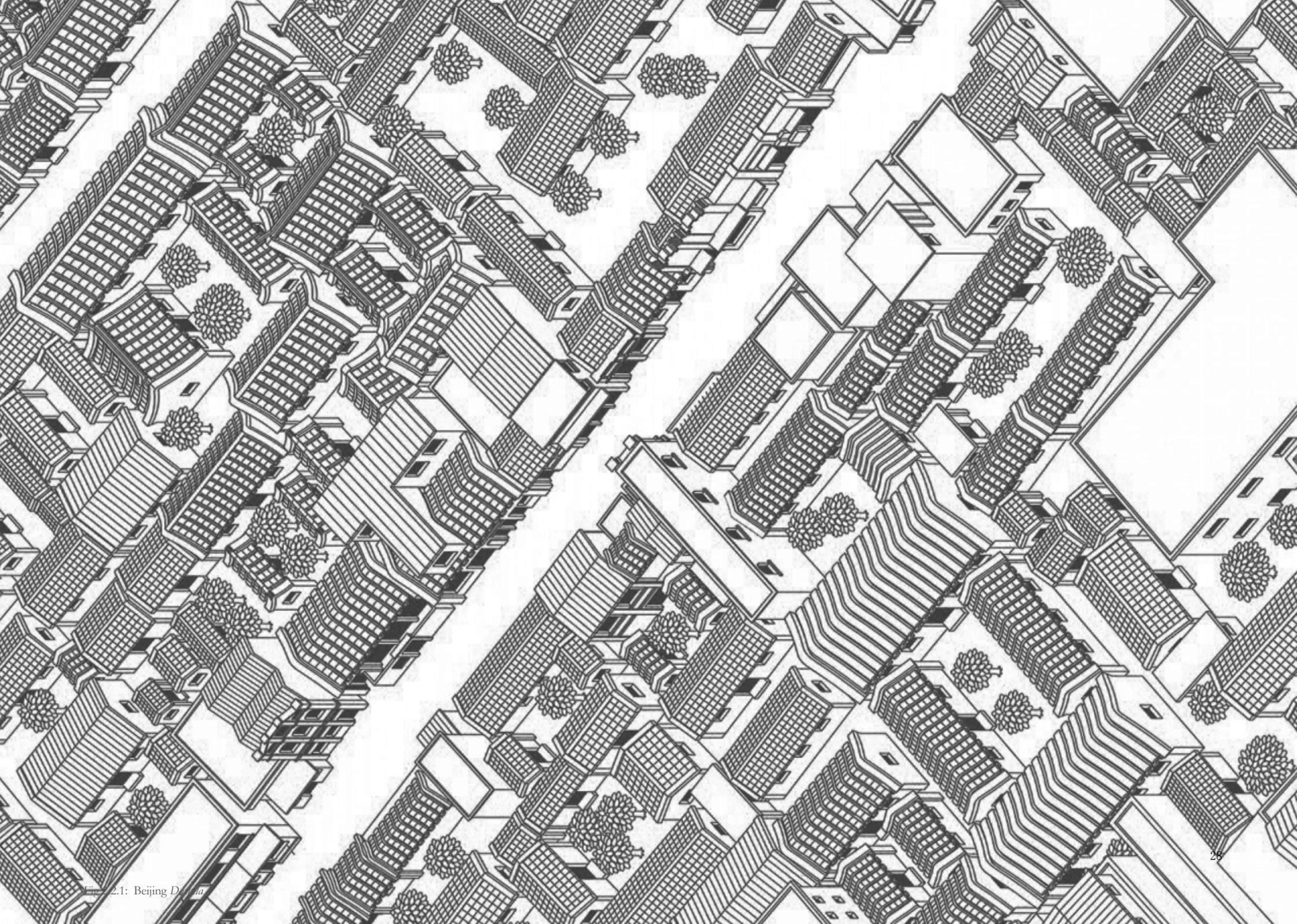


Fig. 2.1: Beijing Dajiaochang

2.2 Precedent Study: Anatomy of Typical *Hutongs* — *Dashila*

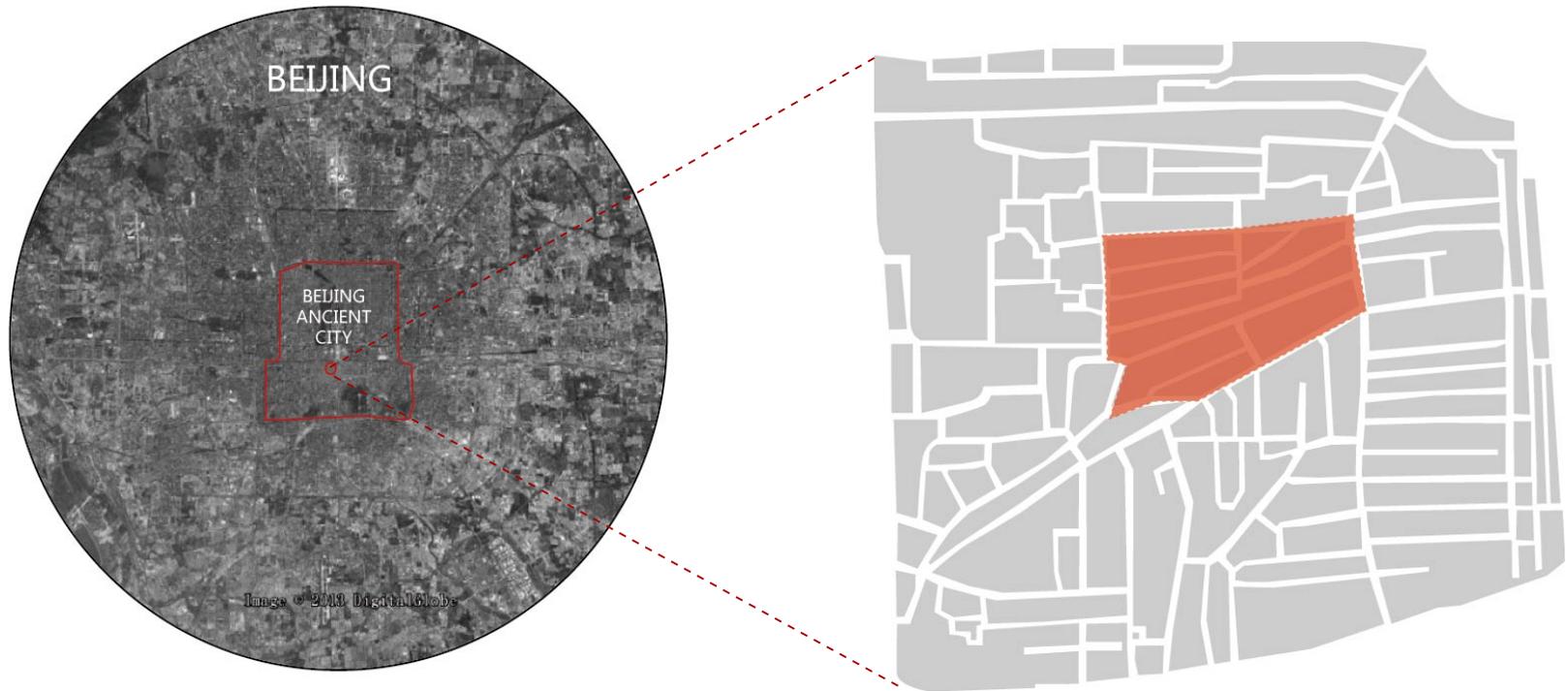


Fig 2.2.2: The location of the *Dashila* area

2.2.1 Historical context

Dashila is located on the West side of Qianmen Dajie in the South of Beijing ancient city, representing an important element of the Beijing South Axis, and is known as Langfangsitiao, or more commonly Dashilar or Dazhalan.³⁵ For 600 years Dashila was Beijing's most prosperous and well kept quarter.³⁶ Built during the Ming Dynasty as a business and residential area for the palace's service workers, the district developed into a rich shopping area as craftsmen opened stores to offer their wares to the public, especially around the commercial areas Qianmen Dajie and Dashila Jie. Because of this the area became an attraction for thieves leading the Emperor to enclosed *hutongs* and shopping streets with a wooden fence. In Chinese, Dashilar means "big wooden fence" and this name gradually replaced the previous Langfangsitiao.³⁷ Conveniently located near Qianmen gate, Dashilar was the meeting point between royal and civil life. This combination resulted in one of China's most vibrant commercial and entertainment districts, home of some of shops as well as theatres where Peking Opera is said to have been born.³⁸ Because of its peculiar characteristics, Dashila remained the centre of the city for most Beijingers until the middle of the last century.³⁹ (fig 2.2.1)

The Dashila area is introduced as a key architectural precedent for *hutong* due to the fact that its clear pattern has been well-preserved. Complex and incremental, Dashilar's growth throughout the years has created a palimpsest whose many layers are still visible.⁴⁰ Nowadays, it is still representative of the

35 Orsini, *Dashilar Hutong*, 107.

36 Ibid.

37 Ibid.

38 Ibid.

39 Ibid.

40 Ibid.

significant evolutionary stages of *hutong*.

Margherita Orsini devotes the fifth chapter in her thesis *Dashila Hutong*, to an in-depth analysis of the function, layer, and basic information of a particular area of Dashila, which is defined by four streets: Langfang First Alley, Dashilan West Street, Meishi Street, and Yanshou Street. Through detailed on-site investigation and data collection, her purpose was to understand what factors contributed to forming the structure of *hutong* in the present. She discusses *hutong* as a multilayered sequence of spaces and a space of connection and transition.

All these ideas form a good basis from which to work. However, her analysis does not fully demonstrate how the specific communication spaces of *hutongs* could be generated, and how these spaces could be a particular strategy for connecting cluster individual rooms, nor does she fully explore how *hutongs* create various positive layers of communication. Therefore, further investigation, analysis, and synthesis are required into how *hutongs* could act as people oriented spaces, and the crucial role of different layers of *hutong* as a means for building good social relationships through a highly-controlled the sequence of circulation spaces.

2.2.2 Urban Level Study – strategies for general arrangement of Dashila area

2.2.2.1 Shape and Pattern

In the Dashila area, there is no open square or central plaza for the residents to congregate. However, dense streets and nodes along the way offer communal urban spaces for the public. The linear spaces constitute a network of urban node spaces. All events of commercial and social encounters and interactions were accommodated in the street networks.⁴¹ Such public spaces act as foci for social life in Dashila. There are three main scenarios for the combination between linear system and node in the larger picture of *hutong*.

First, *hutong* is a flux linear system; its length is much longer than its width.⁴² Because of their characteristic length, linear organizations express a direction and signify movement, extension, and growth.⁴³ Hence, the transition and connection function of *hutong* is obvious. As shown on figs 2.2.3 - 2.2.4, the shape study of negative space (void space) in different layers has been drawn. The intention is to make clear how this linear system formalizes the basic structure of *Dashila*, which suggests how *hutong* space could be experienced and discovered.

Secondly, the form of linear organization is inherently flexible and can respond readily to various conditions of its site. It can adapt to changes in topography, manoeuvre around a body of water, a stand of trees, or turn to orient spaces to capture sunlight and views. It can be straight, segmented, or

curvilinear. It can run horizontally across its site, diagonally up a slope, or stand vertically as a tower.⁴⁴ Because of that, it is conducive to further studies to define three dimensional *hutong* networks. *Dashila* shares the labyrinthine qualities of *hutongs*. Once inside, there is no clearly defined way for one destination; instead there are multiple potential routes which could be chosen, various paths join with each other in different ways forming a network of linear spaces. Based on previous analysis, in Dashila, all eight patterns of *hutongs* combine to create larger urban form (fig 2.2.6).



Fig 2.2.3: The *hutong* spaces in public layer redrawn from (Margherita Orsini, *Dashilar Hutong*)



Fig. 2.2.4: The *hutong* spaces in the semi-public and semi-private layer



Fig 2.2.5: The potential of the linear space (redrawn from *Form, Space, and Order*)

41 Zhu Jianfei, *Chinese Spatial Strategies: Imperial Beijing, 1420-1911* (London: Routledge, 2012), 88.

42 Li, *Study on Typology of Beijing Hutong Sibeyuan*, 68.

43 Francis D. K. Ching, *Architecture: Form, Space, and Order* (Hoboken: John Wiley & Sons, Inc., 2007), 206.

44 Ibid., 207.

Thirdly, numerous node spaces are inserted into the linear space. Each time the pedestrians cross a series of corners and intersections, the quantity and depth of *butongs* visible from that point is much more open and varied. Also, the node space compels the visitors to make a series of turns, which contribute to change the repeated and boring straight line journey, and provide more possibilities of different routes. The movements of turning and the changing of field of vision at the point spaces enrich the journey, and are key elements of *butong* space design. See fig 2.2.7 for diagrams that focus on what is visible, the depth of view, and the overall understanding of *butong* space.

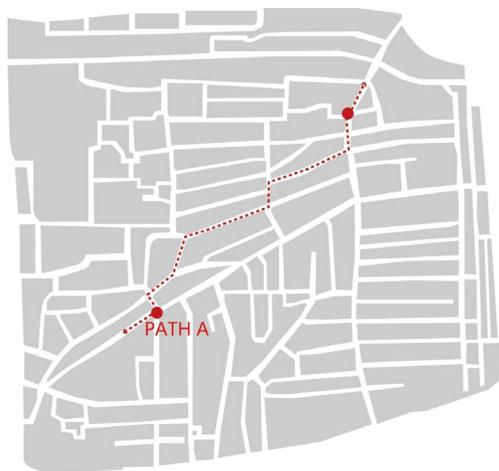


Fig 2.2.6: Multiple potential routes

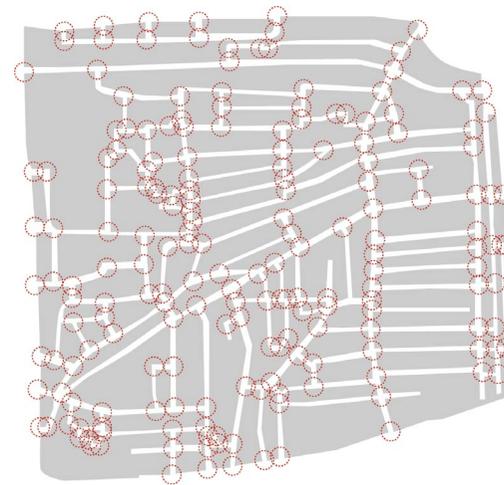
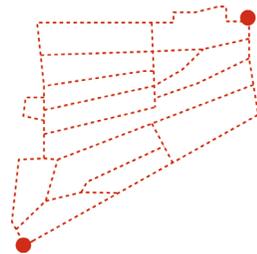
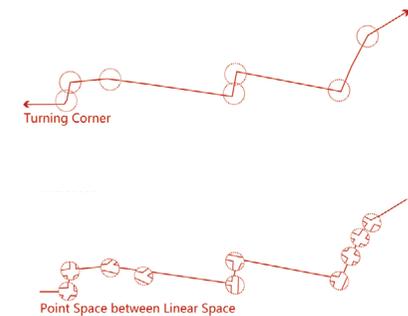


Fig 2.2.7: Copies turning corners and intersections



2.2.2.4 Space Layers

As Jane Jacobs has written, city neighborhoods are “mundane organs of self-government”.⁴⁵ The relationships that exist within a community, or between different communities, are very harmonious, and could benefit from the diverse space layers of *butong*. Orsini’s investigation shows that there are four spatial layers in the Dashila area: public, semi-public, semi-private, and private (fig 2.2.9). The private layer is shared by the members of same family. In the semi-private layer there are many facilities which could be shared by neighbors with a tight relationship, such as water supply facility, toilet, and even kitchen. The semi-public layer is shared by all of the people who live in the same community, most of which provide storage facilities or pathways for the occupants. The public space layer is the space where for different communities and visitors meet each other, and consists primarily of commercial and service facilities. In this way the movements of pedestrians are highly controlled, and they cannot avoid to pass through the layers between the private space and public space, meaning that there are higher possibilities of building a positive social relationship between families, neighbors and visitors.

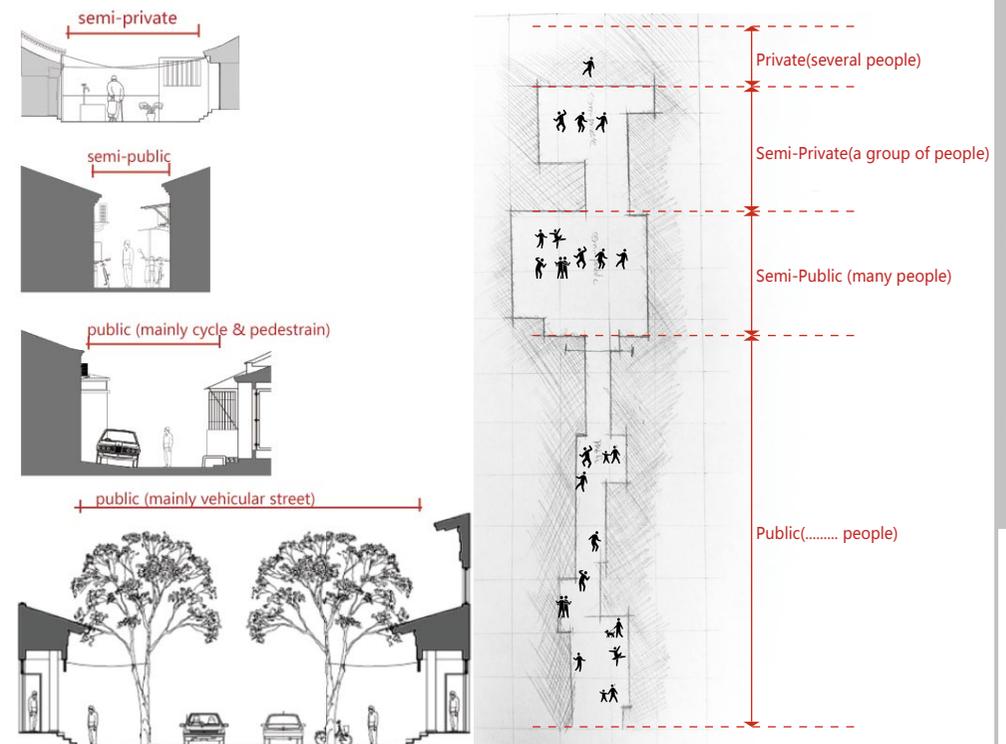


Fig 2.2.8: Four social layers: private, semi-private, semi-public, and public.

45 Jane Jacobs, *The Death and Life of Great American Cities* (Harmondsworth: Penguin, 1964).



① Public Layer



② Semi-public Layer

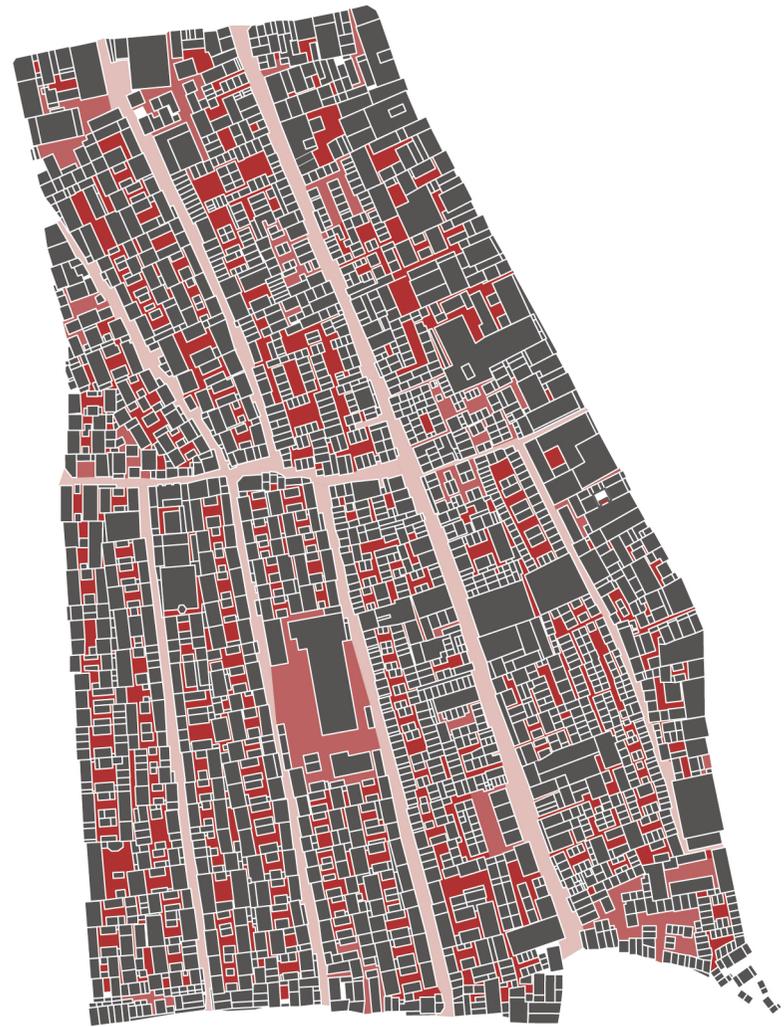


③ Semi-private Layer

Fig 2.2.9: The plan of four social layers: private, semi-private, semi-public, and public. (Redrawn from Margherita Orsini, *Dashilar Hutong*)



④ Private Layer



⑤ All four Layers

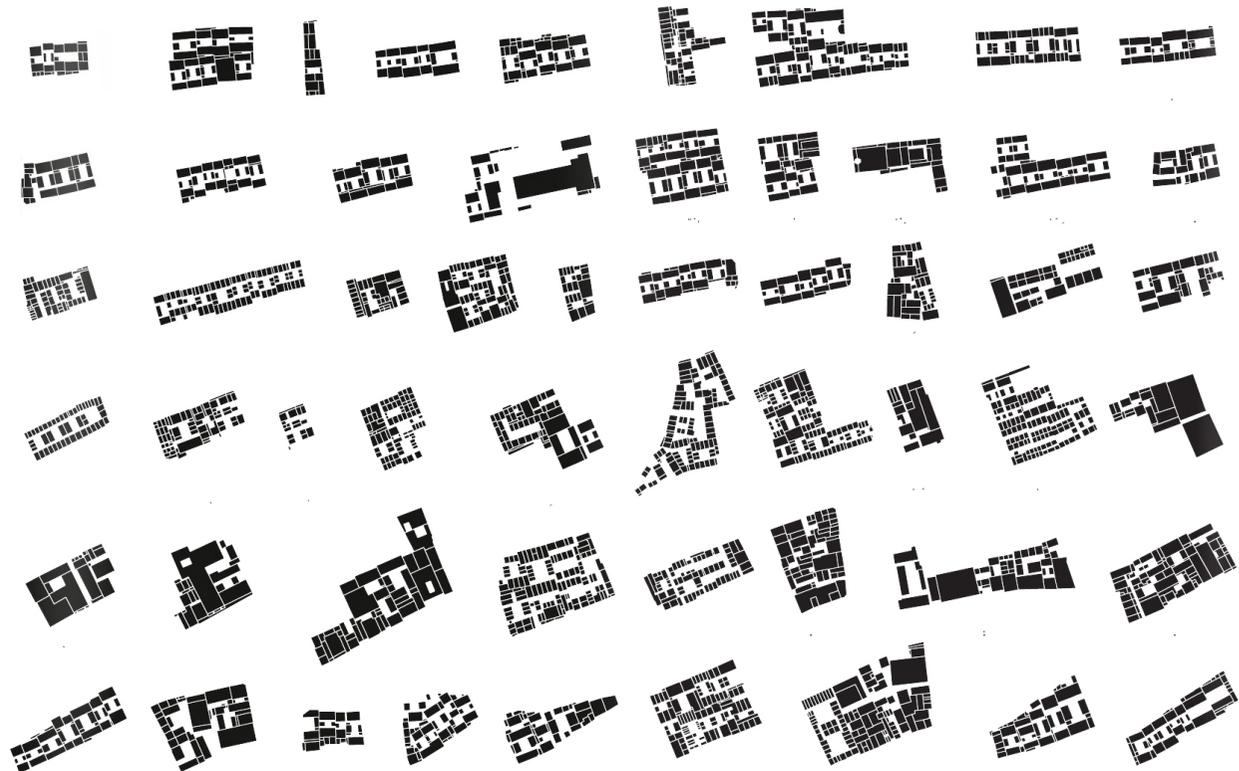


Fig 2.2.10: The different communities groups (Redrawn from Margherita Orsini, *Dashilar Hutong*)

2.2.2.2 Scale

While looking at how Dashila developed and how traditional courtyards evolved from a *Sibeyuan* situation (four pavilion yards) to a *Dazayuan* one (“big mix” yard), a very characteristic feature is evident: “In Dashila, a room is a building”⁴⁶(fig 2.2.11). As a result, scale of spaces is highly related to both the “room” sizes and the way that the ‘room’ aggregate. In addition, based on the aesthetic principles, *hutong* creates a feeling of the space of stability, because when people stand on one side of a *hutong*, their visual field covers the whole facade of the opposite building, generating a strong feeling of enclosure. Examples of this in Dashila are the section study of *Taner hutong*. The *hutong* width is from 2.4m to 3.5m. The building height is around 3 metres, so that the ratio of wall height to the *hutong* width is around 1:1. Therefore, most *hutongs* in Beijing create a feeling of intimacy.⁴⁷

Another characteristic of *hutong* is significant: different scales of plans and sections. The scale study of path A continues the journey from Yingtao Byway to Langfang first alley, passing through seven different *hutongs*, each of which have a different width, height and length. In this way there is a rhythmic pattern of openness and enclosure, the route intersecting with a series of cross views to the other *hutongs* at the junction point. The significance of this is that travelers enjoy imagining and discovering what will happen at the next level of *hutong*, which makes *hutong* a positive space for wandering and social encounters. (fig 2.2.12).



Fig 2.2.11: The small scales of buildings in *Dashila* (Redrawn from Margherita Orsini, *Dashilar Hutong*)

46 “Dashila,” accessed September 6, 2014. <http://www.bao-a.com/dashila.html>

47 Li, *Study on Typology of Beijing Hutong Sibeyuan*, 70.

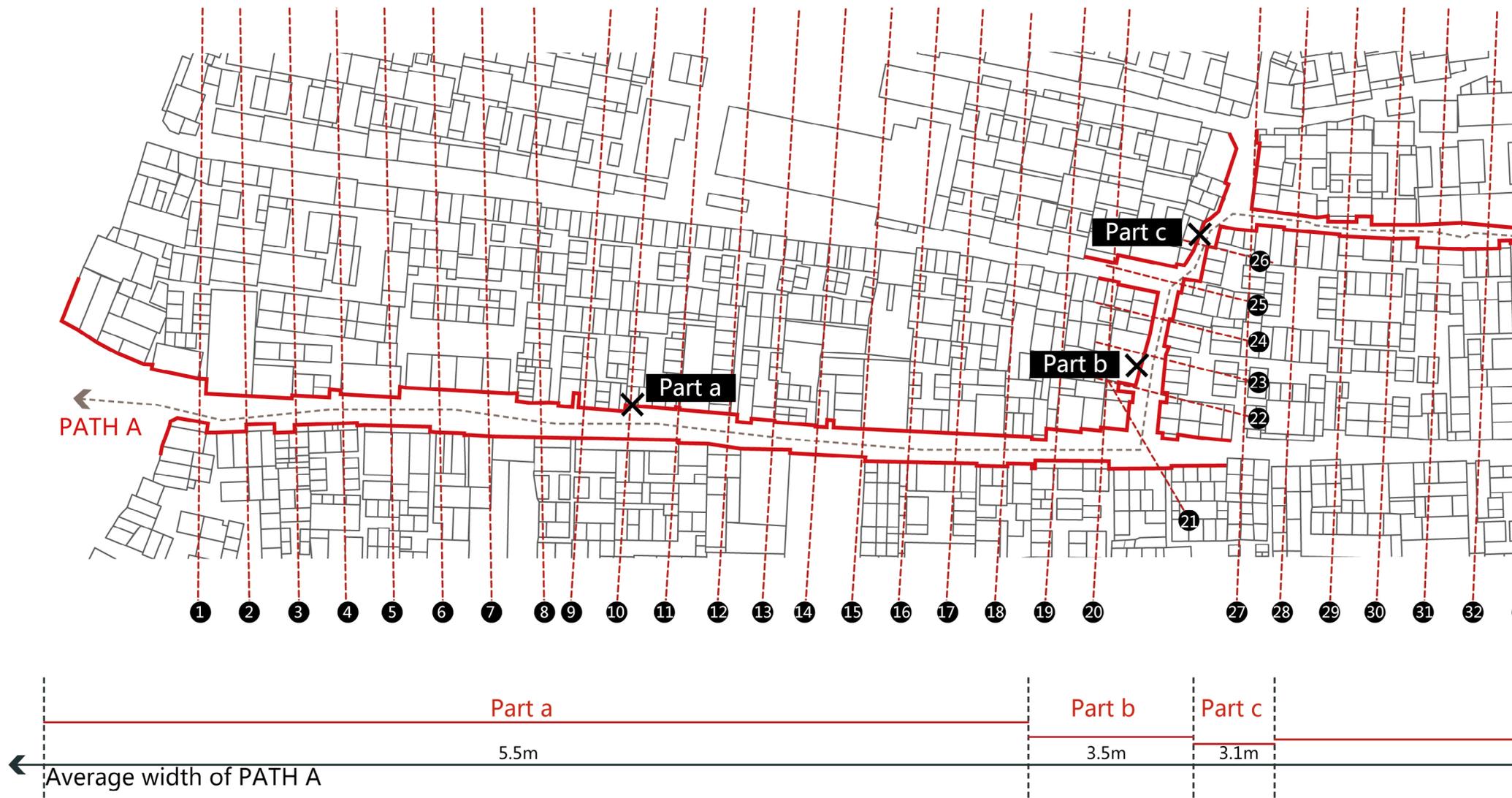
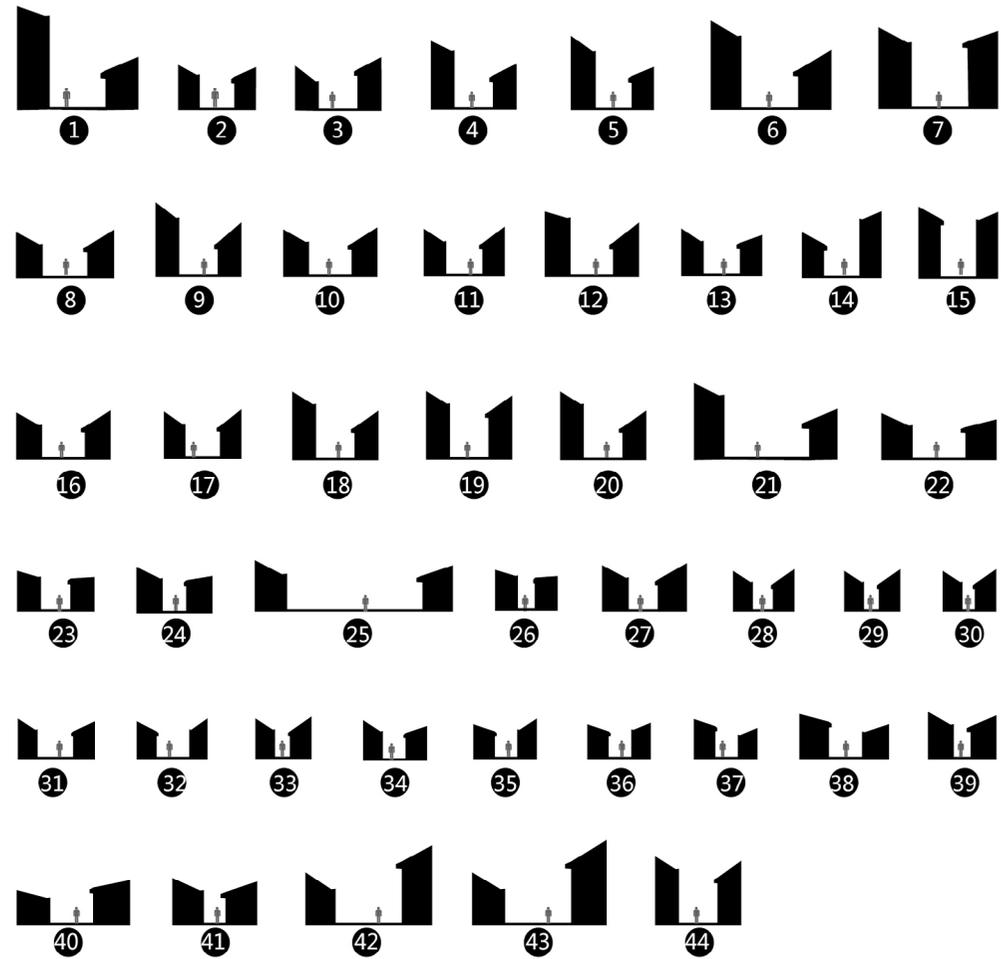
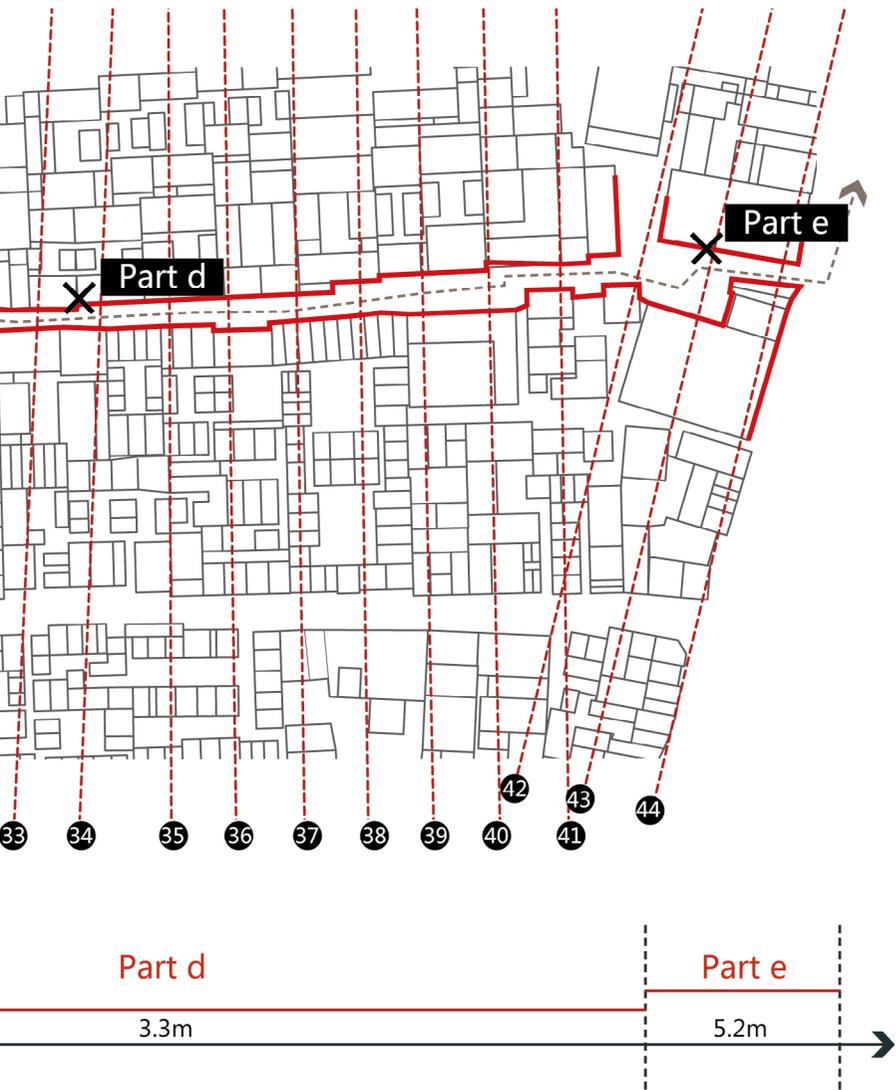


Fig 2.2.12: The changing scales in the plan and the sections of Path A



Section study of PATH A

2.2.2.3 Function

In the larger picture, *Dashila* contains a great concentration of cultural and commercial activities, resulting in an overlapping of networks and pathways. It appears clear that the district is a space of transition and connection.⁴⁸ (fig. 2.2.15) Moreover, in one part of *Dashila*, instead of a centralized functional block, the commercial and service spaces scatter into the residential area, which encourages people to wander in the *hutongs* (figs. 2.2.13-14). Local vegetable markets and small shops are present in most of the *hutongs*. These provide a convenient supply of daily necessities for residents and additional spots to meet and interact with neighbors.⁴⁹ In this way, both occupants and visitors in *Dashila* keep circulating around *hutongs* and get opportunities to meet each other.

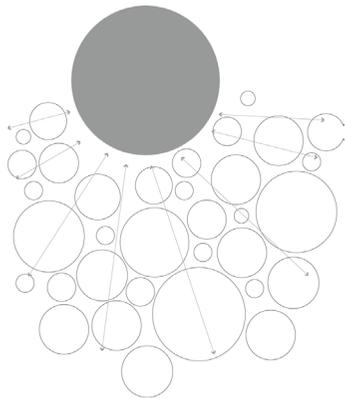


Fig 2.2.13: Centralized public usage block lead to less meeting opportunities

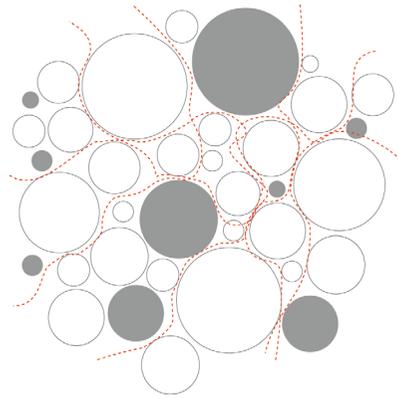


Fig 2.2.14: Decentralized public usage spaces increase meeting and communication opportunities.

48 Orsini, *Dashilar Hutong*, 112.

49 Ibid. 47.



● Commercial ● Service ○ Residential

Fig 2.2.15: The scattered public spaces in the *Dashila* area. (Redrawn from Margherita Orsini, *Dashilar Hutong*)

2.2.3 Building Level Study – Detail design strategies of Dashila area

2.2.3.1 Interface

Psychologist Derk de Longe stated the theory about “boundary effect”, from the point of view of psychology. He believes that the edges of the forest, sea, and grove are the places where people would like to stay.⁵⁰ This principle is suitable for *hutongs* as well. The “edges” of *hutongs* are the junction points consisting of the movement link and visual link between public layer, semi-public layer, semi-private layer, and private layer. It makes boundaries of *hutongs* as flowing spaces, and avoids individual spaces being separated, so that *hutongs*’ space becomes clustered space with a tight relationship with each other. As a result, the sense of community and integration could be created.

At a spatial level, the Chinese ancient city is the direct opposite of a Western ancient city because in Chinese cities there are limited formal squares for the citizens to gather. As a result, the streets include the functions of squares.⁵¹ Alternatively, in Chinese history, the *Sibeyuan* was the basic system of building for housing, palaces, temples, and government offices. Numerous activities happen in courtyards, such as watering flowers, communication, relaxing, and keeping pets, that is the reason why people always spend a long time in them. Nowadays, because *hutongs* replaced the status of courtyards, the functions of courtyards are inherent. Hence, the other nature of a *hutong* should be multifunctional. *Hutong* is a dense, ground-based, settlement framework that has proven remarkably successful in its flexibility to accommodate both formal and informal socio-economic networks.⁵²

50 Li, *Study on Typology of Beijing Hutong Sibeyuan*, 197.

51 Ibid. 199.

52 Alexander Morley, *The Informal Formal*, 20.



Fig 2.2.16: The scattered potential performing and communication spaces in *hutongs*, created by the concave and convex



Fig 2.2.17: The early study models about *hutong* pieces

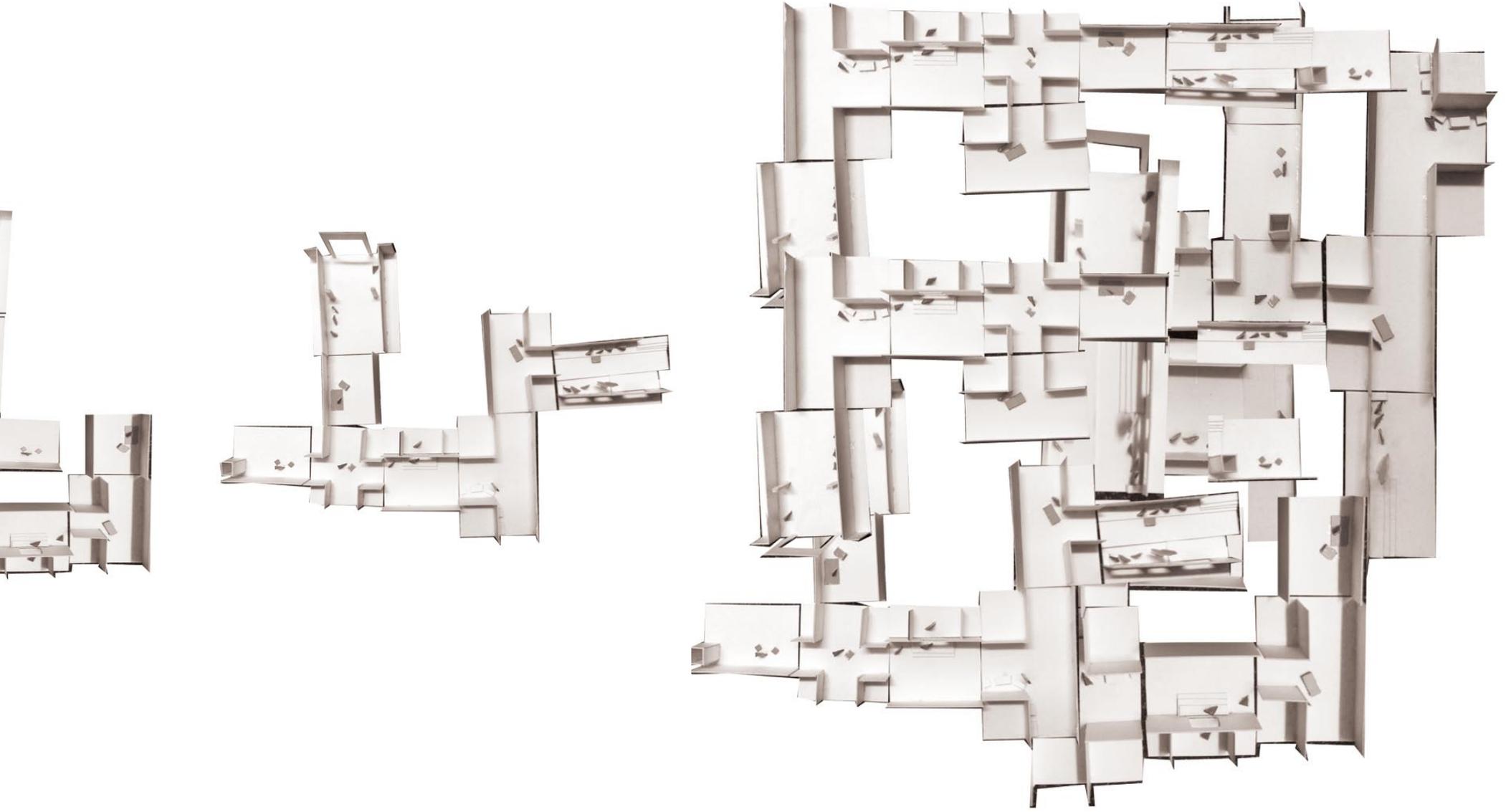




Fig 2.2.18: The photos of different flexible activities created by concave-convex spaces in hutong.

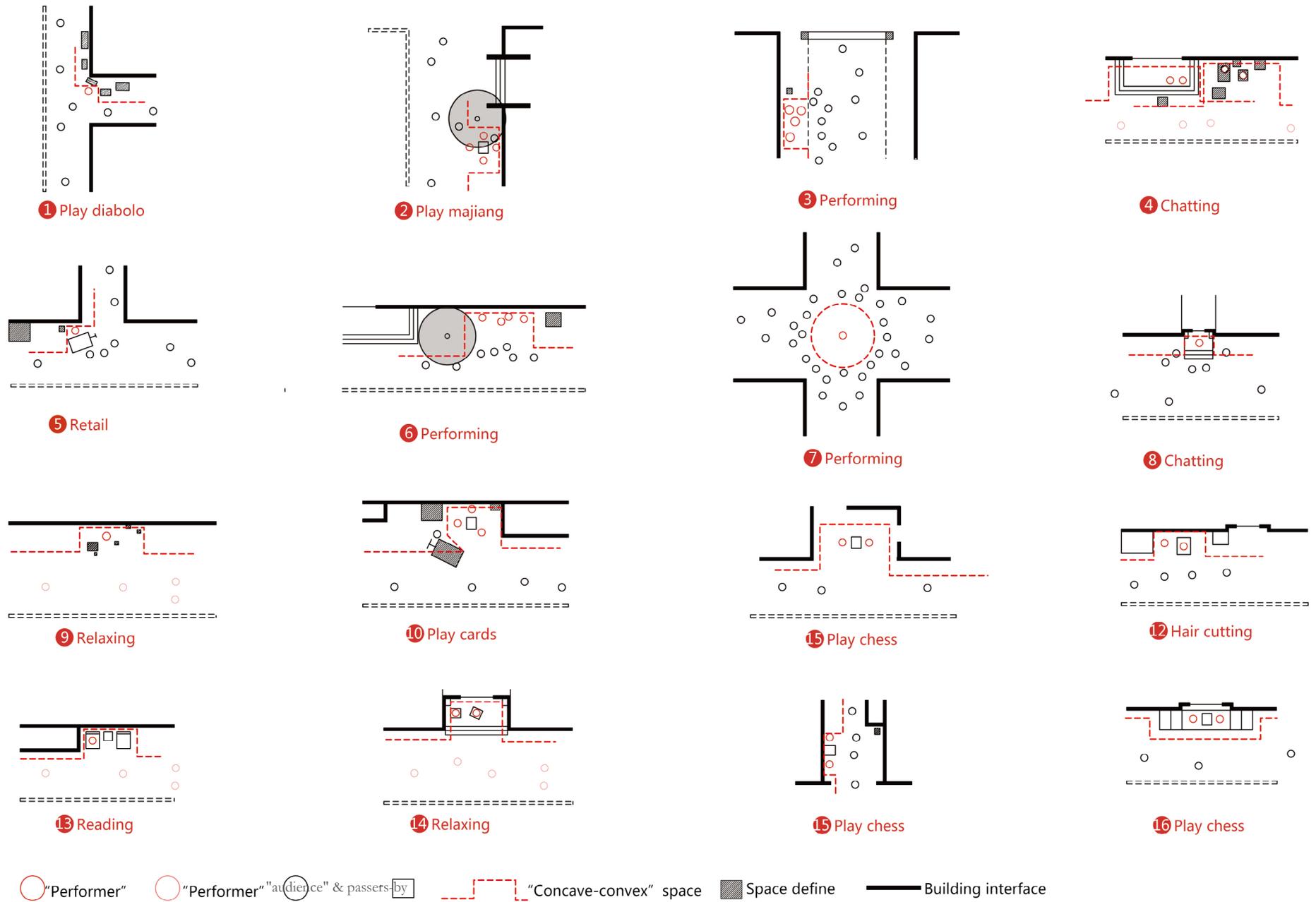
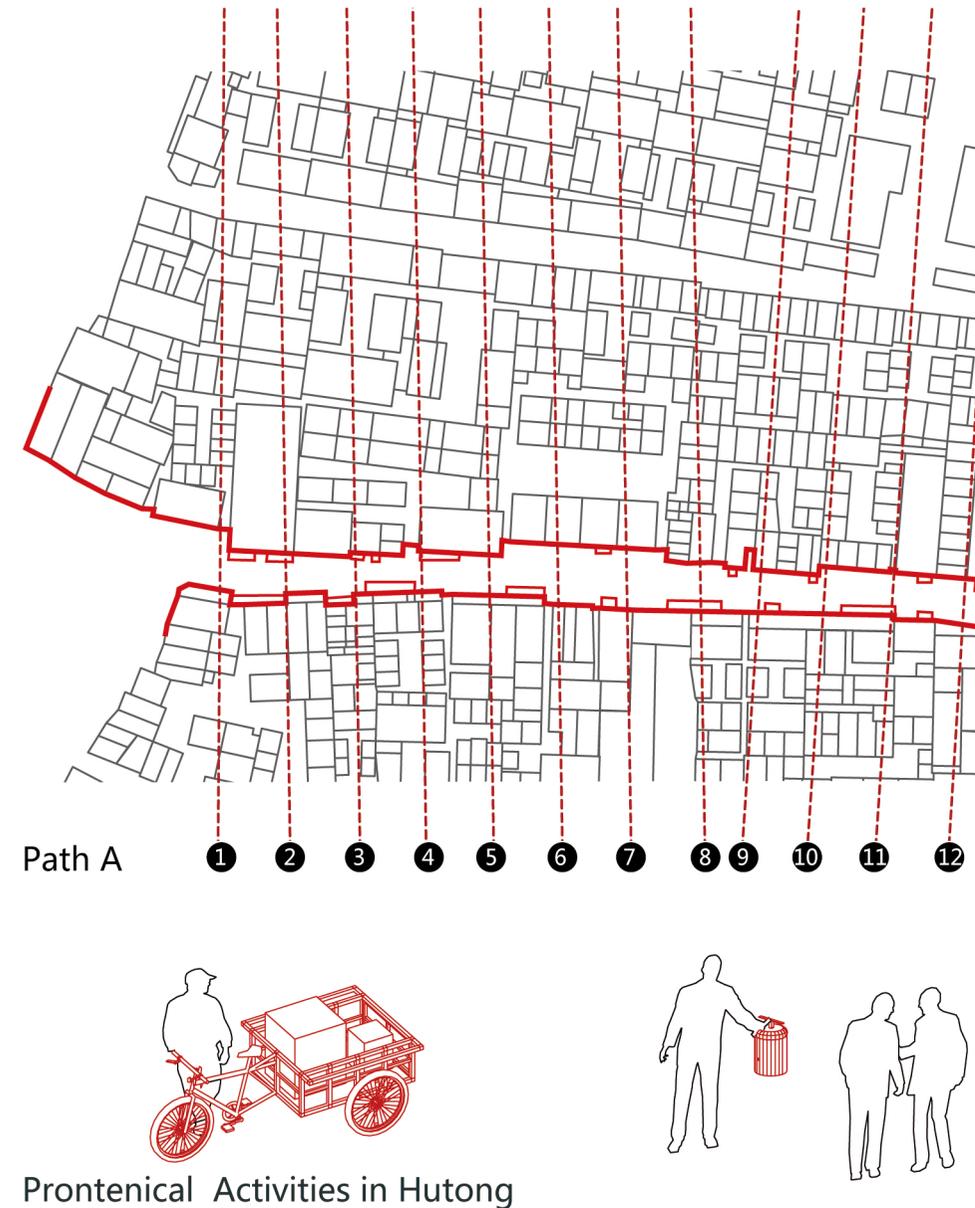
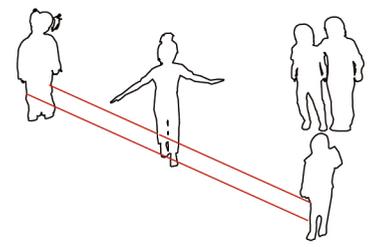
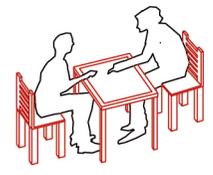
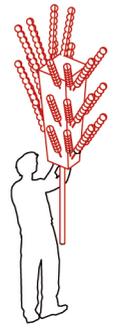


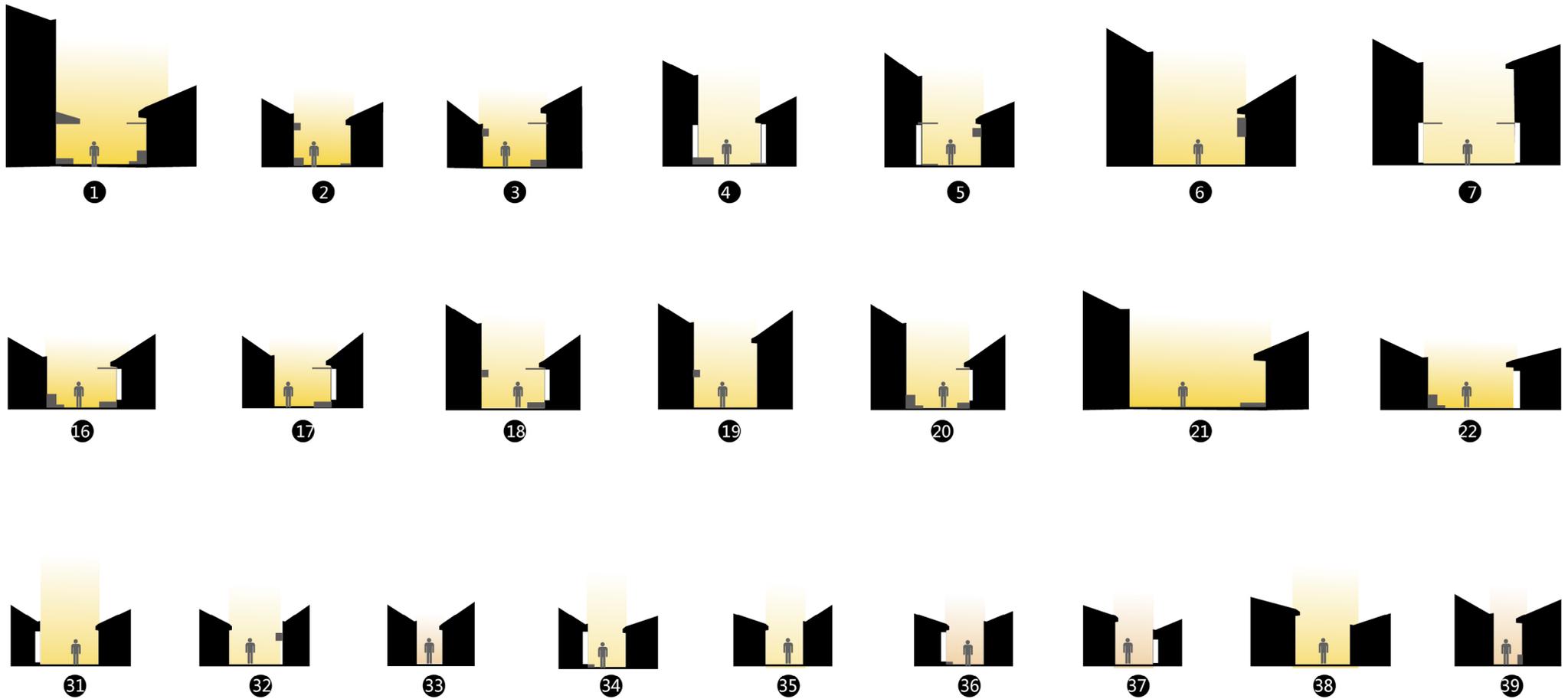
Fig 2.2.19: The concave-convex nature of *butong* creates direct or indirect connections between the performer and pass-by people.

The irregular edges of *hutongs'* interfaces trigger the multifunctional nature, and most activities happening on the street benefit from it. Through studying a series of pictures relevant to flexible, spontaneous activities happening on the street, it is clear that concave spaces along the street act as a catalyst for the activities (figs 2.2.16-18). The concave space is defined by the convex space which may be stairs, plants, entrances, buildings, and so on. Sometimes it is an indispensable part of some buildings, and sometimes it is just an accident. In *Darshila*, all of the irregular edges of *hutongs'* interfaces follow the same logic, and those concave spaces act as potential courtyards and squares along *hutongs* without interrupting the traffic. The activities could be trading, playing, chatting, and especially informal performing and they are highly affected by the furniture they brought, or found on the site. In addition, the irregular edges create slight differences of openness and enclosure of *hutong* space which contribute to the richness of the journey as well. Examples of this in Dashila are the section study of *Taner Hutong* and *Qudeng Hutong* (figs 2.2.19-21).



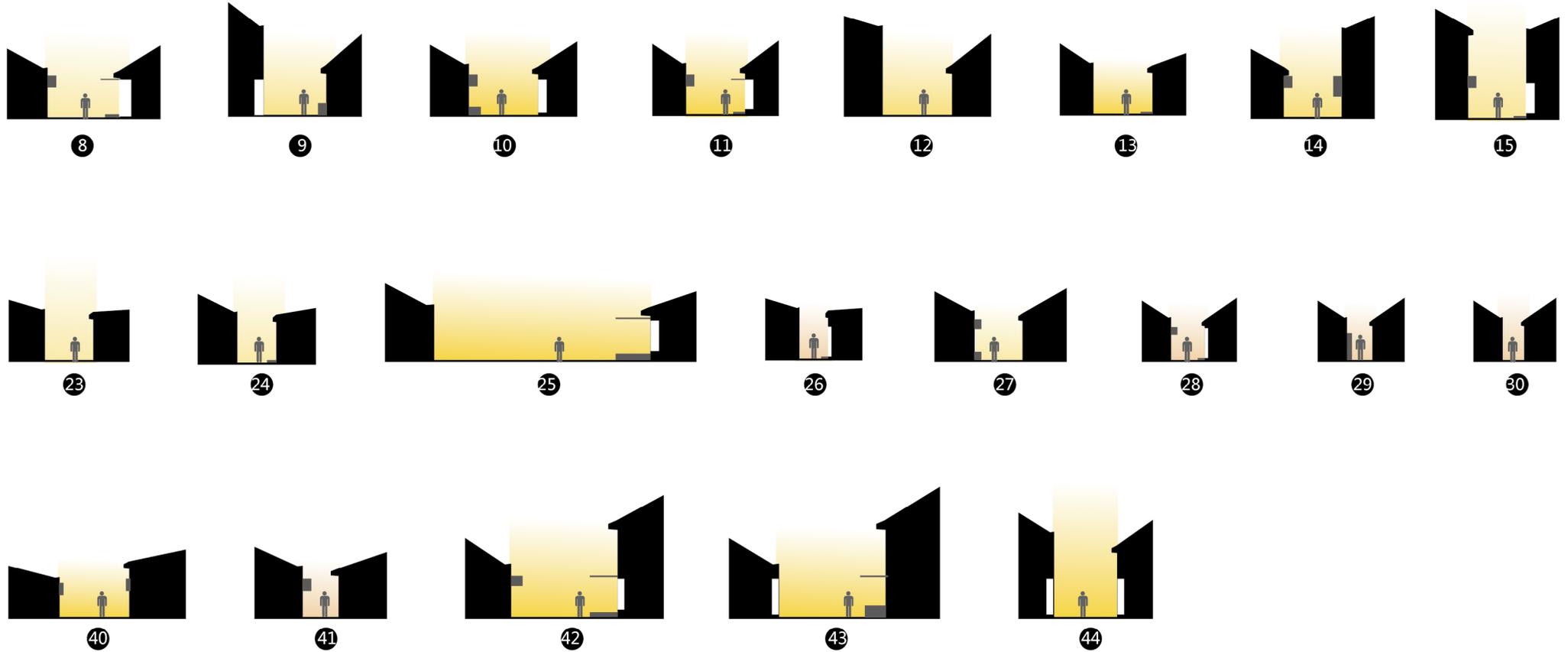
Figs 2.2.20: The concave-convex space in the plan & different furniture lead to different activities.





Section (concave-convex) & Light study of PATH A

Fig 2.2.21: The study of concave-convex space in section



2.2.3.3 Visual link and Movement link

Along the interfaces of hutong, there are many visual link and movement link, which provided by windows, doors, and intersections. All of these elements keep *hutong* spaces as positive space for social interactions or wandering.

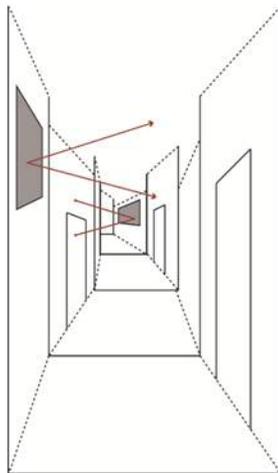


Fig 2.2.22: The visual links

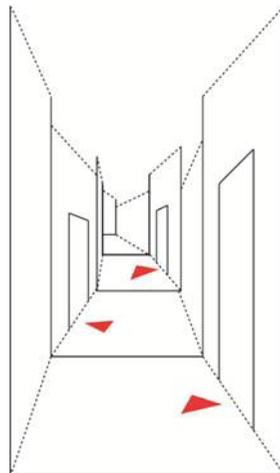


Fig 2.2.23: The movement links

2.2.3.3 Plants

Plants are significant elements of *hutongs*. Most trees in *hutongs* are Chinese scholar trees, and after the Republic of China was established, increasingly there are locust trees along the street.⁵³ Moreover, owners of *sibeyuan* often grow flowers and trees in the garden for decoration and, based on Chinese traditions, most of them are jujube tree, persimmon, tree peony, Chinese herbaceous peony, and so on. Although *hutongs* have replaced most of the *sibeyuans*, some of the plants are still there, and their branches and leaves always extend out from the walls to break spaces' limit and connect two separate spaces to some extent. Plants in *hutongs* not only enrich people's visual impression and bring green spaces for Beijingers, but also act as clues to hint at further space layers (fig 2.2.21).



Fig 2.2.24: The green spaces analysis

2.2.3.4 Materiality

There are mainly six materials for buildings in *Dashila*: grey brick, wood, tile, stone, cement, and metal. Grey bricks are the dominant materials for the building facade, and highly influence the general impression of *hutong*. The whole interfaces of *hutongs* seem like collages of different materials (fig 2.2.22).



Fig 2.2.25: The material collage analysis

2.2.3.2 Light

Hutong is a highly exterior space. Natural light acts as a device for creating shadows which contribute to define, separate and modulate the space. Light creates more space layers to enrich people's visual impression (fig 2.2.24). Because of the different scales of *hutongs*, the brightness of space is different, so that there is a continual rhythm of light and dark intersecting the path of movement. Basically, the narrower *hutongs* are darker than the wider ones (fig. 2.2.20).



Fig 2.2.26: The shadow analysis

2.3 Concluding *Hutong*

2.3.1 The potential nature of hutong for certain building complex

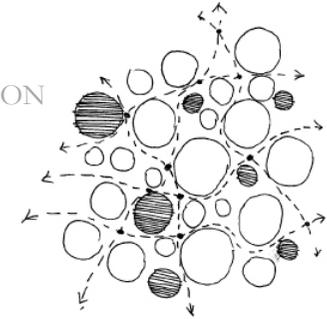
Basing on previous analysis, it is clear that *hutongs* are Beijing's typical open spaces for social and commercial activities, and they are extremely significant for Beijingers. Although traditional culture and urban life are fading, and have been replaced to a large extent by modern life, the potential of *hutongs* in an architectural context should not be neglected. Actually, the timeless spaces of *hutongs* can be described as complex systems of architectural, social and cultural layers. *Hutongs* provide different social layers dealing with the relationship between private and public. Also, decentralized functional arrangement is the trigger for connection. Moreover, other visual and spatial strategies characterize *hutong* as a positive space for traffic, wandering, social, performing, and encountering. All of these imply *hutong* is a good guidance for certain building complex arrangements. In conclusion, there are four main advantages coming from *hutong*.

1. CREATE MOVEMENT, LINKING, CIRCULATION
2. GOOD SOCIAL STRUCTURE
3. POSITIVE SPACE FOR WANDERING
4. CATALYST OF FLEXIBLE AND SPONTANEOUS ACTIVITIES

2.3.2 The derived characteristics of hutong in architectural context

CREATE MOVEMENT, LINKING, CIRCULATION

1. Decentralized layout for public usage space – creating more communication possibilities for all people;

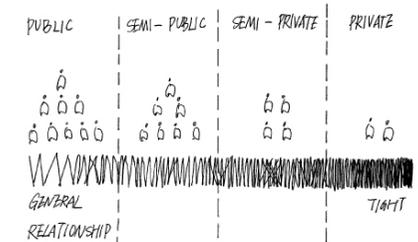


2. Flux linear system – connection and traffic;



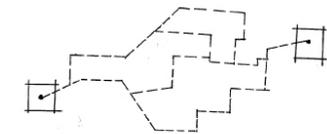
GOOD SOCIAL STRUCTURE

3. Four specific social layers – providing proper transition space from public to private and specific communication spaces for different relationships of people;

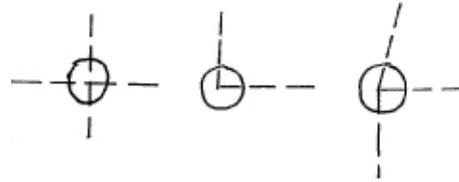


POSITIVE SPACE FOR WANDERING

4. Unexpected route combinations— provide various choices to enrich the journey;



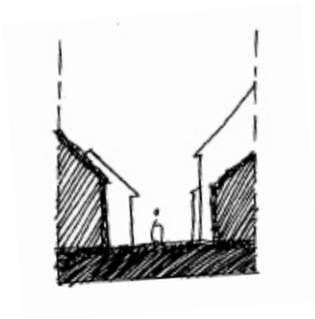
5. Many corners and intersections—provide various choices to enrich the journey;



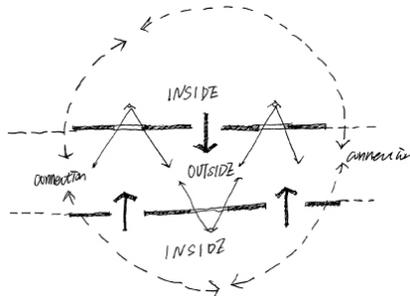
6. A room is a building – small scales provide a feeling of intimacy;



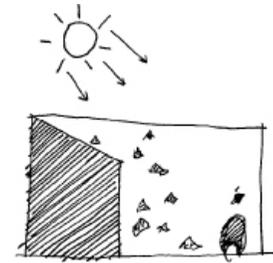
7. Different scales – enrich the journey;



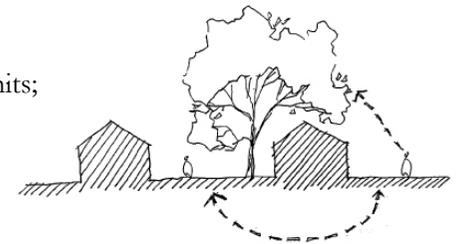
8. Visual links and movement links – connect separate spaces, leading to cluster spaces;



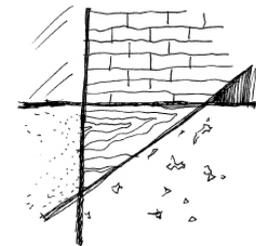
9. Natural light and amazing shadows—enrich the space layers;



10. Green space – break space limits;



11. Material collage—enhance the visual richness.



CATALYST OF FLEXIBLE AND SPONTANEOUS ACTIVITIES

12. Irregular edges—catalyst for flexible activities;



Fig 2.2.27-38: The derived characteristics of hutong in architectural context



Fig 3.0.1: The sketch shows Peking opera player -- dan

3.0 Programme — Peking Opera

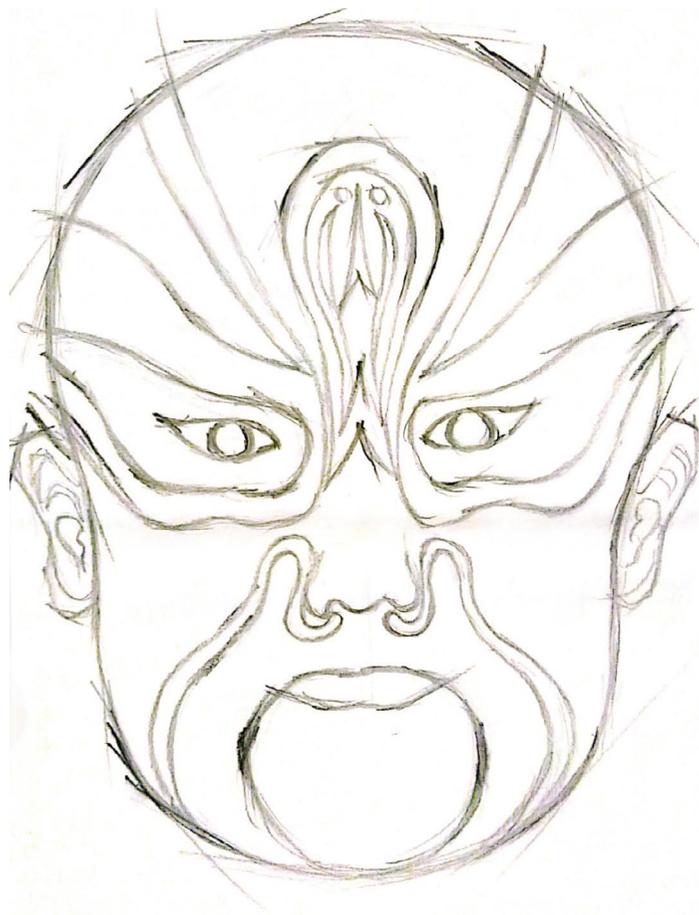


Fig 3.0.2: The sketch shows male character in Peking Opera with a painted face

3.1 Beijing Opera

A suitable programme for a contemporary interpretation of the principles of *butong* in the context of this research is one that fosters complex programs and functions, is involved in positive relationships between space occupants and visitors, is relevant to the Beijing context, and benefits from frequent and diverse communication opportunities. One such programme is Peking opera school.

3.1.1 General Performing Principles

Peking opera, or Beijing opera, is a form of traditional Chinese theatre which combines music, vocal performance, mime, dance, and acrobatics.⁵⁴ It arose in the late 18th century and became fully developed and recognized by the mid-19th century.⁵⁵ Focused neither on script nor plot, these plays feature the mental and emotional lives of characters. They reveal the “miracle of moments”, and do so in several complexly layered “languages”, which are presented simultaneously. One of these languages is Mandarin Chinese, performed as much for its aesthetic values as for its denotative meaning. Other languages include the *pibuang*, musical language of song and orchestral accompaniment, the language of percussive patterns (*luogudian*), and the language of conventional stylized movement— all of which are capable of expressing dense and specific affective meaning.⁵⁶ Therefore, to a large extent, all of these “languages” are symbolic and suggestive rather than realistic, so that these plays neither highly rely on the setting and props, nor are limited by time and place restrictions. (figs 3.1.2-3)

54 “Peking Opera”, accessed September 9, 2014.http://en.wikipedia.org/wiki/Peking_opera#cite_note-30

55 Joshua Goldstein, *Drama Kings: Players and Publics in the Re-creation of Peking Opera*(Berkeley, CA: University of California Press,2007), 3

56 Elizabeth Wichmann,“Tradition and Innovation in Contemporary Beijing Opera Performance,”*TDR*, 34, no. 1 (1990):146.



Fig 3.1.1: The typical stage for Peking opera playing - There is no complicated storage or ornament, the reason is that all the performing are meaningful and highly abstracted.

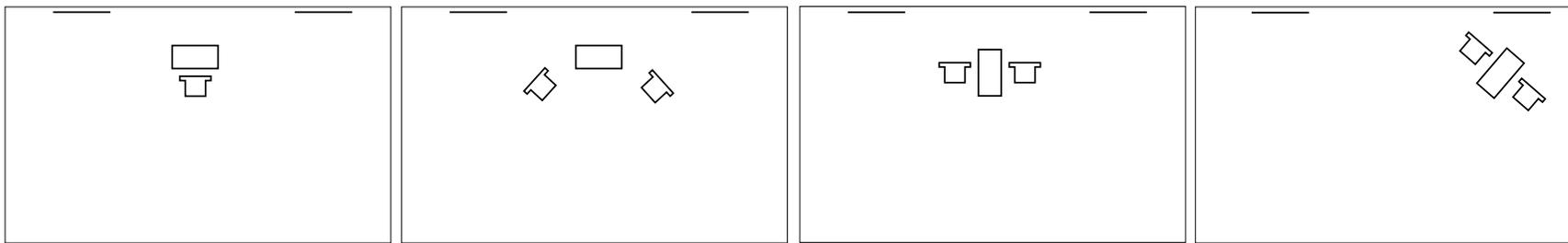


Fig 3.1.2: The different ways of furniture arrangement present different scenes.

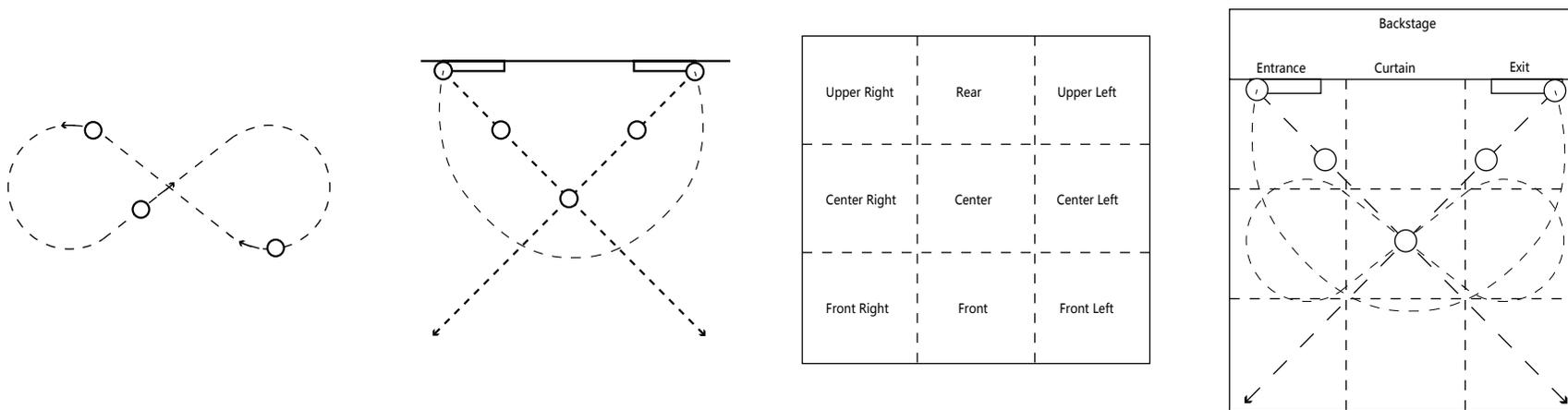


Fig 3.1.3: The different gestures and different locations of the performer present different meanings.

3.1.2 The Characters and Staffs of Peking Opera

Peking opera is involved in a series of subjects: performing, music, and design. For performance there are four main types of performers: *sheng*⁵⁷, *dan*⁵⁸, *jing*⁵⁹, *chou*⁶⁰. Also, performing troupes often have several of each variety, as well as numerous secondary and tertiary performers.⁶¹(figs 3.1.4-9). Depending on the different gender, age, personality, and performing experiences or capacity, different performers plays different characters. For musical composition, the accompaniment for a Peking opera performance usually consists of a small ensemble of traditional melodic and percussion instruments. The *jinghu*⁶² is the primary accompaniment for performers during songs, and also the bamboo flute, reed pipe, and suona horn, *erhu*⁶³, *yueqin*⁶⁴, *sanxian*⁶⁵, the drum, bamboo clappers, gong, cymbals, and bell. (fig 3.1.12) In general, there are three to fifteen people accompanying with musical instruments. Design involves mask design, costume design, the set and props design, and script composition (figs 3.1.10-11). All of these programmes not only need to learn and practice individually, but also benefit from interdisciplinary study and communication.

57 *Sheng* is the main male role in Peking opera.

58 *Dan* refers to any female role in Peking opera.

59 *Jing* is a painted face male role. Depending on the repertoire of the particular troupe, he will play either primary or secondary roles.

60 *Chou* is a male clown role. The *Chou* usually plays secondary roles in a troupe.

61 “Beijing opera”, accessed September 9, 2014.http://en.wikipedia.org/wiki/Peking_opera

62 *Jinghu* is the lead melodic instrument, a small, high-pitched, two-string spike fiddle.

63 *Erhu* is two-stringed fiddle.

64 *Yueqin* is the four-stringed moon-shaped Chinese mandolin.

65 *Sanxian* is a three-stringed plucked instrument.



Fig 3.1.4: The different roles playing Peking Opera painting by Naibin Chen

THE DIFFERENT CHARACTERS OF PEKING OPERA



Fig 3.1.5: *sheng*



Fig 3.1.6: *Dan*



Fig 3.1.7: *Jing*



Fig 3.1.8: *Chou*



Fig 3.1.9: *Long tao*



Fig 3.1.10: Make up



Fig 3.1.11: Design



Fig 3.1.12: Music instruments

3.1.3 Relationship with Beijing context

Peking opera is not a changeless art; it has been evolving since it was born and is affected by different society. In history, it is one branch of Chinese opera. During the Qing Dynasty (1790), the four big *Huiban opera* troupes entered the capital and combined with *Kunqu opera*, *Yiyang opera*, *Hanju opera* and *Luantan* in Beijing's theoretical circle of the time. Over a period of more than half a century of combination and integration of various kinds of opera there evolved the present Beijing Opera.⁶⁶ However, during the second half of the 20th century Peking opera witnessed a steady decline in audience numbers. This has been attributed both to a decrease in performance quality and an inability of the traditional opera form to capture modern life.⁶⁷ It suggests the new architecture of Peking Opera should provide more professional education facilities, and allow it to capture modern life in a more meaningful way, and therefore, to attract a more audiences that will enable it to have a strong future. (Figs 3.1.13-16)

In addition, the Peking opera education is a cyclic process including learning, practicing, rehearsing, performing, and enjoying. In terms of engaging the public, the practice processes would be uninteresting to the majority as they are usually repetitive and long. However, the critique, performing, and research aspects would be very suitable phases to present to the public, as they combine presentation, judging and reflection together. It is a window through which the students could present their skills, innovations, and even problems to the public, and the public could contribute their judgments and suggestions to them. Also, it is a method of living, a vision for their city, which largely enriches the city life

⁶⁶ Ruru Zhou, "Beijing Opera", accessed April 10, 2014.<http://www.chinahighlights.com/travelguide/beijing-opera/>

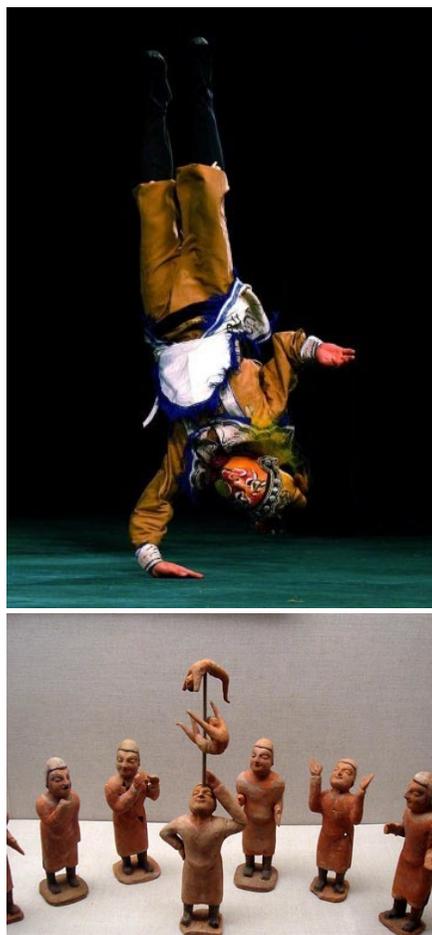
⁶⁷ "Peking Opera", accessed September 9, 2014.http://en.wikipedia.org/wiki/Peking_opera#cite_note-30

in Beijing.

Therefore, due to the specific conditions needed for their survival and improvement, and the potential contribution to the city, Beijing opera has a crucial role to play in the Beijing context, and vice versa.



Fig 3.1.13 12th century painting by Su Hanchen; a girl waves a peacock feather banner like the one used in Song Dynasty dramatical theater to signal an acting leader of troops



Figs 3.1.14-15: Performing of Peking Opera was largely influenced by traditional acrobatics, and urban life.



Fig 3.1.16 The accent of Peking opera was influenced by Beijing accent, while other Chinese opera was influenced by other local accent.

3.1.4 The Development of Peking Opera Education

3.1.4.1 Child Training Education

In ancient times, to meet some the needs of particular rich families or officers, students started to learn skills such as playing various musical instruments and traditional poetry from an early age. The teachers were knowledgeable scholars and they emphasized personal development and teaching students in accordance with their aptitude. It is a good way for small numbers of students' education. The simple relationship between teacher and student is the only anchor for opera learning.

3.1.4.2 Troupe Education

With the development of society, there were larger requirements for the opera performers; the troupe became the main performing and learning institute. Most 19th century *keban* were not wholly independent institutions but were attached to professional acting troupes in an arrangement described as *yi ban dai ban*, "each troupe arise a training school".⁶⁸ A complete group of actors, musicians, and stagehands, would be bound together for the entire year.⁶⁹ However, there was no particular building for troupes, because they always keep giving touring performances in different parts of the country. It emphasized troupe training, and different troupes had their own particular performing strategies and skills. The teachers were not only the famous opera player or some artist with outstanding skills, but also themselves. The older performers would teach younger students. Also, the students got many opportunities to practice on the stage, so they could enrich their stage experience. Educational outcomes largely benefit from communications between groups with the same specialties, as well as between groups with different specialties.

⁶⁸ Goldstein, *Drama Kings*, 32

⁶⁹ Ibid.

3.1.4.3 Modern Education

Nowadays the performing institute system has formed, and the modern education method is more comprehensive and international, which provides possibilities to teach a large number of students. Christopher Alexander believes that a university should be a "Marketplace of ideas,"⁷⁰ where the individual can freely choose their courses, like buying from the market. The purpose of modern performing education is not only limited to training good performers, but also fosters students with comprehensive knowledge and accomplishment. The courses cover theory, practice, and creativity, and the last item being of increasing importance. Therefore, more complex functions and programs are involved with a modern performing arts education. There are several modern performing arts school precedents to be studied, in order to show the modern teaching facilities and the student learning.

⁷⁰ Christopher Alexander, *A Pattern Language*(New York: Oxford University Press, 1977), 232.

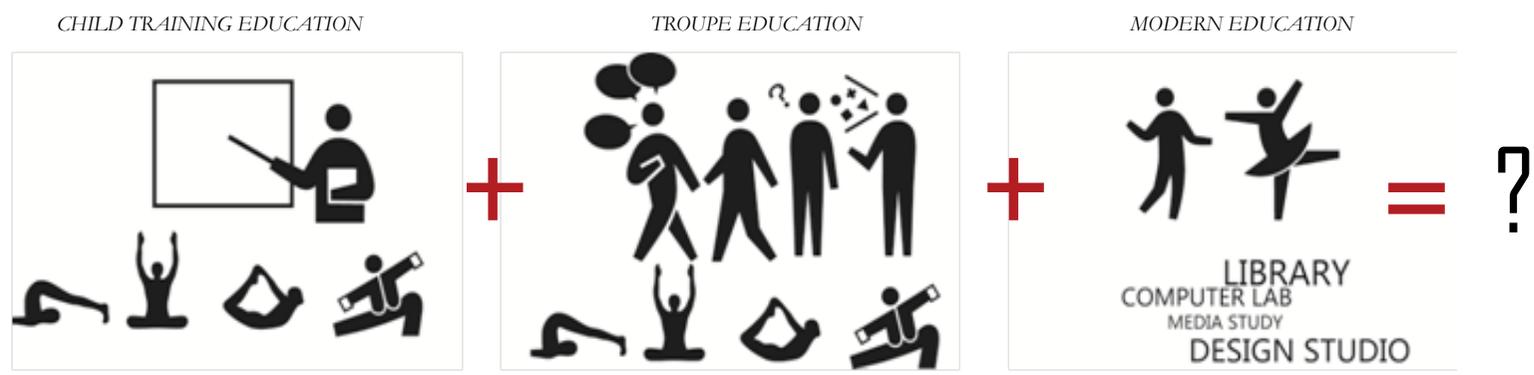


Fig 3.1.17: Different teaching methods

The Laban Dance Center

The Laban Dance Center, designed by Herzog & de Meuron, is the largest school for contemporary dance in the world, and one of Europe's leading institutions for contemporary dance artist training (figs 3.1.18-20). Through an analysis of the basic functions and circulations, it is clear that more specific and comprehensive spaces are involved: studio, rehearsal studio, cafeteria, workshop, library, therapy centre, lecture theatre, and administration. Also, the functions are dispersed throughout the centre to promote social interaction, but individual spaces with the same function are arranged together to maintain working and communication efficiency. Most of the studios are on the upper floor, and each studio is different in size, form and colour. The heart of the building is the main theatre, which is the public and student orientation point in the open "cityscape" of the first floor.

In addition, the horizontal circulation of the interior plays an important social role. A set of ramps go from the ground floor to the next level, and several benches are designed for meeting points. Also, during performances the sloping ramp "street" becomes the lobby for the 300-seat main theatre. All activities are intermixed and distributed on two main levels, promoting communication within the entire building. Two black, concrete spiral staircases, placed at either end, become places for encounters.⁷¹

Main idea: Circulation as informal communication space, visual connection, shared using functions scattered, the necessary of space clusters.



Figs 3.1.18-20: The perspectives of the building and the perspectives of the indoor street of Laban dance center

⁷¹ "Laban Dance Center", accessed December 19, 2013. <http://www.arcspace.com/features/herzog-de-meuron/labandance-centre/>

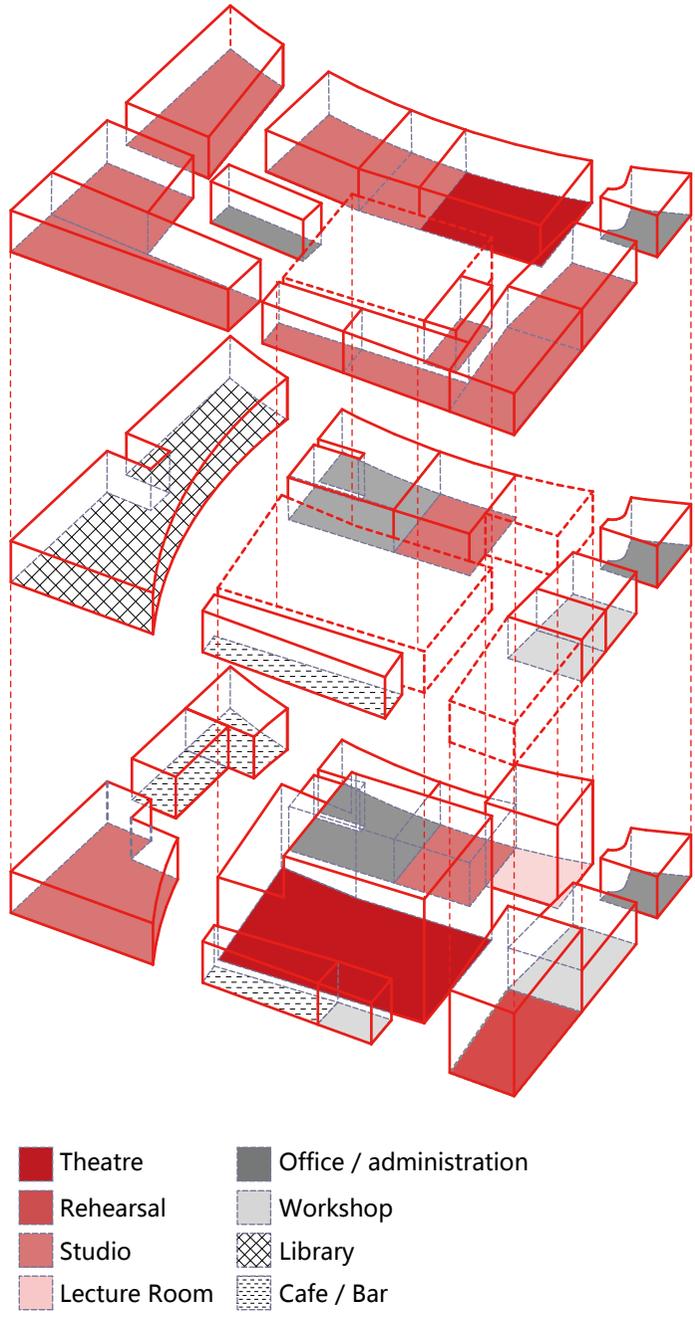
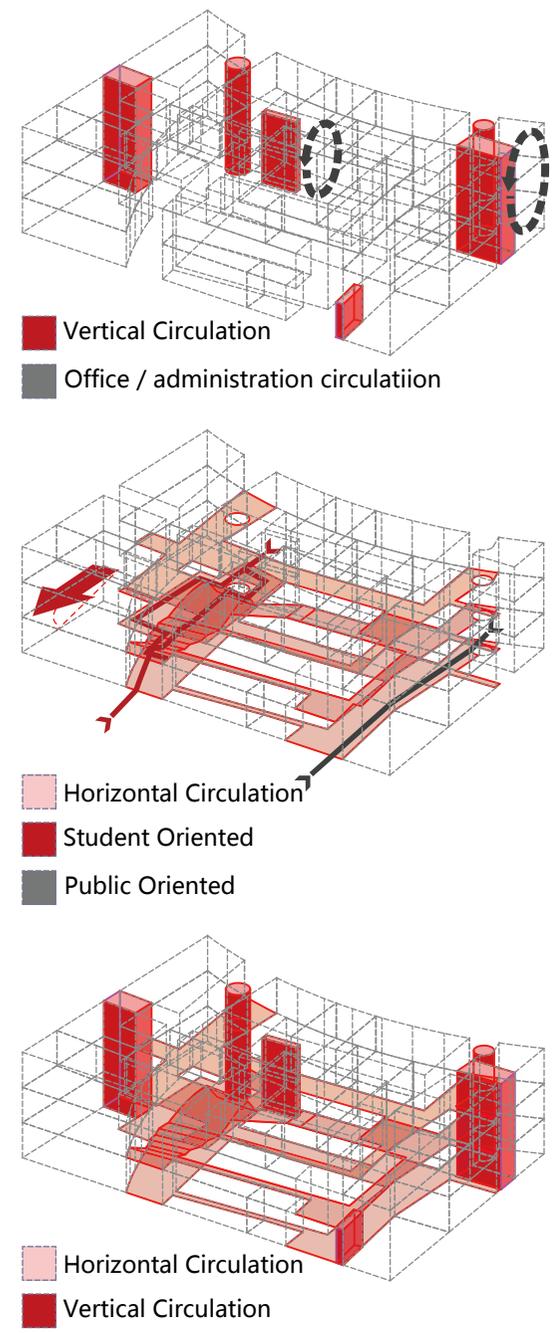


Fig 3.1.21: The function and circulation analytical drawings of Laban dance center



Reed College Performing Arts Building

Compared to the Laban Dance Center the Reed College performing arts building, designed by Opsis Architecture, is more complex. It consolidates theatre, dance and music programs, previously scattered across campus, into a new, vibrant and cross-disciplinary home for the arts.⁷² The building features: a 200-seat studio theatre with flexible seating configurations, a highly experimental 100-seat black box theatre, a 100-seat choral rehearsal hall, and the 100-seat Performance Lab for theatre. Instruction and rehearsal spaces include: a multi-media lab and resource library, two large dance and theatre rehearsal spaces, a costume design studio, shared classrooms and faculty offices.⁷³ To encourage collaboration, all fifteen faculty rooms are clustered in one section, so the faculty can see each other on a daily basis.

Enclosing the Commons Quad, the building serves as a doorway connecting the performing arts to the academic core of the campus.⁷⁴ A series of public orientated theatres is organized around a central atrium lobby, an informal learning space providing an address for each program and four performance venues. In this way, the facility encourages teamwork and experimentation across intellectual, social and creative communities, and makes performances open to the public as well.

Main idea: interdisciplinary, collaboration, atrium as informal communication space for all students.

⁷² “Performing Arts Building REED COLLEGE”, accessed September 9, 2014. <http://www.opsisarch.com/blog/project/reed-college-performing-arts-building/#>

⁷³ Ibid.

⁷⁴ Ibid.



Fig 3.1.22-24: The site plan and perspectives of the Reed College performing arts building entrance

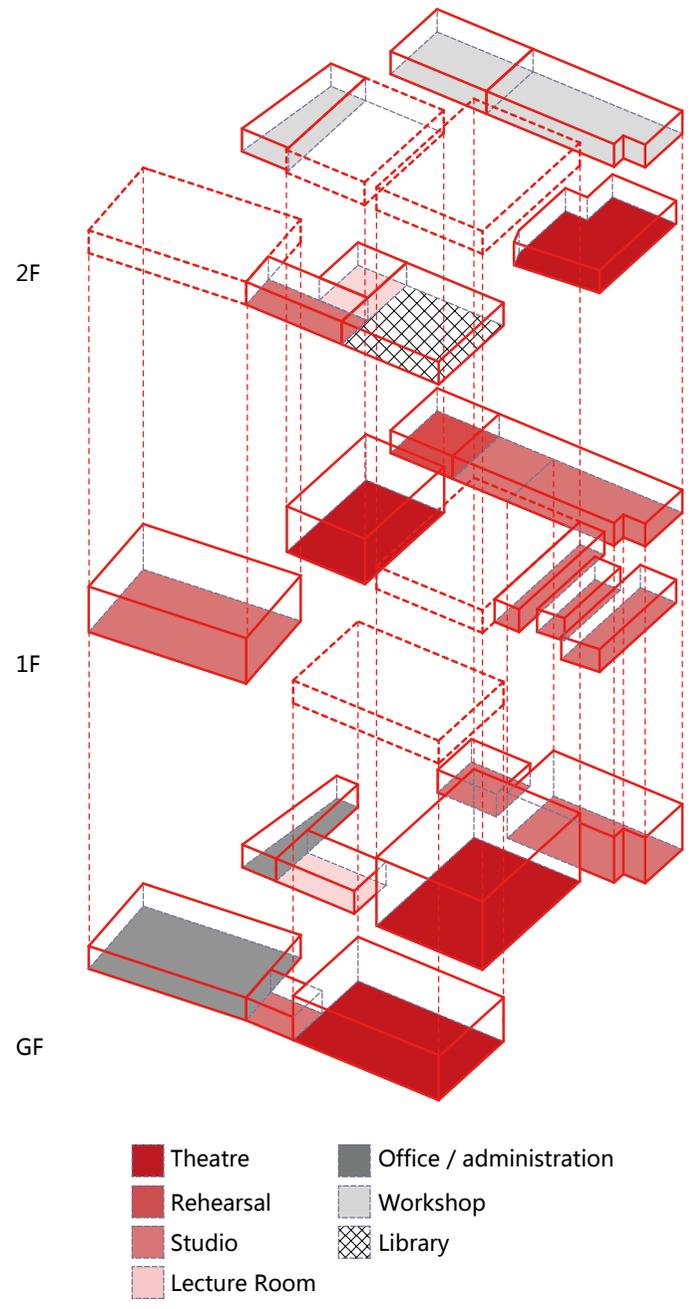
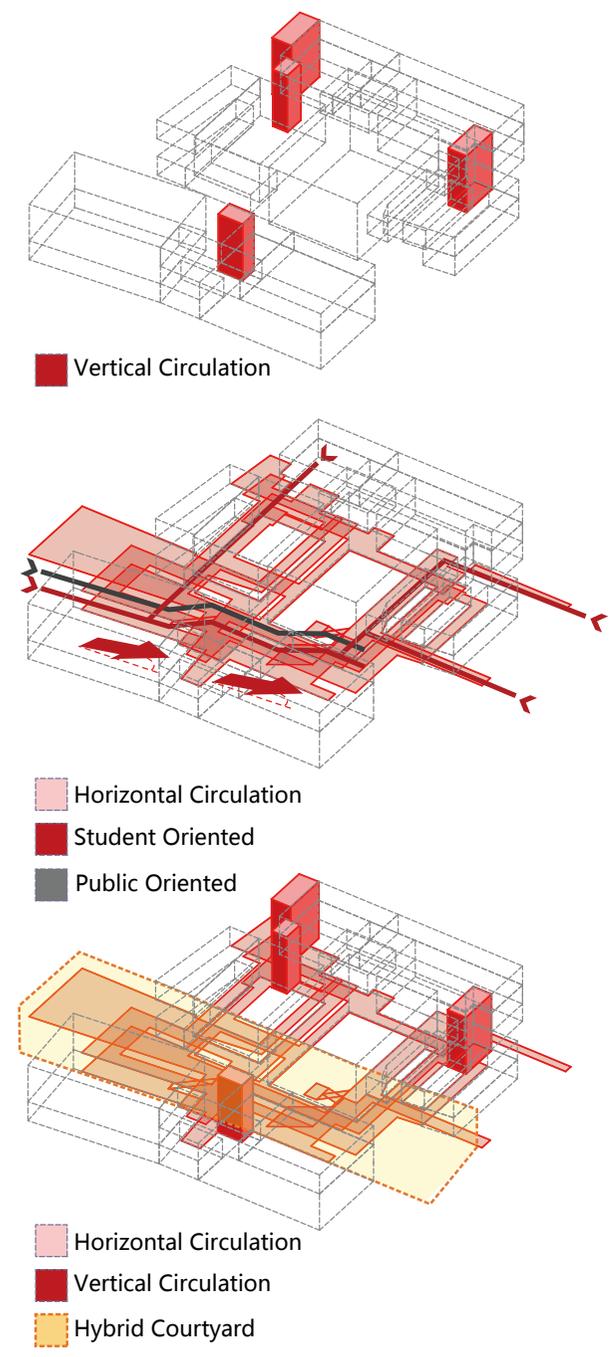


Fig 3.1.25: The function and circulation analytical drawings of the Reed College performing arts building



Logan Center for the Arts, the University of Chicago

Logan Center for the Arts, designed by Tod Williams Billie Tsien Architects, consists of many arts departments rather than just performing arts. Serving as a landmark on the south end of campus, it is the new home to UChicago's academic and extracurricular programs in cinema and media studies, creative writing, music, theatre and performance studies, and the visual arts. The new arts hub is comprised of a light-filled glass and stone tower and a three-story "podium" with a saw-tooth roof. The 170-foot tower houses a performance penthouse, screening room, rooftop deck, classrooms, rehearsal rooms, and performance labs, while the podium features studio space, music practice rooms, workshops, a café, a digital media centre, production and editing labs, two theatres, and a 474-seat performance hall.⁷⁵ Moreover, spaces of some departments are clustered in one section to enhance work and communication efficiency, forming a potential community. Similar to the previous two precedents, the theatre is the heart of the building because of its public orientated nature.

Both vertical and horizontal circulations are significant for communication. The cinemas, dance, performance, ensemble spaces of music, and classrooms on different floors connect the programs with generous elevators and stairways. Moving from floor to floor, students, faculty, and residents of Chicago will discover communal places to gather and secret places to be alone.⁷⁶ (figs 3.1.28)

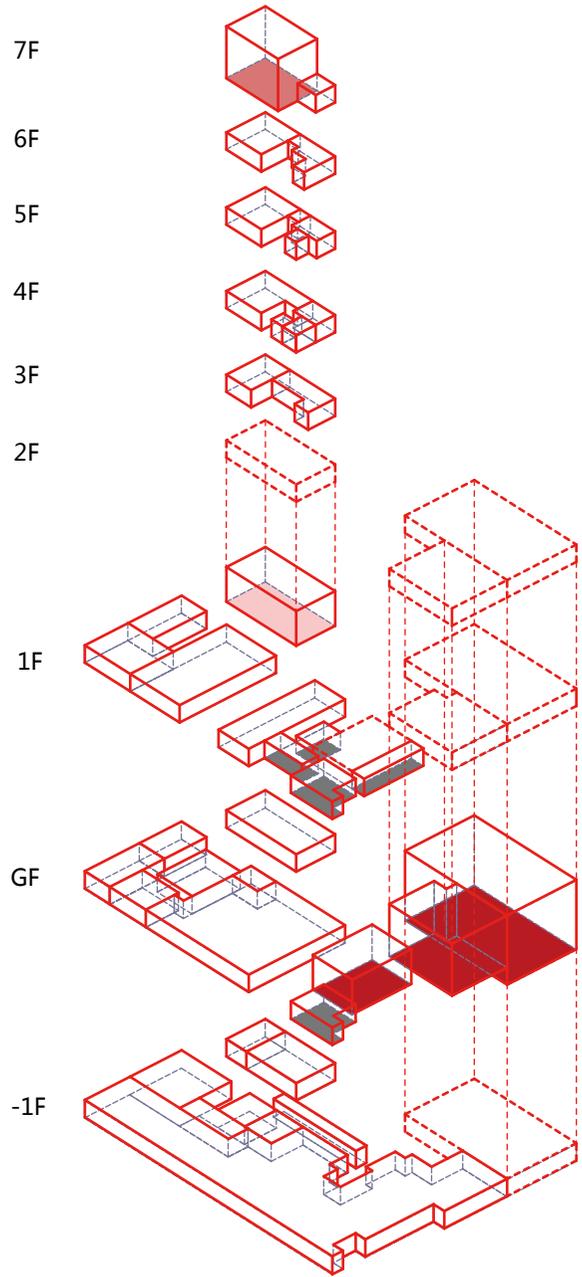
Main idea: Space clustered for working efficiency, Circulation as informal communication space.

75 Karissa Rosenfield, "Logan Center for the Arts, University of Chicago / Tod Williams Billie Tsien Architects", accessed Nov 22, 2012. <http://www.archdaily.com/296212/logan-center-for-the-arts-university-of-chicago-tod-williams-billie-tsien-associates/>

76 Ibid.



Fig 3.1.26-27: The perspectives of the building and the main atrium of Logan Center



- Theatre
- Rehearsal
- Studio
- Lecture Room
- Office / administration
- Workshop
- Library

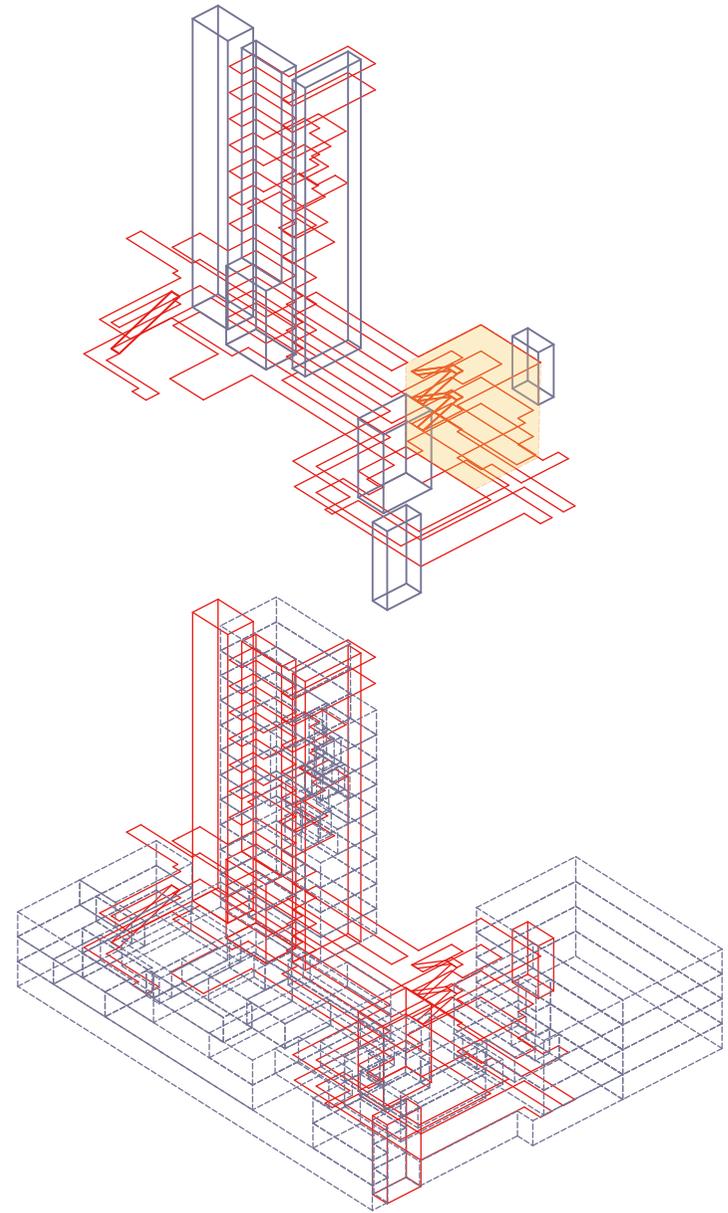


Fig 3.1.28: The function and circulation analytical drawings of Logan Center

3.2 Summary

3.2.1 Design Programmes and Facilities

The programme against which the spatial and conceptual strategies of *hutong* will be tested is a Peking opera school, an institute for learning, performing, and innovation of Peking opera, designed to be a new department of the Central Academy of Drama, which is a university for performing arts in China. Drawing from precedent studies and considering the unique features of Chinese tertiary education, we can generalize its learning environment into two groups, the theory taught in the lecture and practice learnt in studio. If we look at the courses in the performing arts programmed, they can be distilled further into three categories: academic, practical, and rehearsal. "Academic" refers to performing arts history, theory and criticism; this is mostly taught in lecture theatres, received in critiques and researched in the library. "Practical" refers to practice skills; this is mostly learned in the studios. "Rehearsal and Crit" refers to present outcomes; this is practice in specific presentation spaces. These components are then supported by administration spaces, relaxing space, exhibition spaces and circulation spaces. Each of these components has varying degrees of openness and privacy.

Programmes required for the learning of Peking opera and their spatial requirements:

- Studios for Sheng (private and high functional requirement)
- Studios for Dan (private and high functional requirement)
- Studios for Jing (private and high functional requirement)
- Studios for Chou (private and high functional requirement)
- Studios for secondary and tertiary performers (private and high functional requirement)
- Lecture theatre (public and high functional requirement)

- Workshop
- Computer lab
- Office & administration (Offices for Head of School and deans; Offices for professors and lecturers and tutors)
- Library
- Study room

Programmes required for the performing of Peking opera:

- Public Orientated Rehearsal studio Crit theatre (public and flexible functional requirement)
- Student orientated Rehearsal studio (public and high functional requirement)
- Main theatre (public and high functional requirement)
- Rehearsal studio (public and high functional requirement)

Programmes required for the innovation of Peking opera:

- Research space (informal flexible performance space)
- Exhibition space (informal flexible performance space)

Programmes required for Support:

- Student village
- Associated spaces (bathroom, storage, service space, make up room)
- Physiotherapy centre (public and high functional)
- Relaxing space (public and flexible)
- Meeting room and reception (public and high functional requirement)
- Dining space (public and flexible)
- Mechanical
- Parking area

3.2.2 Rearrangement

At this stage, the Peking Opera learning method and facilities could be concluded, by examining the historical development of Peking opera education, which is the basic and important start point of the programme layout for further design. Also, the programme layout should be effected by *hutongism*. First, all the programmes and facilities belongs to different social layer. (figs 3.2.1-2)

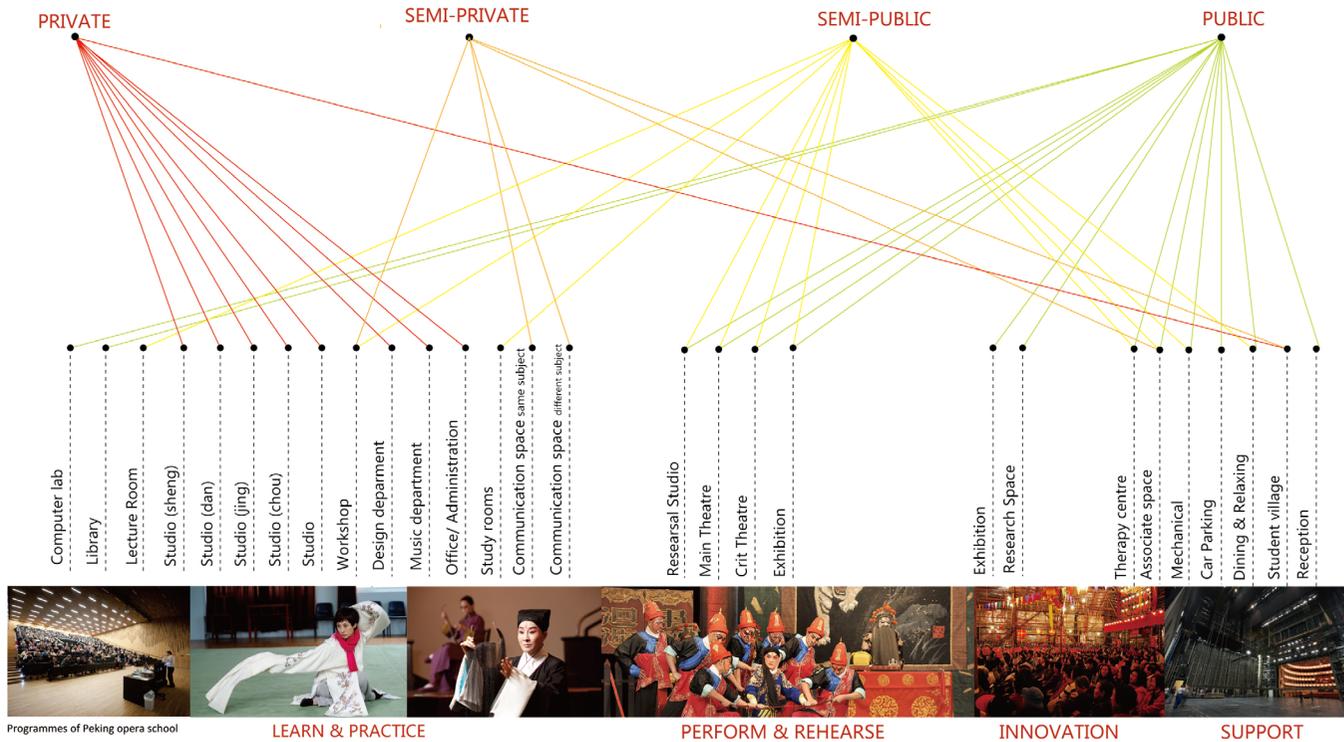


Fig 3.2.1: The different programmatic spaces belong to different social layers

Relationship between Peking Opera learning process & programmatic layout

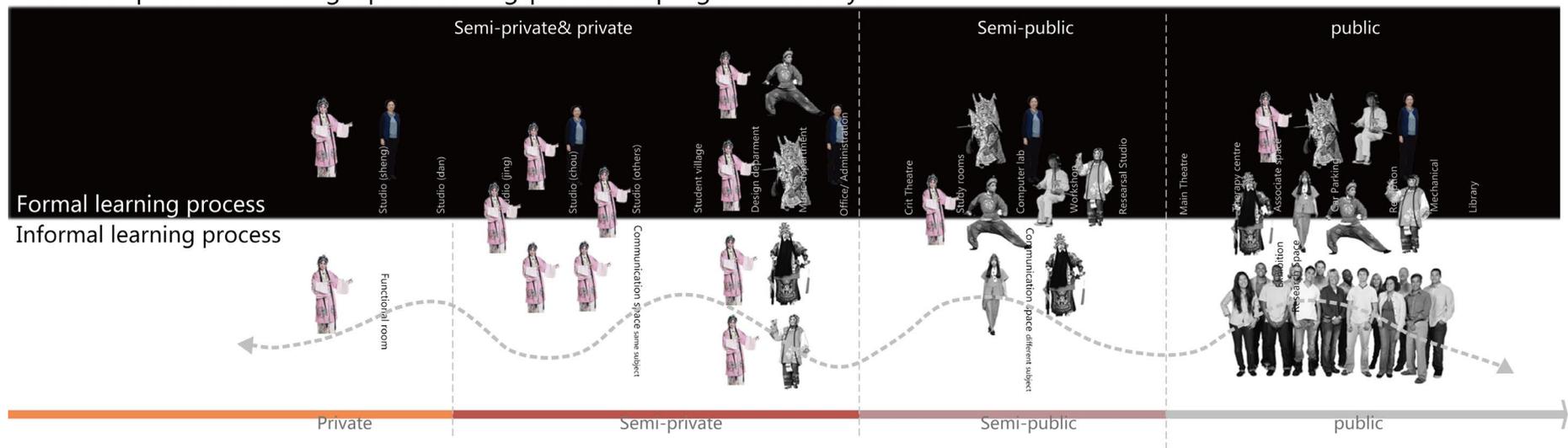


Fig 3.2.2: Peking Opera Learning method: provide different learning environments and meet different people

Second, basing on David Kolb's Experiential Learning Theory, "learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it"⁷⁷(fig: 3.2.3) In other words, in order to learn new experiential knowledge, the sequence between feeling, watching, doing and thinking shouldn't limited by linear sequence. Therefore, the programme layout will provide visual and sound links, but make sure the movement link following *butongism* principles.(fig: 3.2.4)

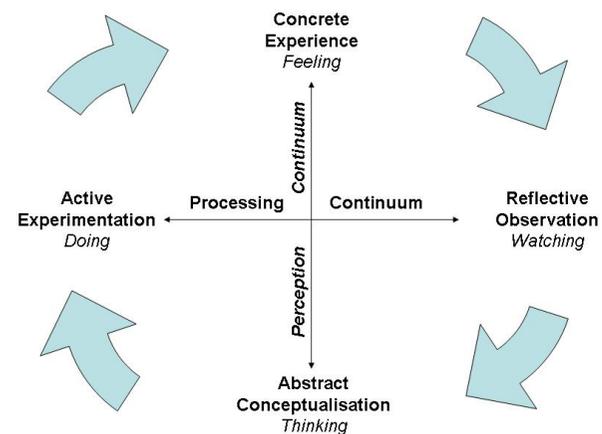


Fig 3.2.3: David Kolb experiential learning theory

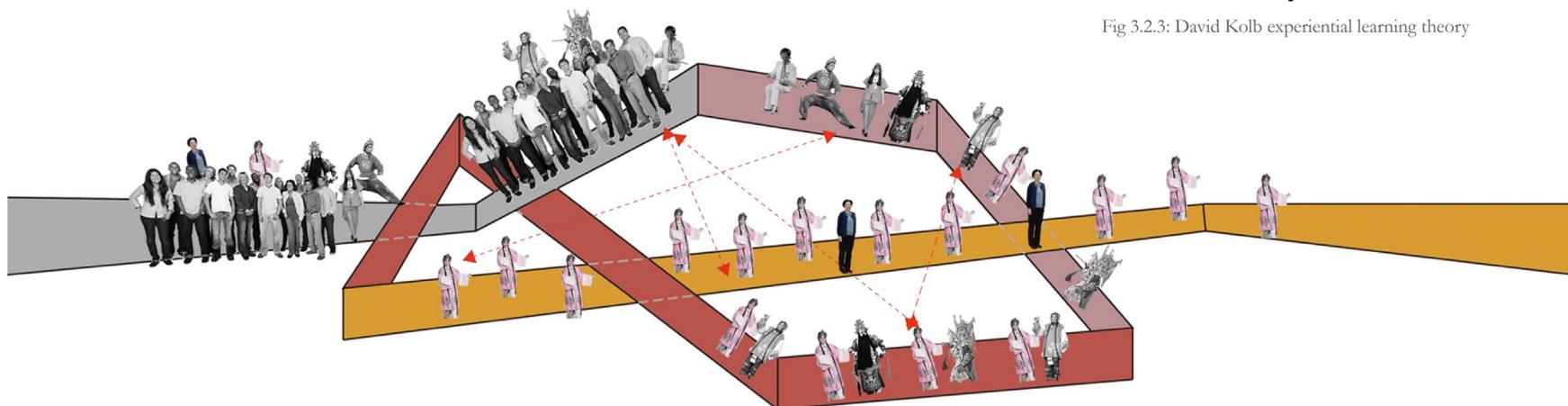


Fig 3.2.4: The new relationships between students and visitors. Basing on David Kolb experiential learning theory, it is necessary to keep the sequence of movement link while create visual and sound link.

77□ "Kolb's Learning Styles and Experiential Learning Model", lastest modified July 13, 2011. <http://www.nwlink.com/~donclark/hrd/styles/kolb.html>

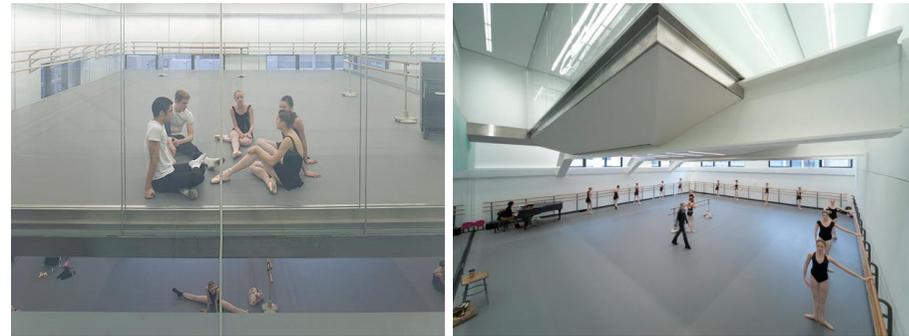
3.3 The design prototypes

At this stage, based on the functional requirements from previous studies, a series of ideal prototypes are collected and refined by the strategies of *hutong*. All of these prototypes share similar scales with this project, and have typical programmatical and spatial features matching with their functions as well, which it is necessary for further design.

3.3.1 Private Space and Semi-private Space

Part 1: Performing Department- American School of ballet

Superiority: For the performing department for *sheng*, *dan*, *jing*, *chou*, and other secondary or tertiary performers of Peking Opera, a proper example is the addition of two new dance studios within the existing training academy for the New York City Ballet. The height of existing studios is around 5 metres. Three steel beams bridge the load within the existing structure, allowing the volumes to float, so a double sense of transparency towards the dancers is achieved through the glass volumes.⁷⁷ It contributes to a large extent to mutual study and communication through visual linking. The two sets of stacked studios are connected by a mezzanine lounge, and its liquid crystal side walls can be switched on and off from translucent to transparent at the discretion of instructors to allow, or deny, parents and visitors visual access to the studios.⁷⁸



Figs 3.3.1-2: The interior perspectives of the performing studio of American School of ballet

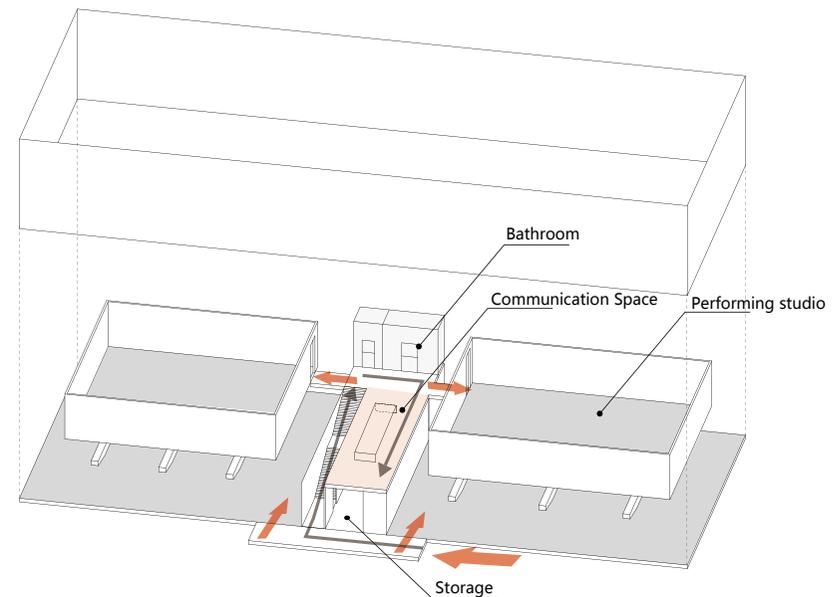


Fig 3.3.3: The original function and circulation analysis of American School of ballet

⁷⁷ Allison Conley, "Perceived Fragmentation," last updated Spring 2013. http://issuu.com/allisonconley/docs/dt_conley_042413_issuu_h2

⁷⁸ Diller Scofidio & Renfro, "School of American Ballet," accessed September 10, 2014. <http://www.dsrny.com/#/projects/school-of-american-ballet>

Part 2: Design Department -- Manchester School of Art

Superiority: The prototype of the design department for mask design, stage storage design, costume design and scenario writer of Peking Opera is a hybrid studio space of the extension of Manchester School of Art. The open studio spaces act as the working heart of the building, connecting the accessory areas: workshops and teaching spaces. Students and MSA staff from a broad spectrum of contemporary design disciplines can work on projects in close, communal proximity which encourages the sharing of ideas, techniques and methodologies in a way that was previously impossible.⁷⁹ The Hybrid Studio is also an environment in which students can proudly display their work in a setting that is light and easy to explore.⁸⁰



Figs 3.3.4-5: The stairs in the common space of Manchester School of Art studio provide vertical link

79 “Manchester School of Art / Feilden Clegg Bradley Studios,” Archdaily, last updated December 16, 2013. <http://www.archdaily.com/458040/manchester-school-of-art-feilden-clegg-bradley-studios/>

80 Ibid.

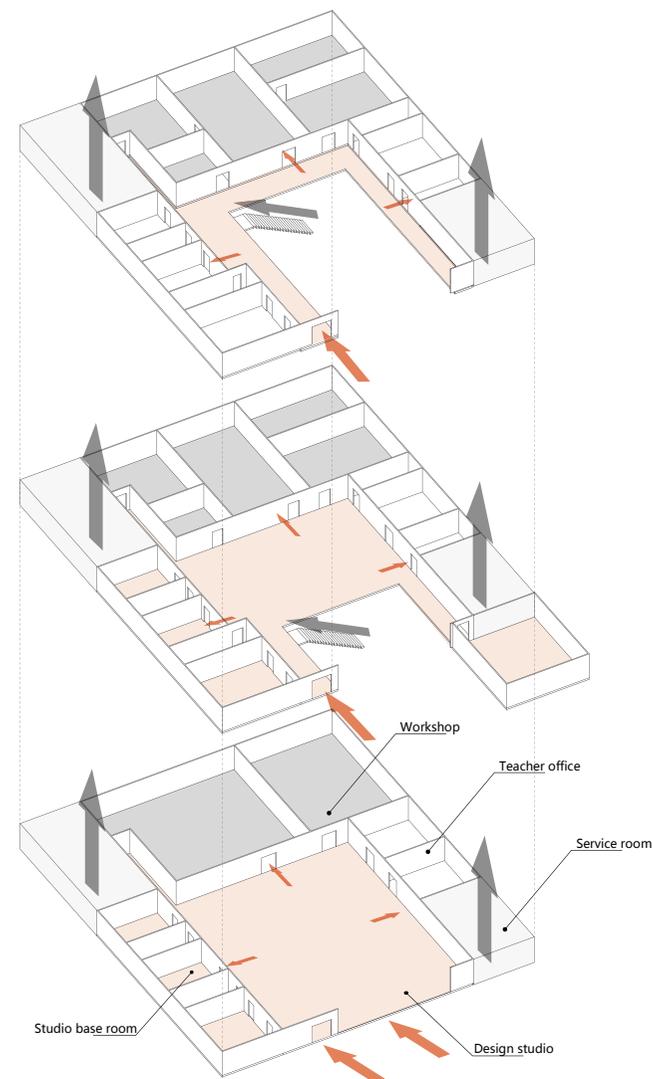


Fig 3.3.6: The original function and circulation analysis of Manchester School of Art studio

Part 3: Music Department -- Taller De Musics

Superiority: For the music department for various traditional musical instrument players of Peking Opera, the ideal reference is the music school on the third floor of Can Fabra Cultural Centre, previously a textile factory, because it has a similar scale and comprehensive facilities for musicians. All the classrooms are separated 1.8m from the building exterior walls, allowing a perimeter access, and creating a comfortable circulation around them all.⁸¹ The design resolves the acoustically insulated problem properly. Each classroom is formed as an independent volume, separated from the facade, the roof, the floor and the rest of the classrooms, preventing sounds transmission between them. In the interior the installation is visible maintaining the acoustic insulation without any hole.⁸² Also, the rooms are austere, in the interior, with white and grey colours, to facilitate the musician's concentration.⁸³



Fig 3.3.7: The main pass way of Taller De Musics

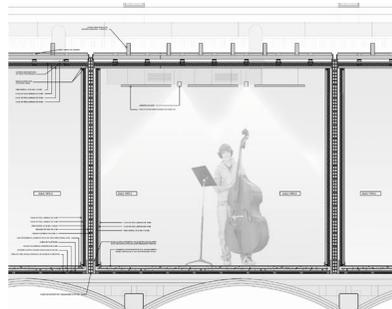


Fig 3.3.8: Sound insulation of Taller De Musics

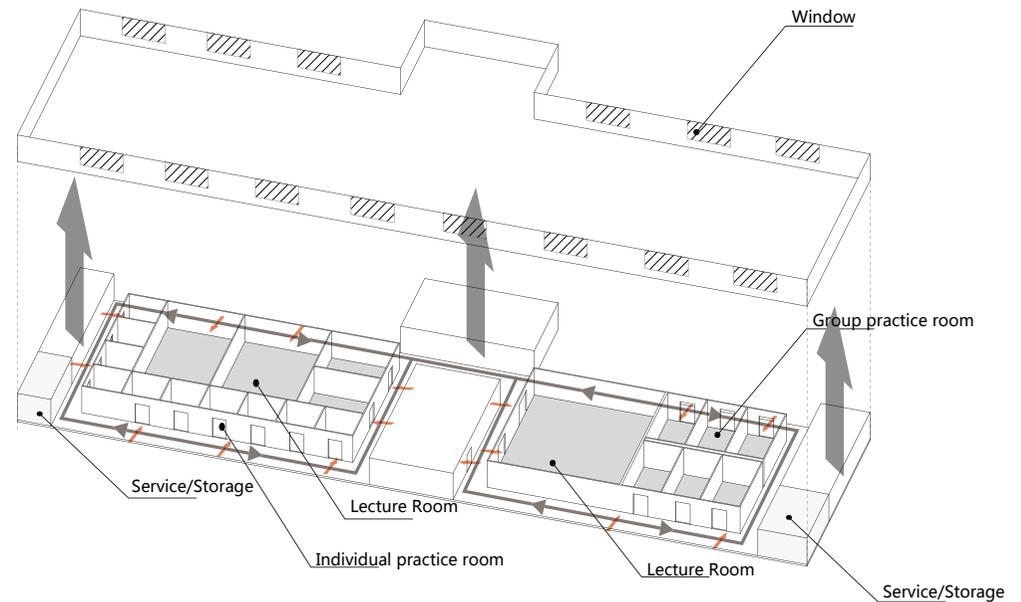


Fig 3.3.9: The original function and circulation analysis of Taller De Musics

81 "Music School Concept 'Taller de Musics' /Dom Arquitectura," Archdaily, last updated September 12, 2012. <http://www.archdaily.com/270376/music-school-project-concept-taller-de-musics-dom-arquitectura/>

82 Ibid.

83 Ibid.

Part 4: Student Accommodation – Typical Student Accommodation Building in Beijing

Superiority: Based on 5 years university life experience in Beijing, it was found that most student accommodation buildings in different universities have high living density to meet the needs of large number of students, especially in the downtown area. A typical student accommodation building has been studied, to see the most efficient way of using space. In general, each living unit provides the necessary study and living facilities for 4-6 students, while the bathroom area on each level provides for daily needs, which is also a key communication space for large numbers of students.



Fig 3.3.10-11: Typical Chinese student accommodation interior perspectives

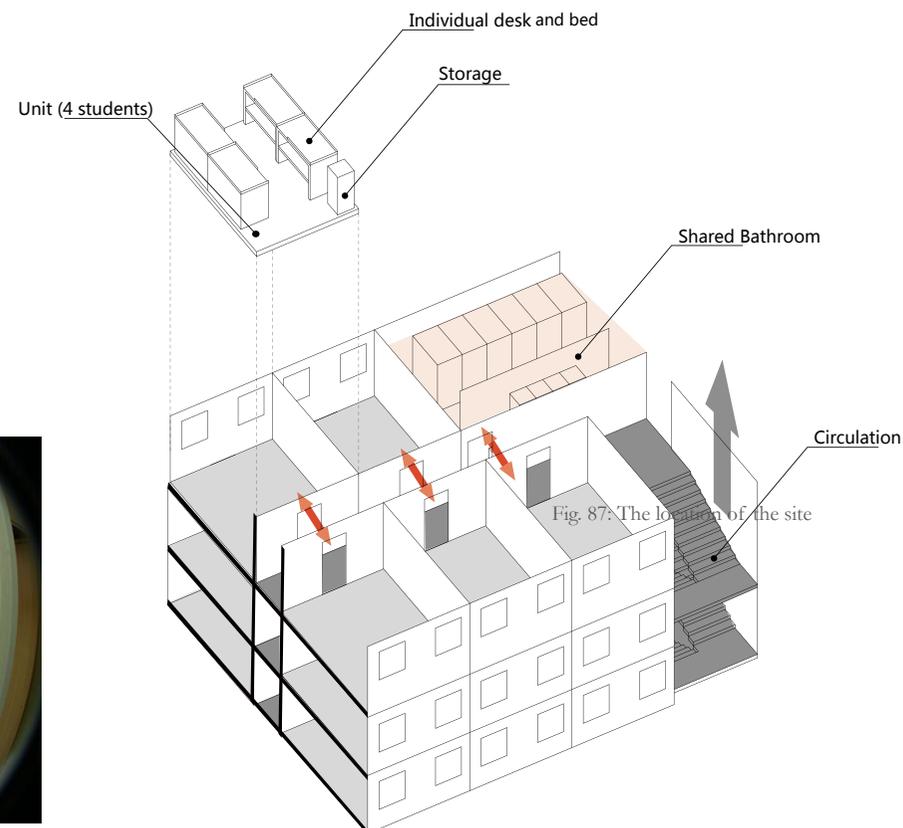


Fig 3.3.12: The original function and circulation analysis of typical Chinese student accommodation

Part 5: The Administration and Offices – the Faculty rooms of Logan Center for the Arts

Superiority: The ideal prototype for administration and offices is the administration department of Logan Center for the Arts which is a similar scale to this project. Logan Center is a multidisciplinary art school including music, design and performing arts departments. Therefore, the number and scales of offices, as well as relevant facilities, could be a good guide for the Peking Opera School.



Fig 3.3.13: Building outdoor perspective of Logan Center for the Arts

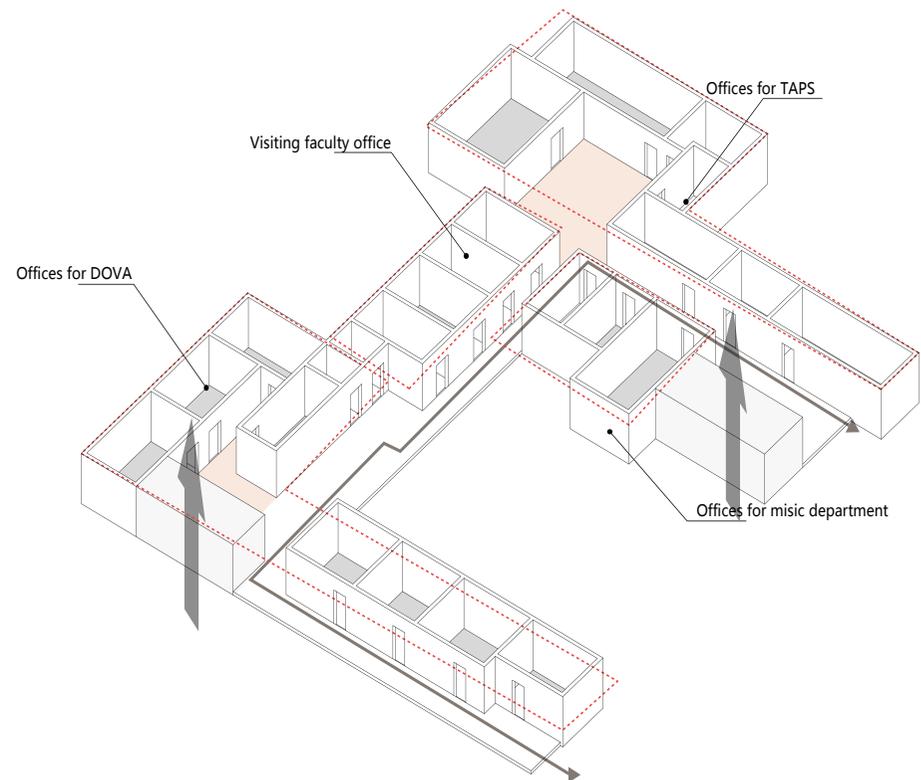
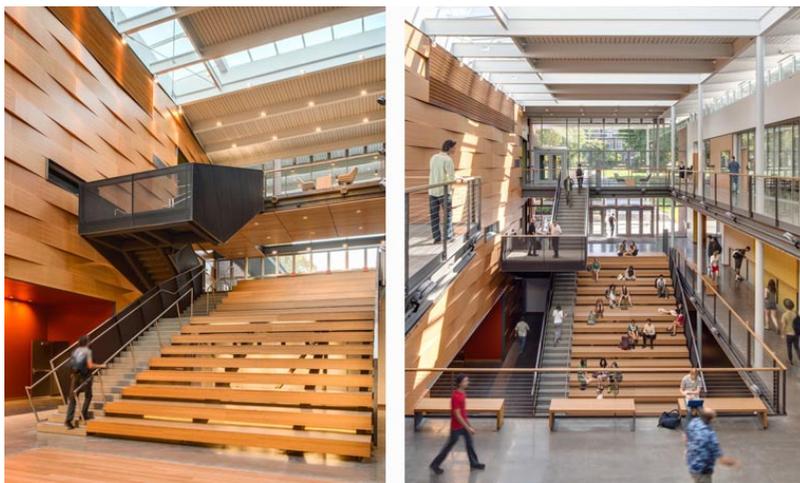


Fig 3.3.14: The original function and circulation analysis of Logan Center for the Arts

3.3.2 Semi-public Layer

Part 6: Atrium Space – the Main Atrium of Reed College Performing Arts Building

Superiority: For this project it is inevitable that an atrium be used to organize complicated vertical and horizontal circulations, and a proper prototype is the main atrium of Reed College performing arts building.⁸⁴ A series of public oriented theatres are organized around a central atrium lobby, an informal social space, providing an address for each program and four performance venues. In this way, the facility encourages teamwork and experimentation across intellectual, social and creative communities.



Figs 3.2.15-16: The main atrium perspectives of Reed College Performing Arts building

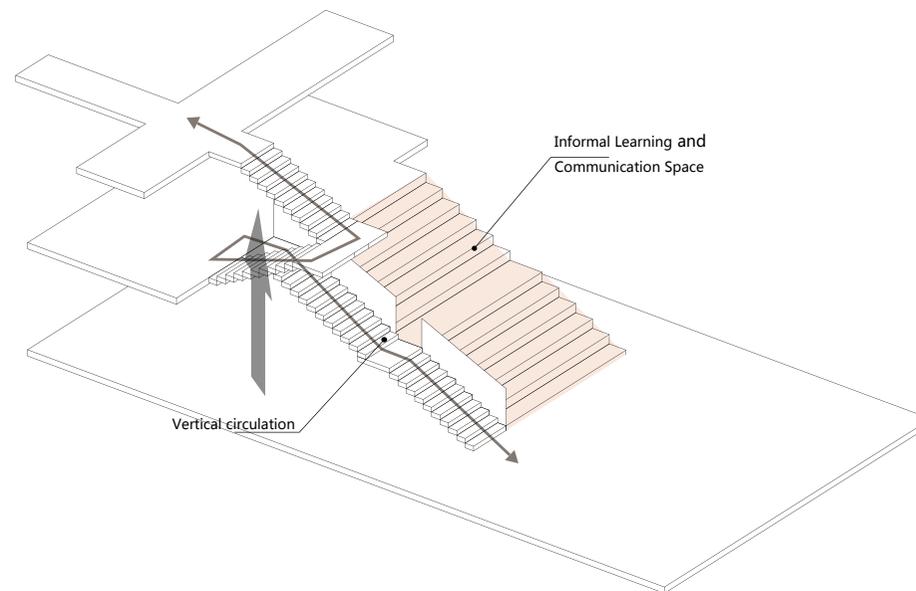


Fig 3.3.17: The original function and circulation analysis of the main atrium of Reed college Performing Arts building

84 Fischer Dachs Associates, “Opsis Designs Reed College Performing Arts Building,” last updated June 11, 2011. http://fda-online.com/news_detail.php?id=77694

Part 7: Researsal Studio –Teatro ofical

Superiority: For the public rehearsal studio for all students, because of the need for a flexible layout contributing to proper interactions between viewers and performers, the ideal prototype is Teatro Oficina outfitting an existing building in Sao Paulo, Brazil. The theatre is organized as a street of performance, and the audience has a bird's eye view as they watch from the scaffolding lining the old brick walls. An opening exists below the stage to raise elements of water, fire or other equipment during performance. Also, on the right side, is a large glazed surface with a flower bed in which a tree that grew outside is planted.



Figs 3.3.18-19: Building indoor perspective of Teatro ofical

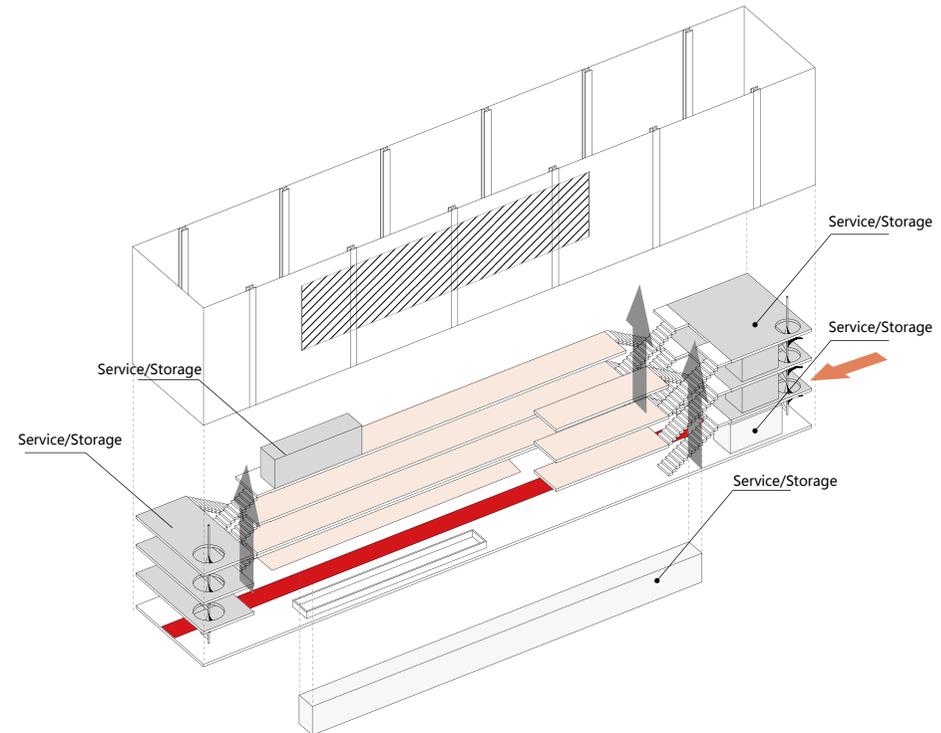


Fig 3.3.20: The original function and circulation analysis of Teatro ofical

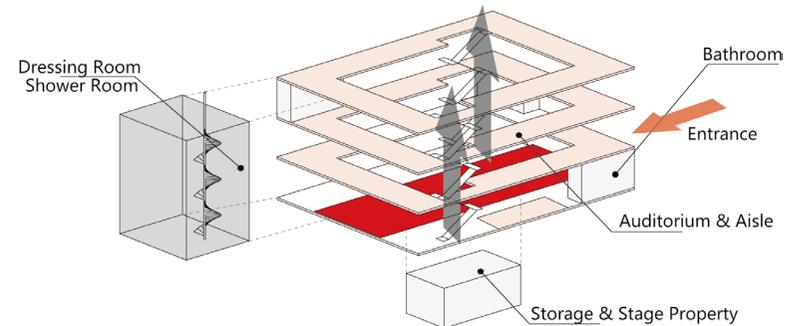


Fig 3.3.21: Ideal function and circulation relationships of Teatro ofical

3.3.3 Public layer design

Part 8: Exhibition and Research Space – London Shunt Bar

Superiority: The London Shunt Bar can contribute many good, intelligent and strategic ideas in terms of intrigue, suspense and structure to the innovation of Peking opera. Shunt is a London-based performance collective, founded in 1998. The idea of Shunt is to “challenge the model of the single author”.⁸⁵ The group agrees on a theme or subject and, as individual artists and visitors, they all contribute proposals for scenes. The way of exhibition and research is to lead the audience on a mystery tour through the vaults under London Bridge station. To enrich the journey, many bars are arranged in different arch spaces and mix with the performing stages. The visitors will have a drink, while they are enjoying, participating and giving suggestions to the show. A disturbingly disorientating, but interesting, experience could be created.



Figs 3.3.22-23: The indoor perspective of Shunt Bar

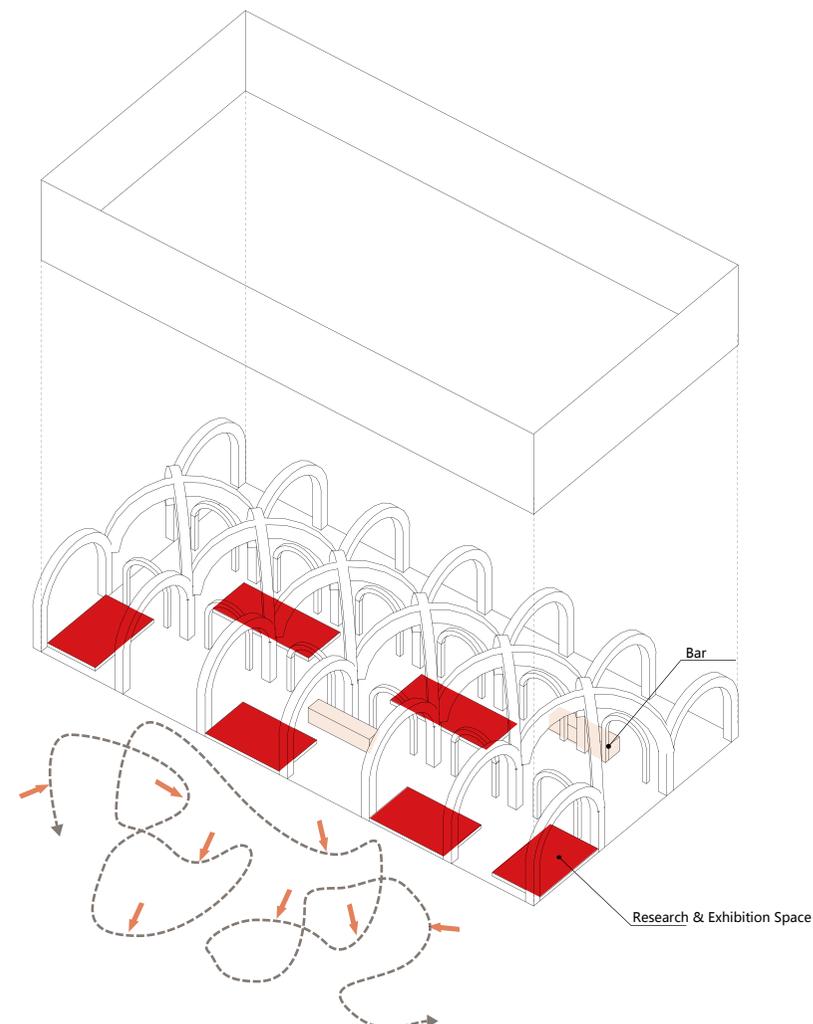


Fig 3.3.24: The original function and circulation analysis of Shunt Bar

85 Wikipedia, s.v. “Shunt (theatre company),” accessed September 10, 2014. [http://en.wikipedia.org/wiki/Shunt_\(theatre_company\)](http://en.wikipedia.org/wiki/Shunt_(theatre_company))

Part 9: Main Theatre and Accessory Buildings –Huguang Assembly Hall

Superiority: The prototype of the main theatre and accessory buildings for school students and public usage is Huguang Assembly Hall, which is a typical traditional Peking opera venue, and was known as one of the “Four Great Theatres” in all of Beijing. Different from a modern theatre, Huguang Assembly Hall, with a thrust stage, paper lanterns hung from the high ceilings and gallery seating on all three sides, is highly influenced by teahouse culture.⁸⁶ A teahouse is situated on one side of the hall providing tea and food for audiences by a courtyard. In addition, a large courtyard in the front of the hall acts as the foyer.

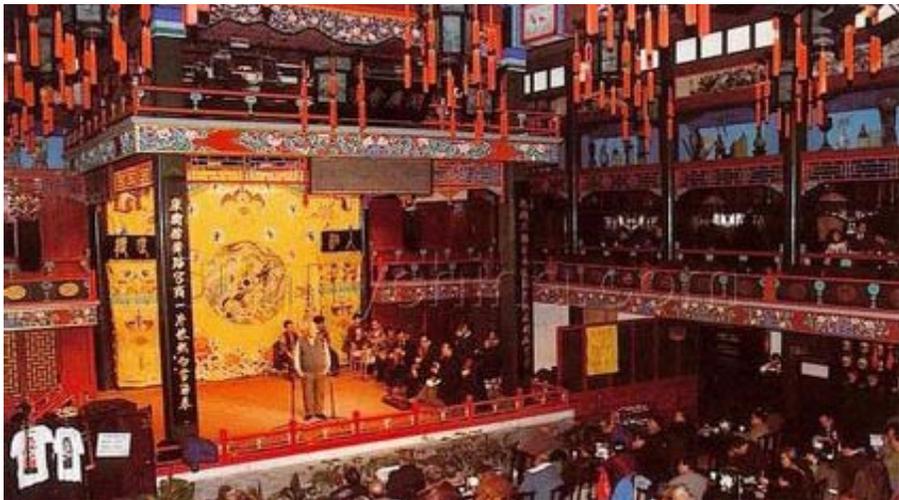


Fig 3.3.25: Building indoor perspective of Huguang Assembly Hall

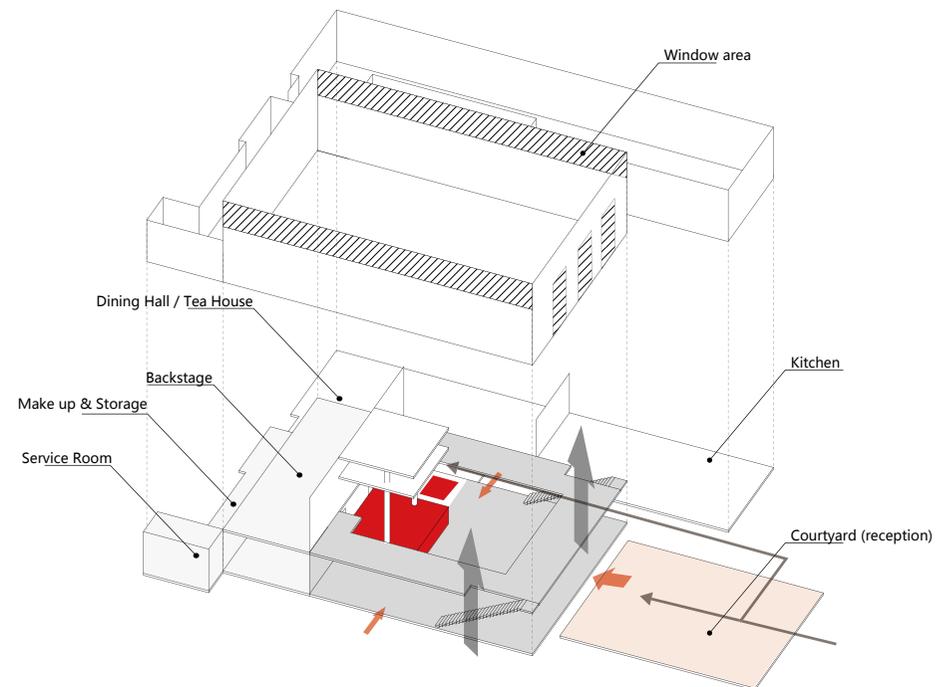


Fig 3.3.26: The original function and circulation analysis of Huguang Assembly Hall

86 “Huguang Guild Hall Opera House,” accessed September 11, 2014. <http://www.huguangguildhall.com/introduction.html>

3.4 Conclusion –the anchor point with *hutong* space

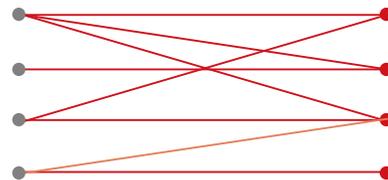
Based on previous analysis, the Peking opera department of the Central Academy of Drama consists of various programs and functions. It is a school complex, rather than a building, whose primary purpose, besides making contributions for the education and innovation of Peking opera, is to become an inseparable part of the context of Beijing ancient city, rather than a traditional enclosed institute. Therefore, there is a question as to how to design and arrange spaces to follow the evolution logic of the ancient city. Some characteristics are to be found in the multiple natures of *hutongs* as shown in the historic precedents, which are positive spaces for living, traffic, wandering, social, performing, and encountering, the spaces for flexible activities, and also spaces for privacy.

Considering the social and spatial implications of *hutongs*, the qualities of spaces would facilitate the various stages for learning, performing, innovation, and support spaces of the Peking opera (fig. 3.3.1). There are three main shifts between *hutong* space and the Peking opera school. For the shift of four social layers from public to private, both *hutong* style residential complex and Peking opera school complex emphasize providing particular communication spaces for different relationships of people. However, to fulfill the transition to privacy, because of different building functions, the latter one is less restriction, rather than hiding everything behind a wall. It provides an appropriate visual link between different layers, and controls the circulation sequence to meet the needs of privacy. The other two shifts are achieved by arranging different programmes and facilities.

THE ANCHOR POINTS BETWEEN HUTONG AND THE SCHOOL COMPLEX

POSITIVE PARTS OF HUTONG SPACE

1. CREATE MOVEMENT, LINKING, CIRCULATION
2. GOOD SOCIAL STRUCTURE
3. POSITIVE SPACE FOR WANDERING
4. CATALYST OF FLEXIBLE AND SPONTANEOUS ACTIVITIES



REQUIREMENTS OF PEKING OPERA SCHOOL

1. RELEVANT TO BEIJING CONTEXT;
2. NEED POSITIVE RELATIONSHIPS BETWEEN SPACE OCCUPANTS AND VISITORS;
3. RELAY ON FREQUENT COMMUNICATION OPPORTUNITIES;
4. BENEFITS FROM DIVERSE SOCIAL SPACES

Fig 3.4.1: The anchor points between the school complex and hutong

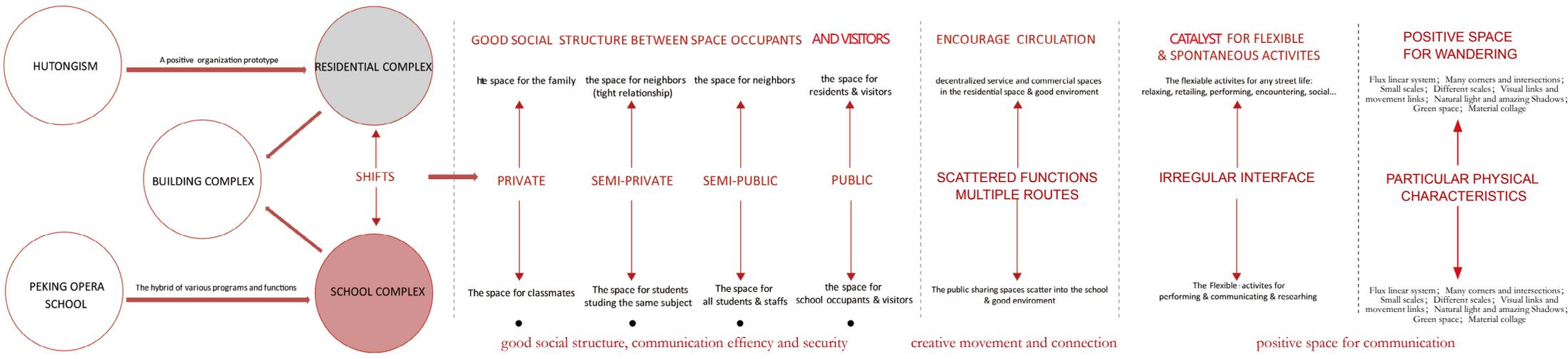


Fig 3.4.2: The shift parts between the school complex and hutong



Fig 4.0.1: The site location - the *Drum tower* area

4.0 Physical Context

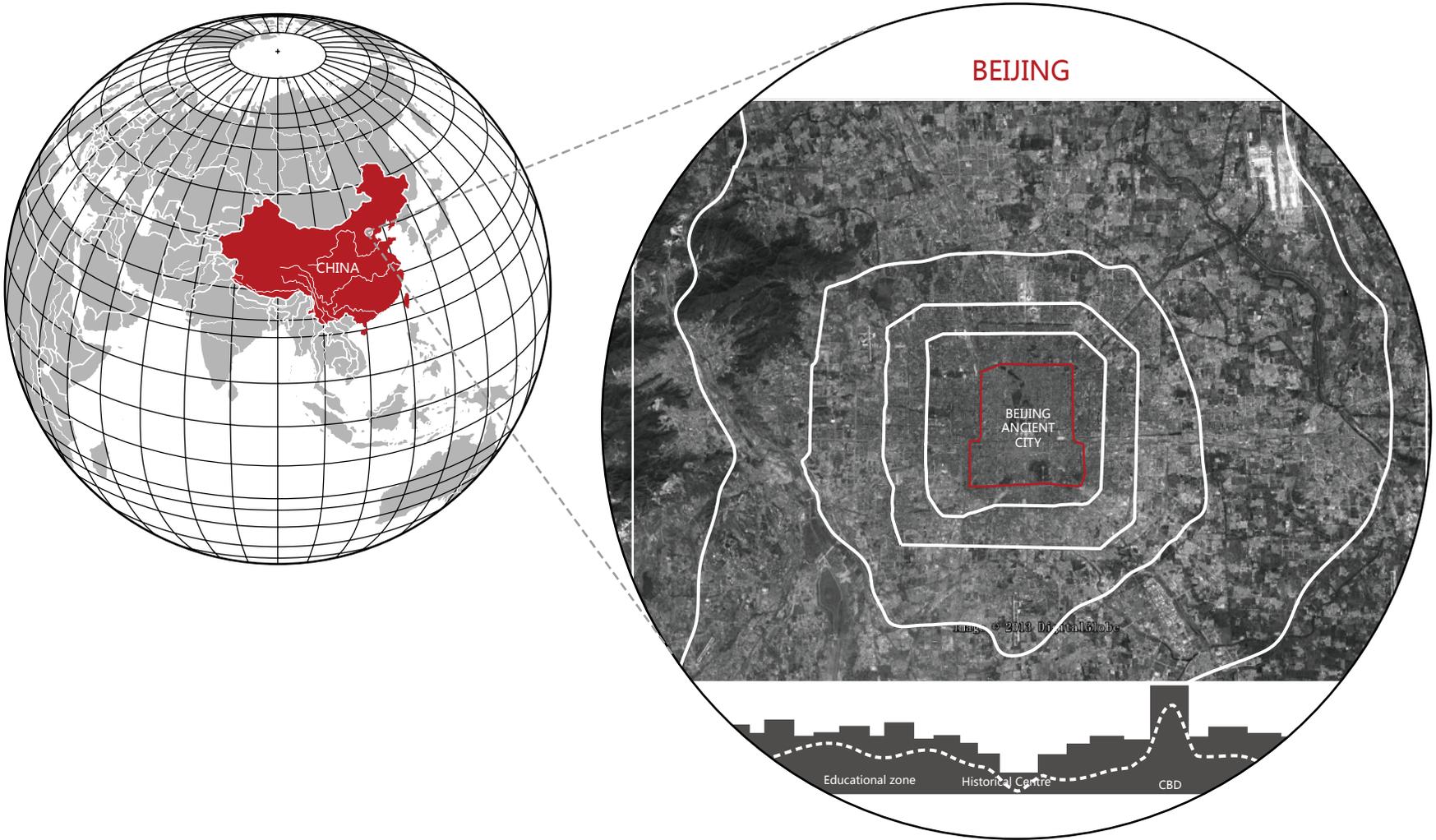


Fig 4.0.2: The location of the Beijing ancient city

4.1 City Scale

Beijing is located on flat land in north-east China, with hills behind the city to the north-west.⁸⁷ As the last of the four great ancient capitals of China, Beijing has been the political centre of the country for much of the past seven centuries.⁸⁸ (fig 4.0.2). The metropolis is governed as a direct-controlled municipality under the national government, with 14 urban and suburban districts and two rural counties.⁸⁹

The chosen site is located in the *Dongcheng* district, a historical protection area, in the centre of Beijing ancient city along the central axis. In general, there are six development centres in Beijing, and each centre was applied different development strategies. The historic centre is mainly based around the tourist industry, cultural industry and creative industry.(fig 4.1.1). In addition, thirty areas to be protected were identified within the city in case of building intervention, the “integrity” of individual buildings, streets, and surrounding areas was to be protected.⁹⁰ However, during implementation, although some ancient city patterns have been protected to some extent, the term ‘integrity’ was considered in a purely ‘formal’ way, and in fact, demolitions continued.⁹¹



Fig 4.1.1: The different development centers of Beijing

87 Orsini, *DashilarAutong*,20, pdf.

88 “Beijing,”last modified September 13, 2014.<http://en.wikipedia.org/wiki/Beijing>

89 Ibid.

90 GrecoandSantoro, *Beijing*, 31.

91 Ibid.

The location is along the central axis of Beijing, which plays a significant role in the city pattern. The perspectives and symmetries clearly reveal the geometry of its layout, governed by the historic Central Axis, which extends for over seven kilometres. The axis ideally unites the principal monumental structures from the recently rebuilt *Wumen Gate* to the south with the new, artificial hill of the Olympic Park to the north.⁹² It can be divided into the following urban landscape areas: the place of worship in the Outer City between *Yongding Gate* and *Zhengyang Gate*; the area from *Zhengyang Gate* to *Tian'an men Square*; the “Halls and Palaces” from *the Forbidden City* to *Jingshan hill*; the “Market” area around the *Drum Tower* and *Bell Tower*⁹³; and the “Six Lakes” water area.⁹⁴ The site is in the “Market” area which used to be the historic market area, and is now a tourist attraction area.(fig 4.1.2). All of these suggest that the new project should highly respect the historic context in terms of circulation, materiality, building height, and building density.

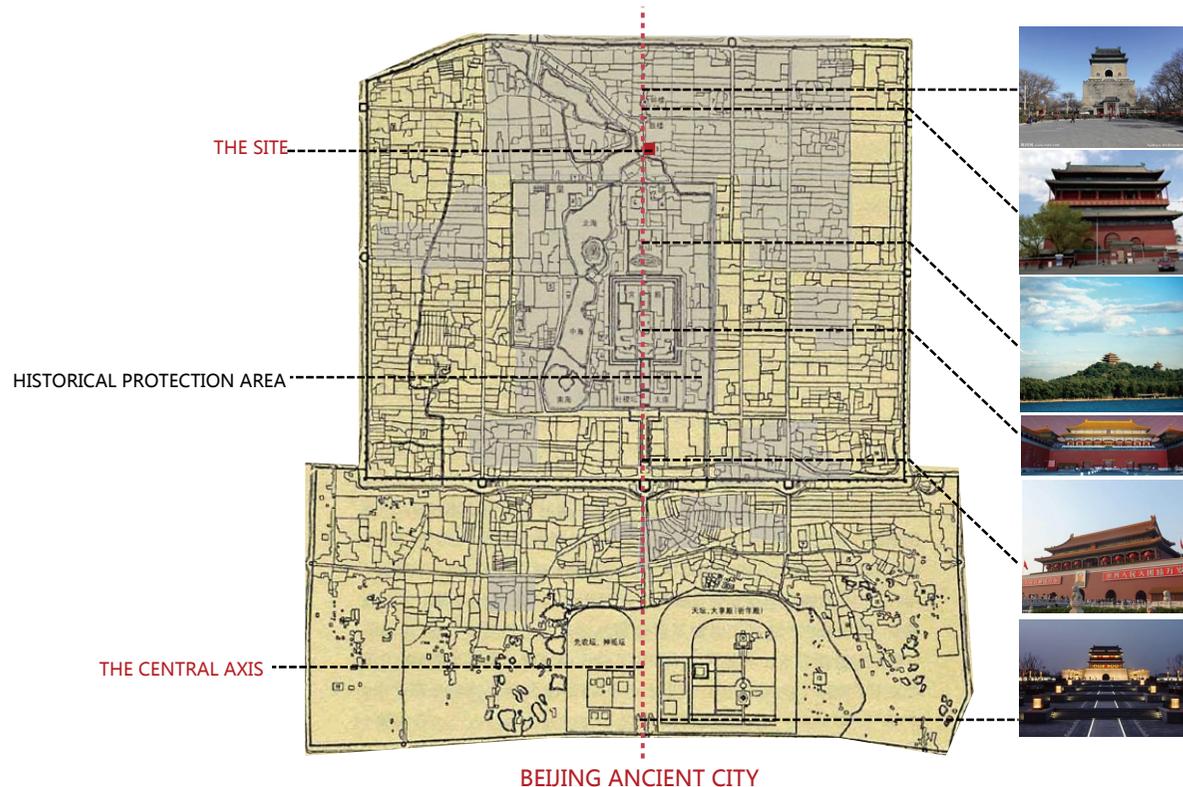


Fig 4.1.2: The location of the site along the central axis of Beijing

92 Ibid., 18.

93 *Drum Tower and Bell Tower* are situated at the northern end of the central axis of the Inner City. Originally built for musical reasons, they were later used to announce the time and are now tourist attractions.

94 “The Central Axis of Beijing”, last modified January 29, 2013. <http://whc.unesco.org/en/tentativelists/5802/>

4.2 Surroundings

Drum Tower is the most important historic building around the site, and it controls the skyline of the market area. Located 100 metres south of the *Bell Tower*, the *Drum Tower* was placed on a 4-metre-high stone and brick base. It is 46.7 metres high, a little bit lower than the *Bell Tower* which is 47.9 metres high. It is also a two-storey building; the first floor contains the China Committee for the Promotion of the Minority Art. The second floor contains an exhibition area.⁹⁵ The height of other buildings around the site is less than 15 metres, around 1 to 3 storeys high. Also, to match the features to the surroundings, building density should be around 60%. (fig 4.2.1).

Because the *shichabai* station of NO.8 subway line of Beijing is being built, all of the existing buildings on the site have been cleared. This is the main reason why the chosen site became a historic run down area. Line 8 of the Beijing Subway, formerly known as the Olympic Branch Line, is a rapid transit line in northern Beijing, which sits on the central north-south axis of the city of Beijing, and is still being expanded along the central axis to the south.⁹⁶ (fig 4.2.4) The main purpose of it is to serve visitors, or large-scale activities. Moreover, there are numerous offices and shops located in the market area to take advantages of the tourist industry. Therefore, for *the shichabai station*, to a large extent, the purposes of passengers will be visiting and working.

95 “Beijing Bell and Drum Towers,” accessed September 1, 2014. <http://www.travelchinaguide.com/attraction/beijing/bell.htm>

96 “Line 8, Beijing Subway,” last modified August 14, 2014. http://en.wikipedia.org/wiki/Line_8,_Beijing_Subway

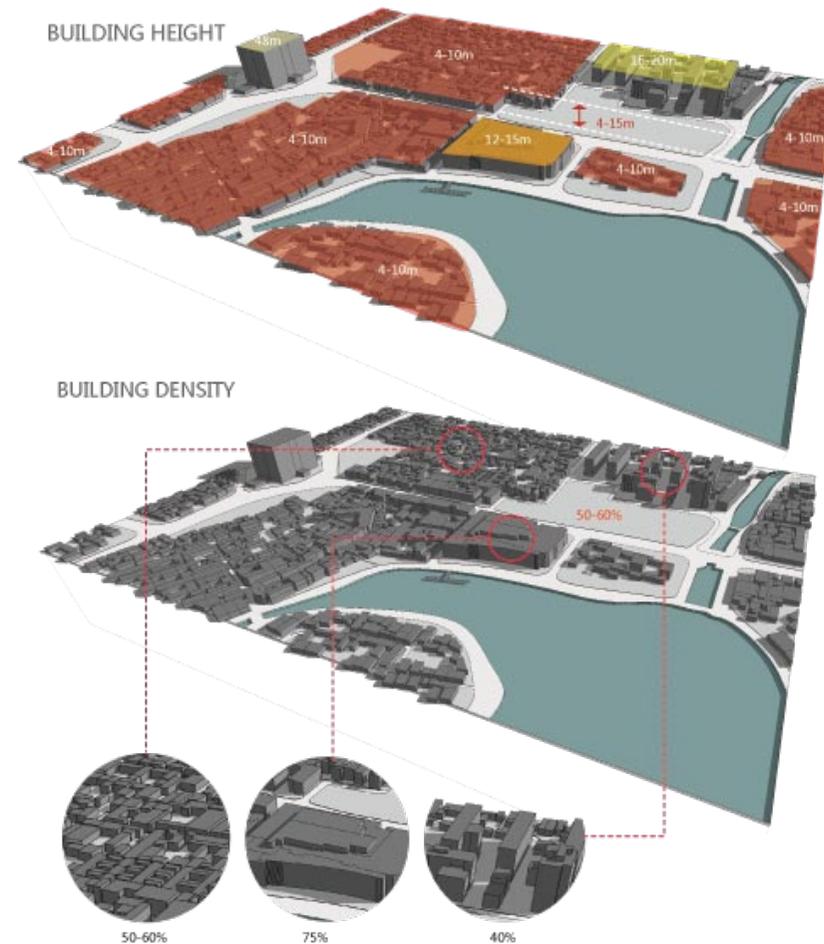


Fig 4.2.1: The building height and building density control

The Drum Tower

Buildings built after 1941 and following the pattern of Beijing ancient city

The site and the shichabai station underneath

Buildings built after 1941 and following the pattern of Beijing ancient city

Physical Context



Fig 4.2.2: The plan and the section of the site

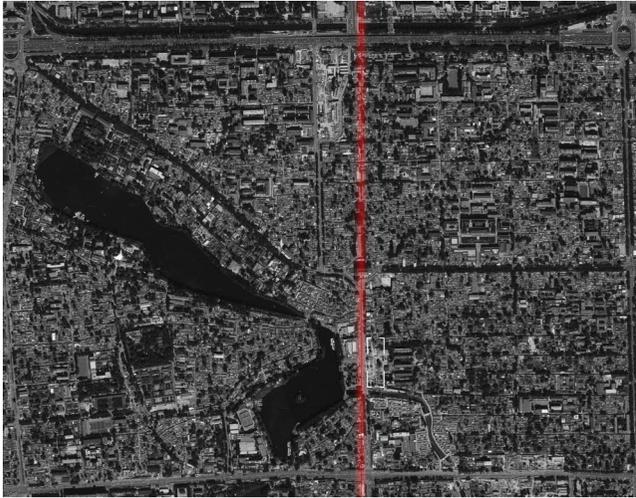


Fig 4.2.3: The central axis



Fig 4.2.4: The subway system



Fig 4.2.5: The bus transport system



Fig 4.2.6: Historical buildings



Fig 4.2.7: The hutong journey (biking)



Fig 4.2.8: Overlapping

Based on the location of historic interests, a spontaneous *hutong* journey by bike or tricycle happened in this area. With the city's long history and status as capital for six dynasties, almost every *hutong* has its anecdotes, with some having a hand in historic events.⁹⁷(fig.4.2.7) There is an illegal tricycle exchange station opposite the chosen site. In addition, to meet the citizen's needs, a bus line has been planned for the area, with a bus station to the north of the chosen site.(fig. 4.2.5)

In conclusion, the chosen site is the key transport junction point for the market area and the frequent passenger circulation and high visitors flow rate could be a useful resource for further design.

97 "A Tour Through the Hutongs of Beijing," accessed September 1, 2014. <http://english.cri.cn/7146/2013/12/05/2921s801839.htm>



Fig 4.2.9: The ancient site map (300 years ago)



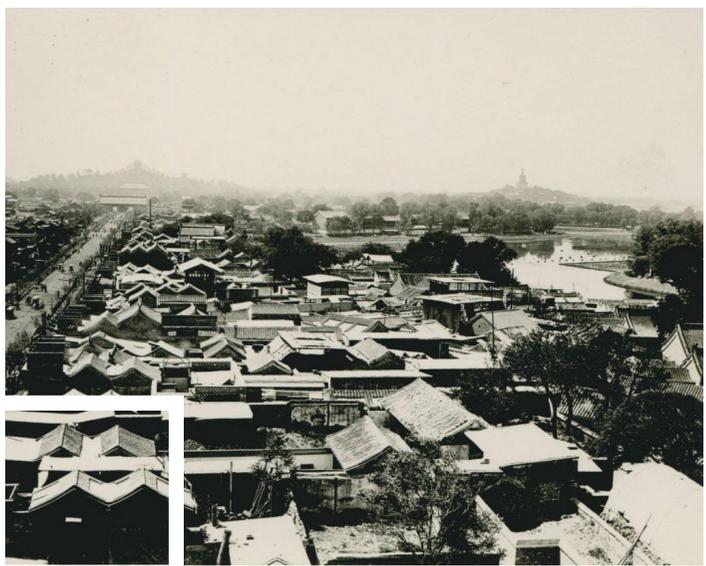
Fig 4.2.10: The present situation of the site



Figs 4.2.11-13: Street views along the site



Figs 4.2.14: The south area of the drum tower



Figs 4.2.15-18: The ancient photos around the site



5.0 Design Development



Fig 5.0.1: The concept drawing - zigzagging through



Fig. 50.2. *Jianzhong hutong* drawn by Yongchao Wang

5.0 Outline of the Design Methodology

How can the Peking opera school complex represent *hutong*, and how can *hutong* optimize a school complex? The strategies shouldn't copy all of characteristics of *hutong* mechanically, nor meet the functional requirements monotonously. It should balance the two: relevant studies through models and diagrams will help to present the evolutionary steps of my design process.

The design development of my project is divided into two parts: the further development of *hutong*, and the adaptation of strategies from this analysis to the school. Based on my previous study of the Peking Opera School, the complicated functional and spatial requirements drive the building complex to be a multi-storied building, so that the architectural and spatial strategies of *hutong* need further development in three-dimensions. In general, there are three aspects that need to be solved: a set of new models with similarities from *hutong* to develop particular programmatic spaces; 3D functional relationships of the *hutong*; a clear spatial relationship for *hutongism* 3D social layers. In addition, for the Peking opera school in the particular site, other aspects should be studied: the urban factor interference, ways of organizing and connecting individual programmatic spaces, material selection, and structure.

Finally, by overlapping all the spatial principles, the new spatial relationships between different programmes could be deduced. Also, a better environment that encourages wandering, encountering, relaxing, and communication could be created.

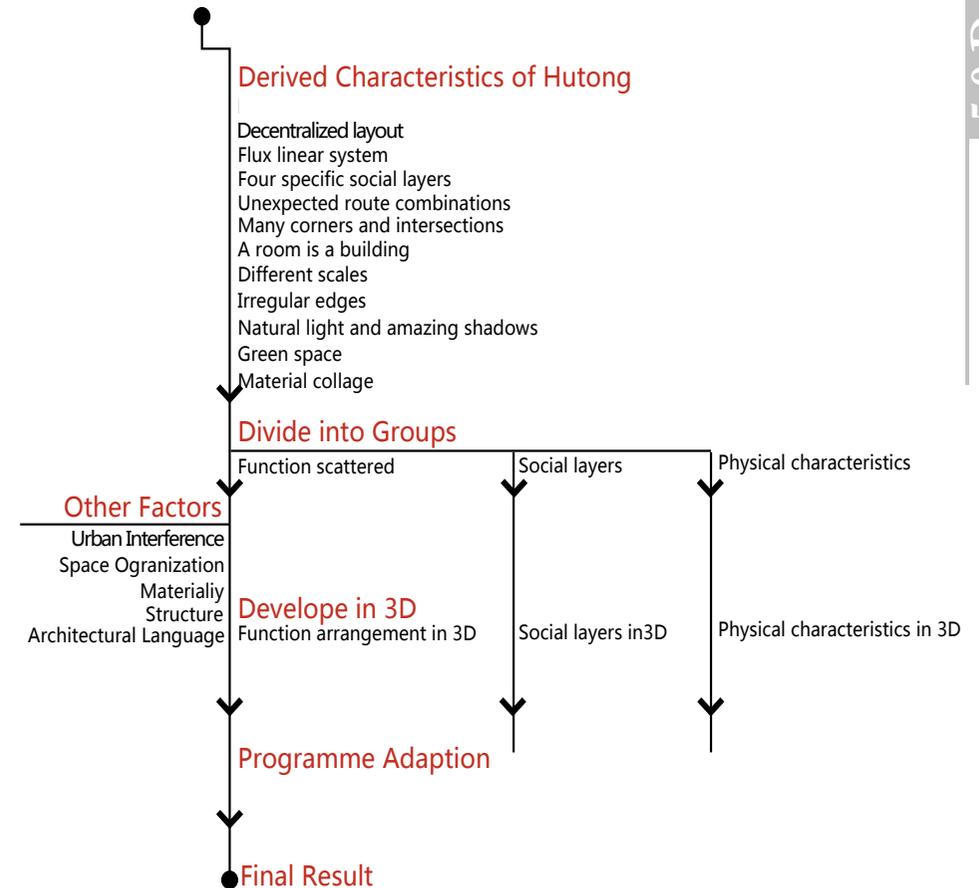


Fig 5.0.3: The development methodology diagram

5.1 Exploration 1 – Urban Interferences

This exploration is to understand the physicality of the site and to expose the urban context's potential influence on the project.

1. The boundary of the site is shown by the red polyline. (fig 5.1.1)
2. Based on previous site analysis, the building height should not be over 15 metres. This building block is to define the boundary and control the visual impact of the building. (fig 5.1.2)
3. There is a subway station (*shichabai* station, NO.8 line) right underneath the site. Two subway accesses are proposed for main pedestrian flows.(fig 5.1.3)
4. Ground floor pedestrian circulation: establishing circulation within the site to connect *Dianmenwai Dajie* with *Fangzhuanchang butong*, *Dianmenwai Dajie* with the narrow alley to the east of the site; *Fangzhuanchang butong* with *Maoer butong*. Also, to meet the needs of *butong* bike journey, two short cuts are proposed. A service line on the east side of the site should be kept, serving for the school and existing shops (fig 5.1.4)

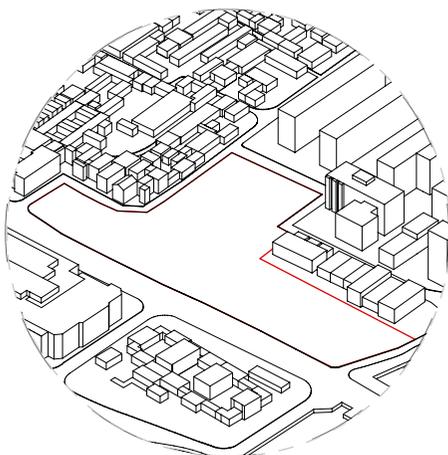


Fig 5.1.1: The site boundary

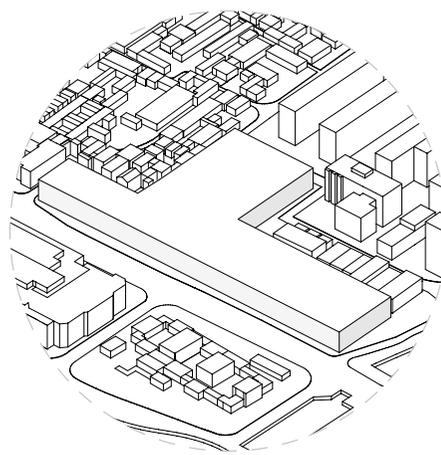


Fig 5.1.2: The proposed building block controlled by the height limit

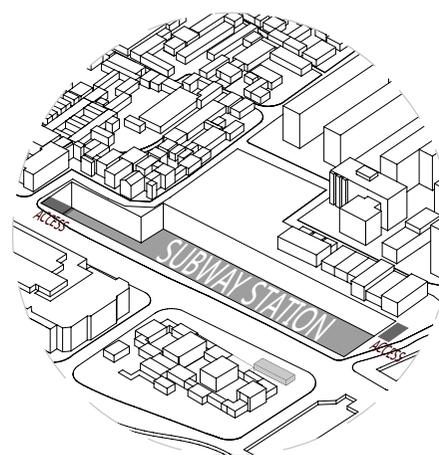


Fig 5.1.3: The location of the *shichabai* subway station

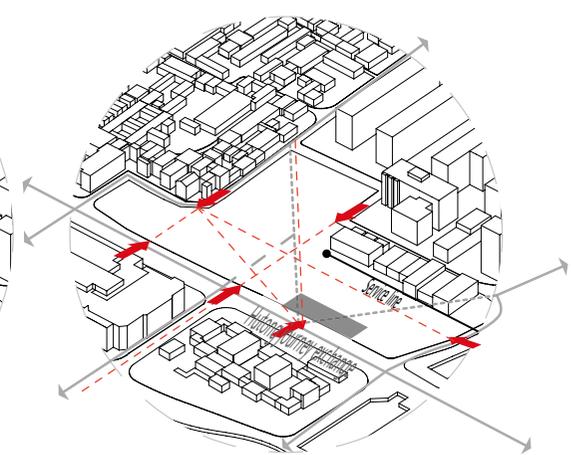


Fig 5.1.4: The potential passing shortcuts

5. Following these optimized proposed routes, the big building mass is split into smaller blocks. It reduces the scale of the articulated volume and dispels the oppressive feeling of such a large building. (fig 5.1.5)
6. In order to bring natural light into the subway station below, and to create more opportunities for communication between students and passengers, a vertical link between the school complex and the subway station is proposed. (fig 5.1.6)
7. Along the *Dianmenwai Dajie* and *Fangzhuanchang hutong*, the function of the building on the ground floor should be relevant, with public or commercial services, in order to provide consistent functional planning in the larger picture. (fig 5.1.7)
8. In order to stay harmonious with the surrounding buildings and keep the original street views along the school, the height of the three smaller blocks should be lower (around 10 metres high). (fig 5.1.8)
9. All of these urban Interferences contribute to achieving proper scale, arranging proper functions, and creating public accessibility.

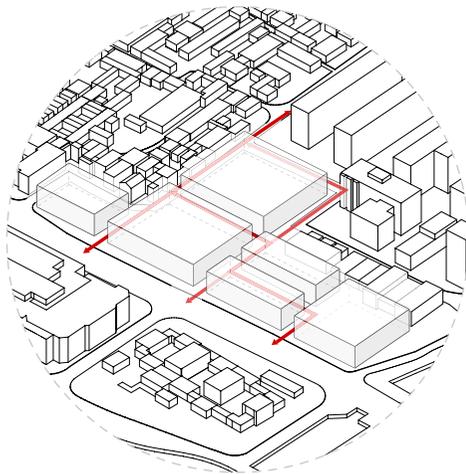


Fig 5.1.5: Reducing the building complex scale

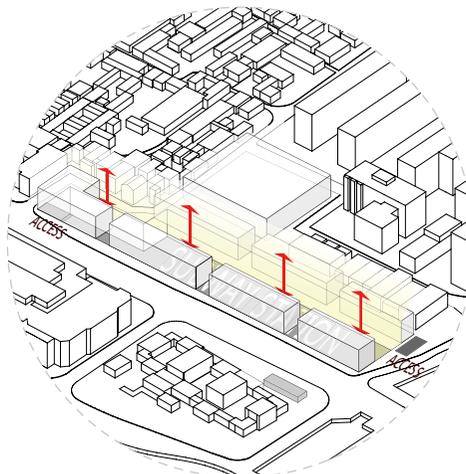


Fig 5.1.6: Creating links with the subway station

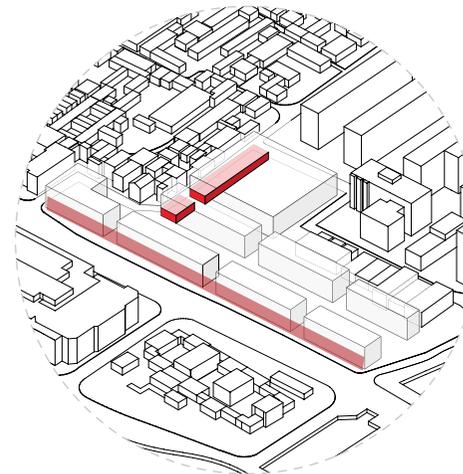


Fig 5.1.7: The programme control

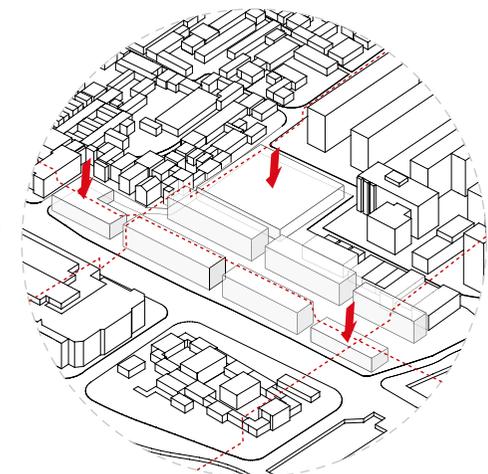


Fig 5.1.8: Optimizing the height of the complex

5.2 Exploration 2 – Partial Design

5.2.1 Derived patterns of hutong in three dimensional

Following the evolutionary strategies of *hutongs*, a study of how to define *hutong* space in three dimensional has been carried out. The study logic follows four main steps:

1. In order to get the segments of *hutong* spaces, the relationship between a line and a mass in three dimensions needs to be studied. In general, there are five relationships between them: a line carving through a mass; a line carving through one side of a mass; a line carving through the top and bottom of a mass; a line adding to the side of a mass; a line in void space. (fig 5.2.2)
2. The evolution steps of how a linear space transforms into a *hutong* space in two dimensions. Basically, there are nine steps, which define the linear space: changing the width, changing the height of interface, creating convex-concave, creating movement link, creating visual link, bring natural light, influencing shadows, and generating green space. (fig 5.2.3)
3. Following the logic of the second step, develop other 3D liner spaces, and get nine three dimensional *hutong* segments' prototype. All these prototypes share common features for every part of *hutongs'* spaces. (fig 5.2.4)
4. In the larger picture, the ways of combining these parts, influenced by different programs, functions, and specific space requirements will be studied in the following sections.

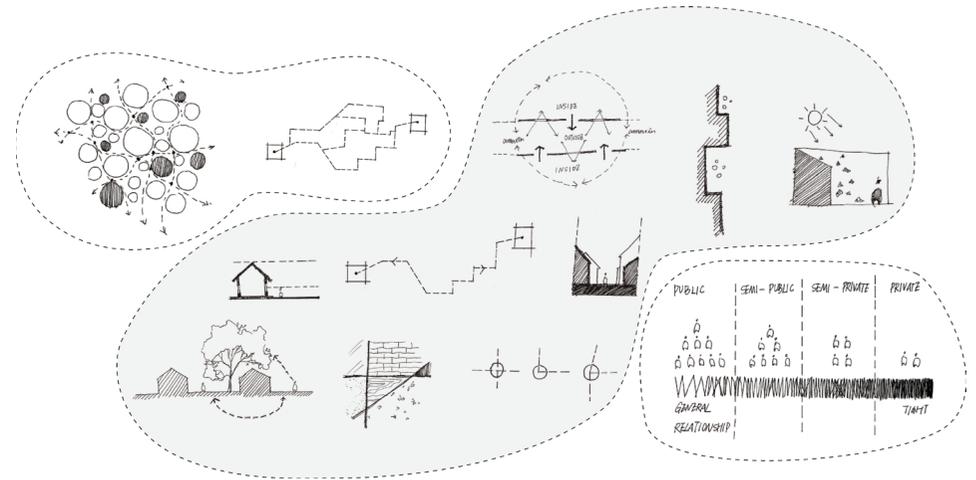


Fig. 5.2.1: The partial development based on the previous 8 derived characteristics of *hutong*

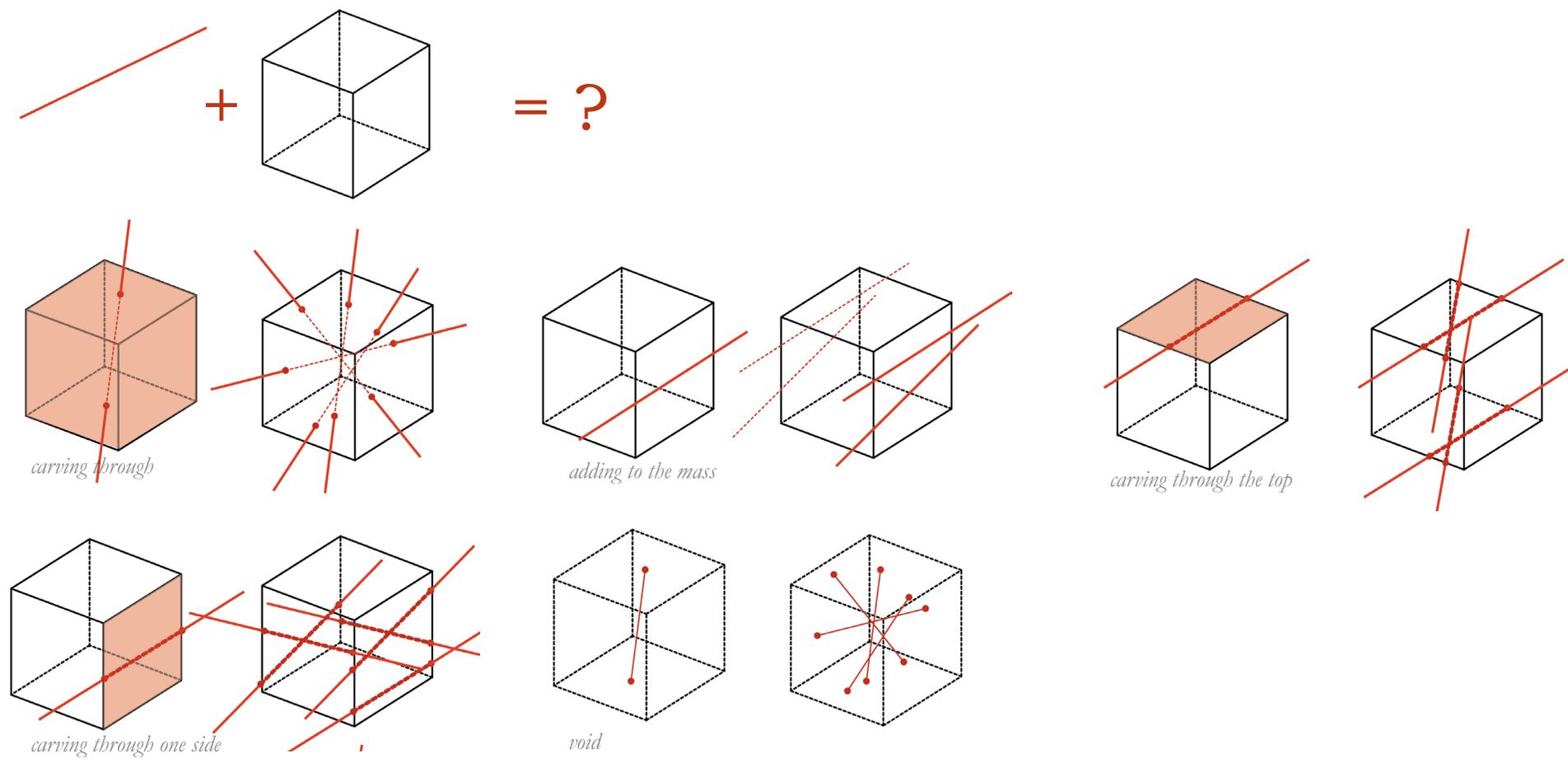


Fig. 5.2.2: Five basic relationships between a line and a mass

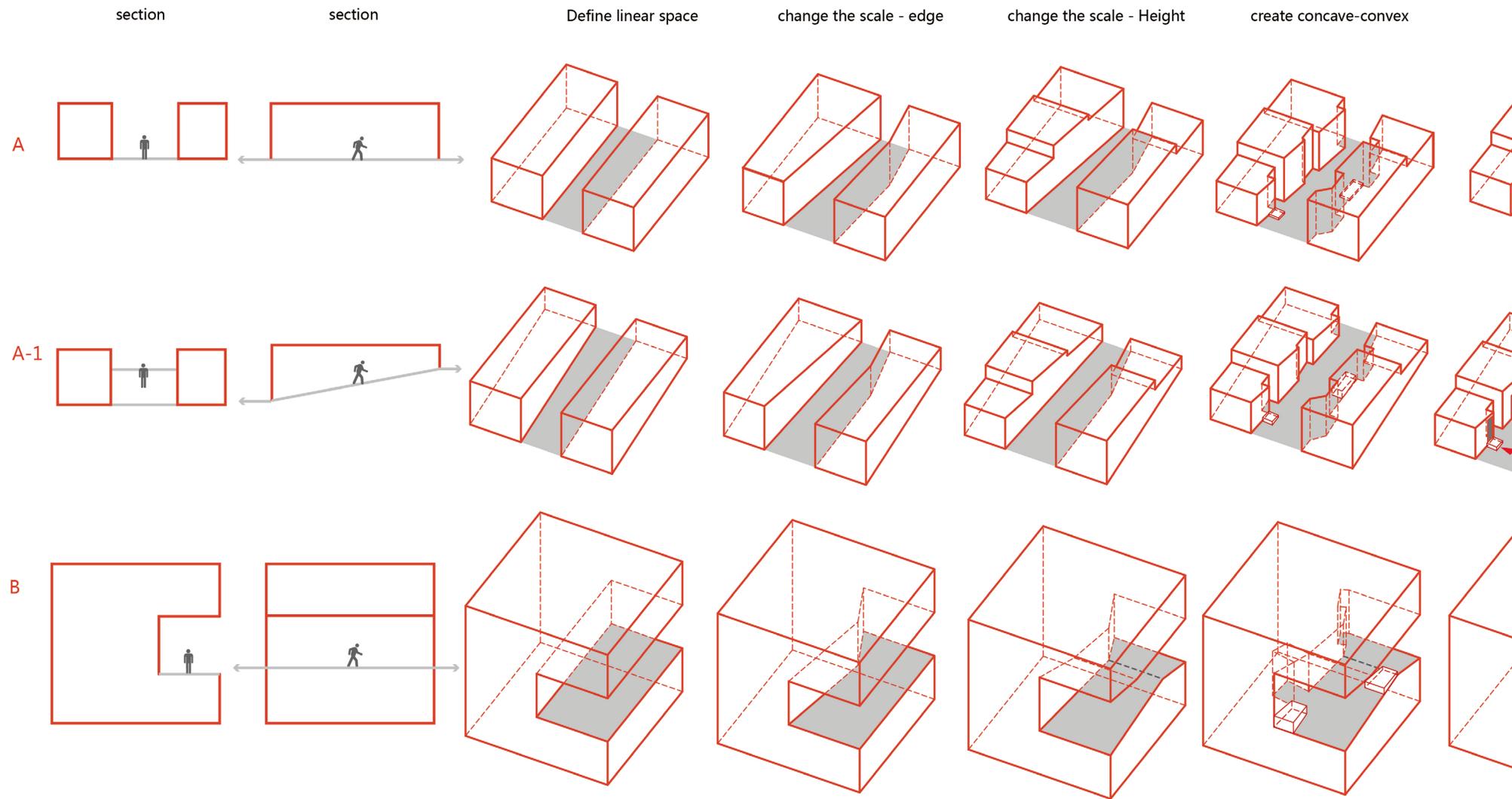
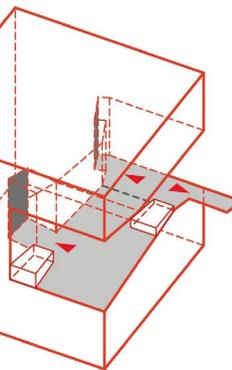
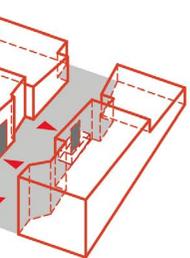
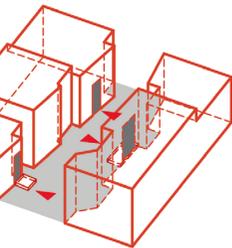
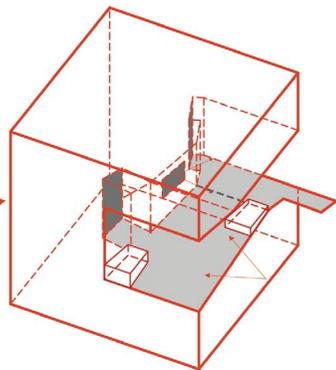
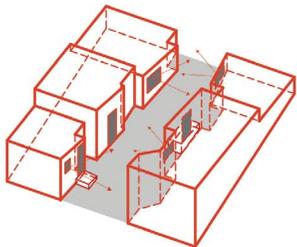
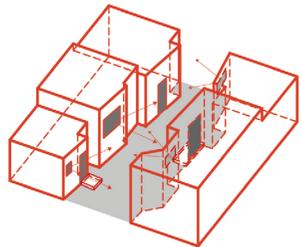


Fig 5.2.3: The study models for partial design based on the 8 physical characteristics of *butong*

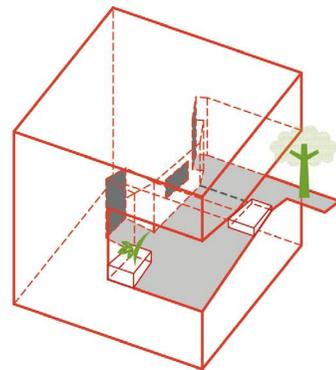
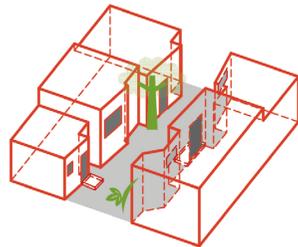
create movement link
(entrance)



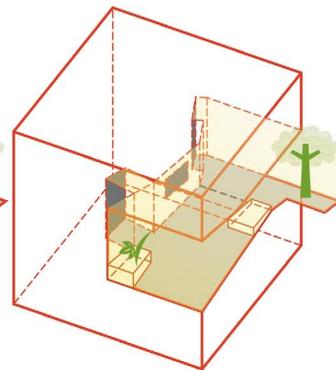
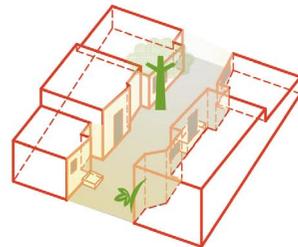
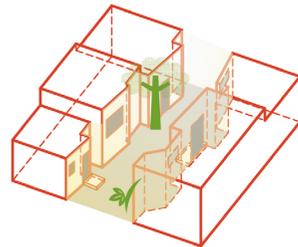
create visual link
(window)



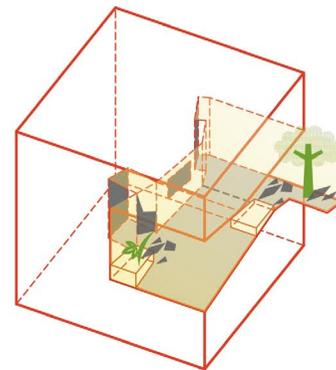
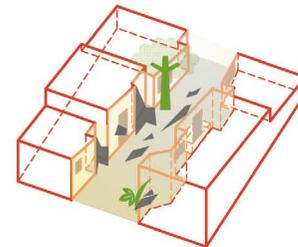
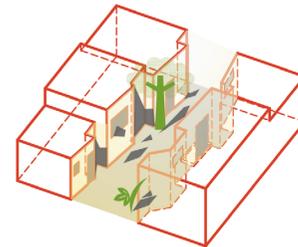
Plant



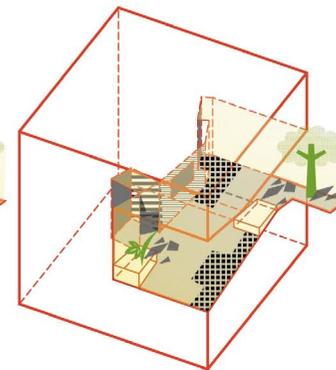
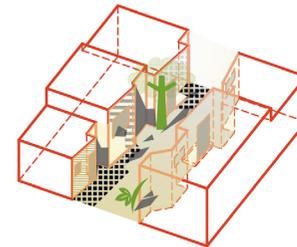
Natural Light



Rich Shadow



Material Collage



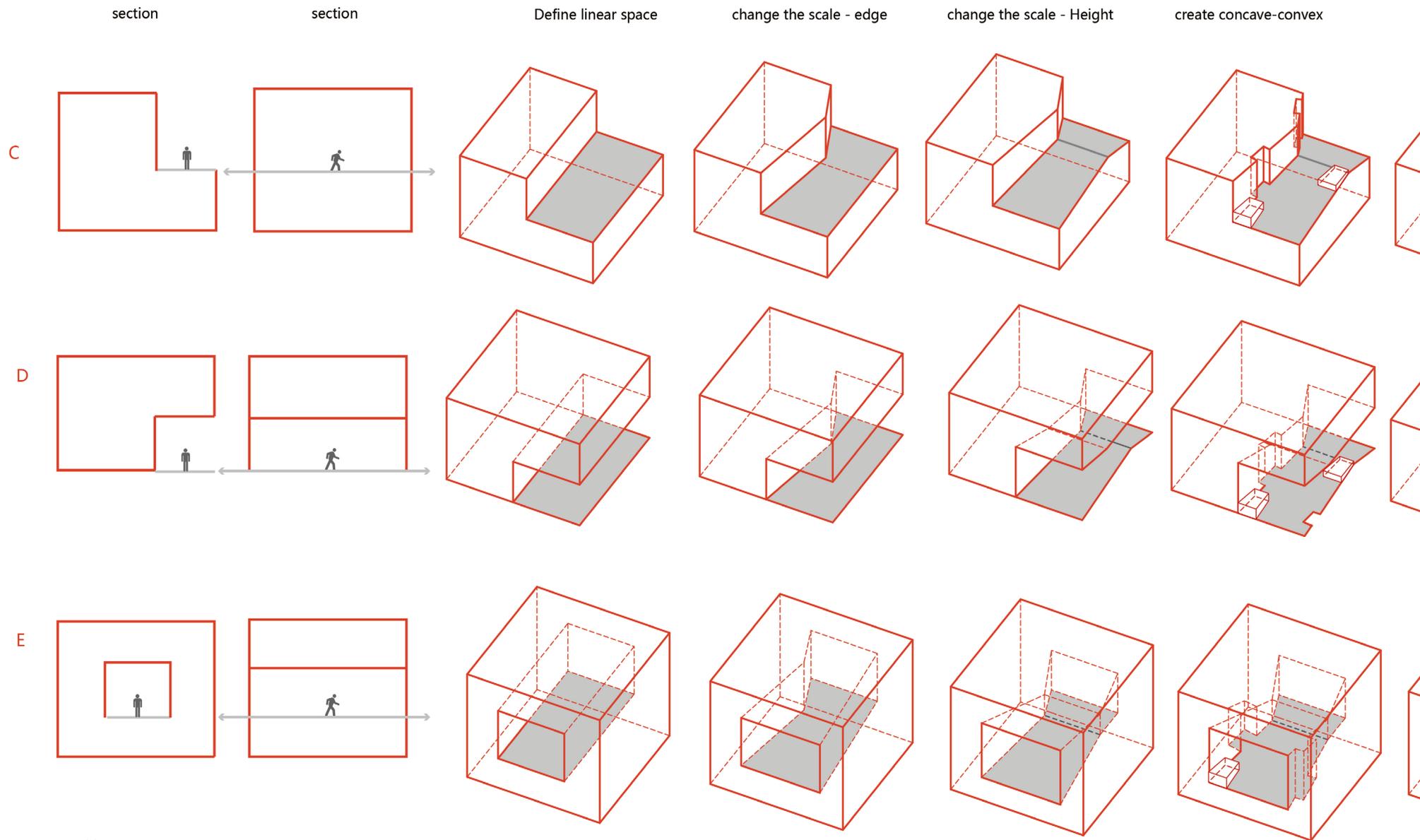
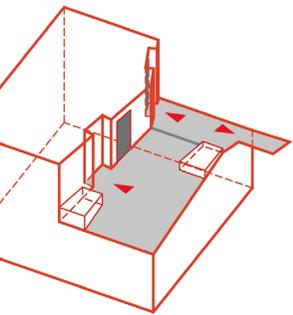
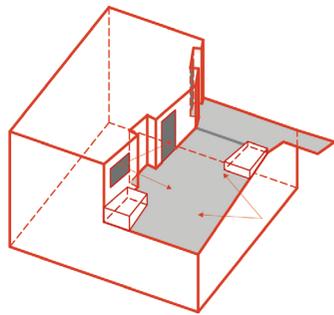


Fig 5.2.3: The study models for partial design based on the 8 physical characteristics of *butong*

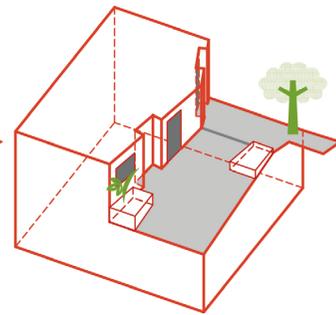
create movement link
(entrance)



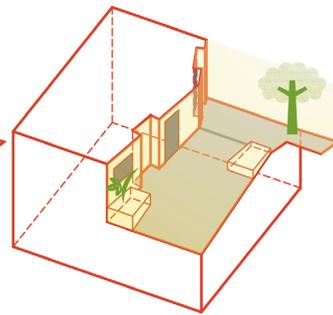
create visual link
(window)



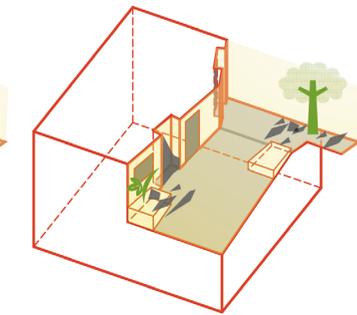
Plant



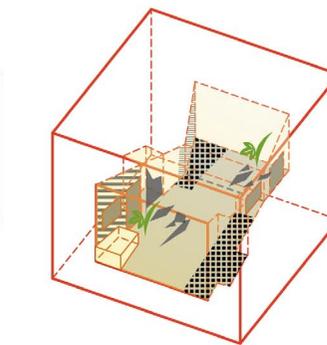
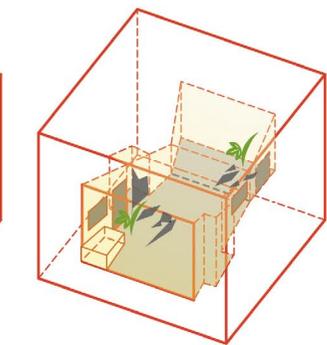
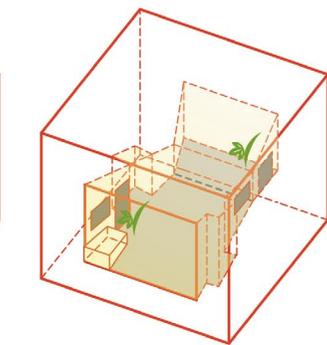
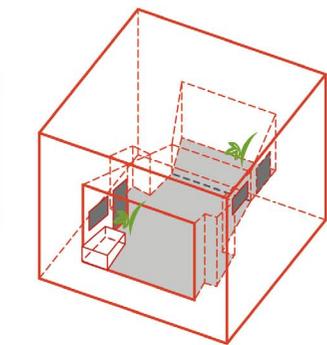
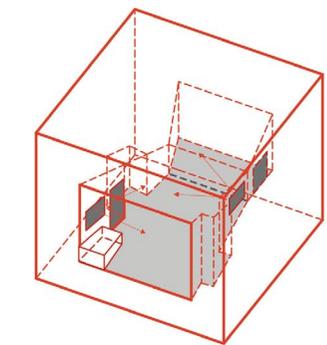
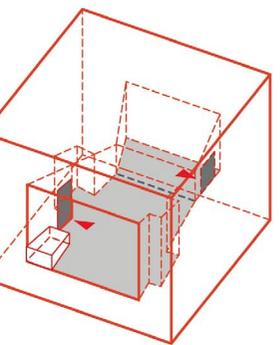
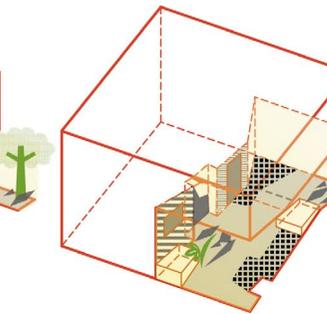
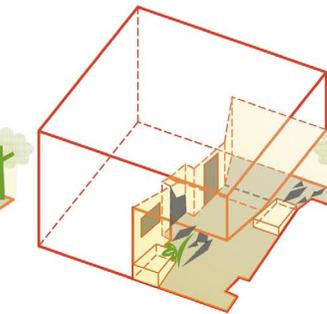
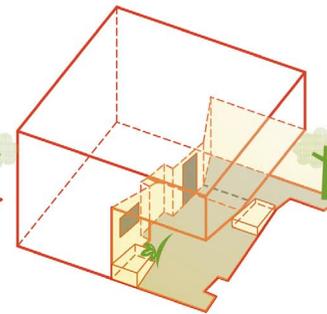
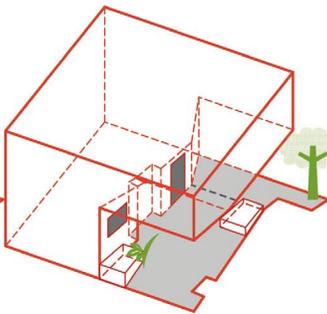
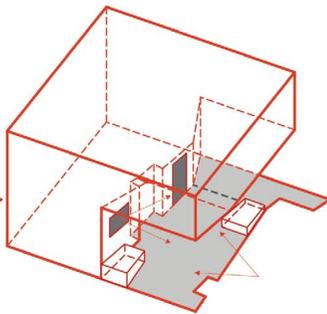
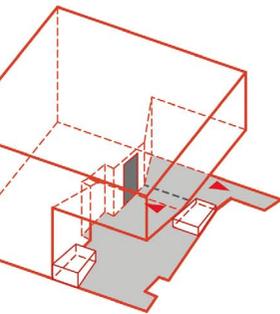
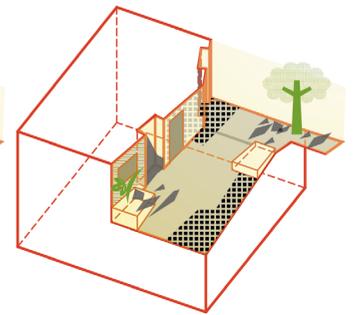
Natural Light



Rich Shadow



Material Collage



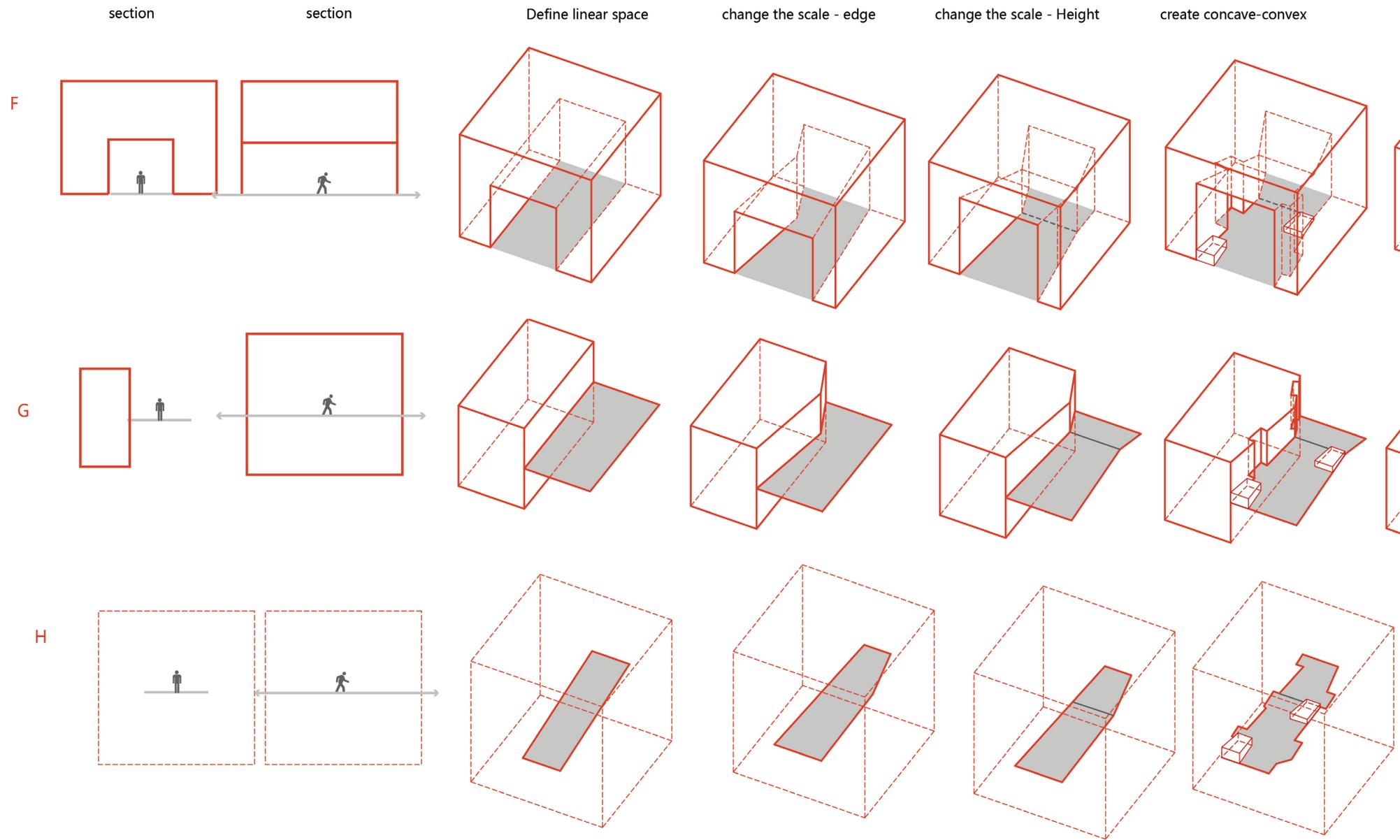


Fig 5.2.3: The study models for partial design based on the 8 physical characteristics of *butong*

create movement link (entrance)

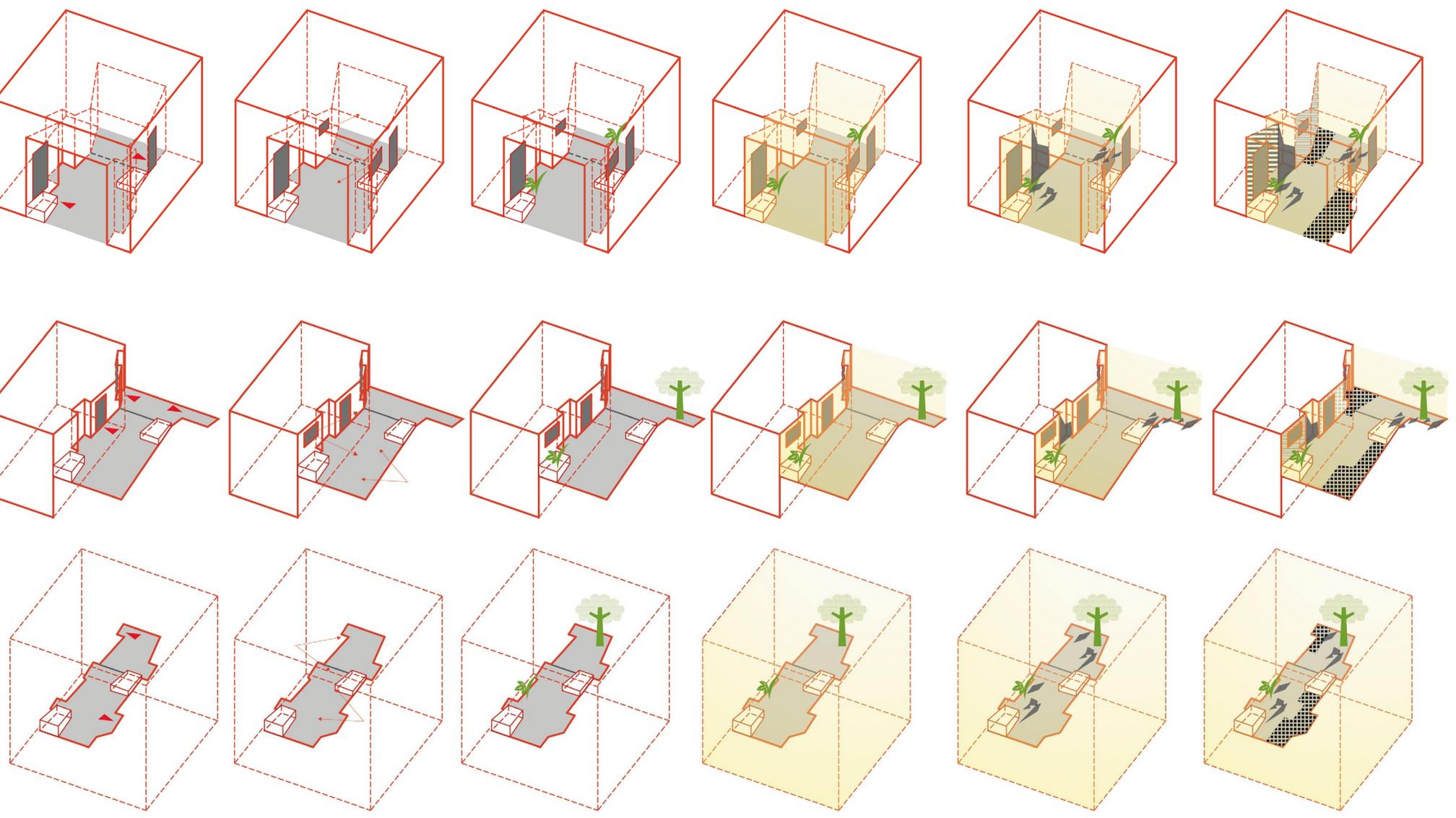
create visual link (window)

Plant

Natural Light

Rich Shadow

Material Collage



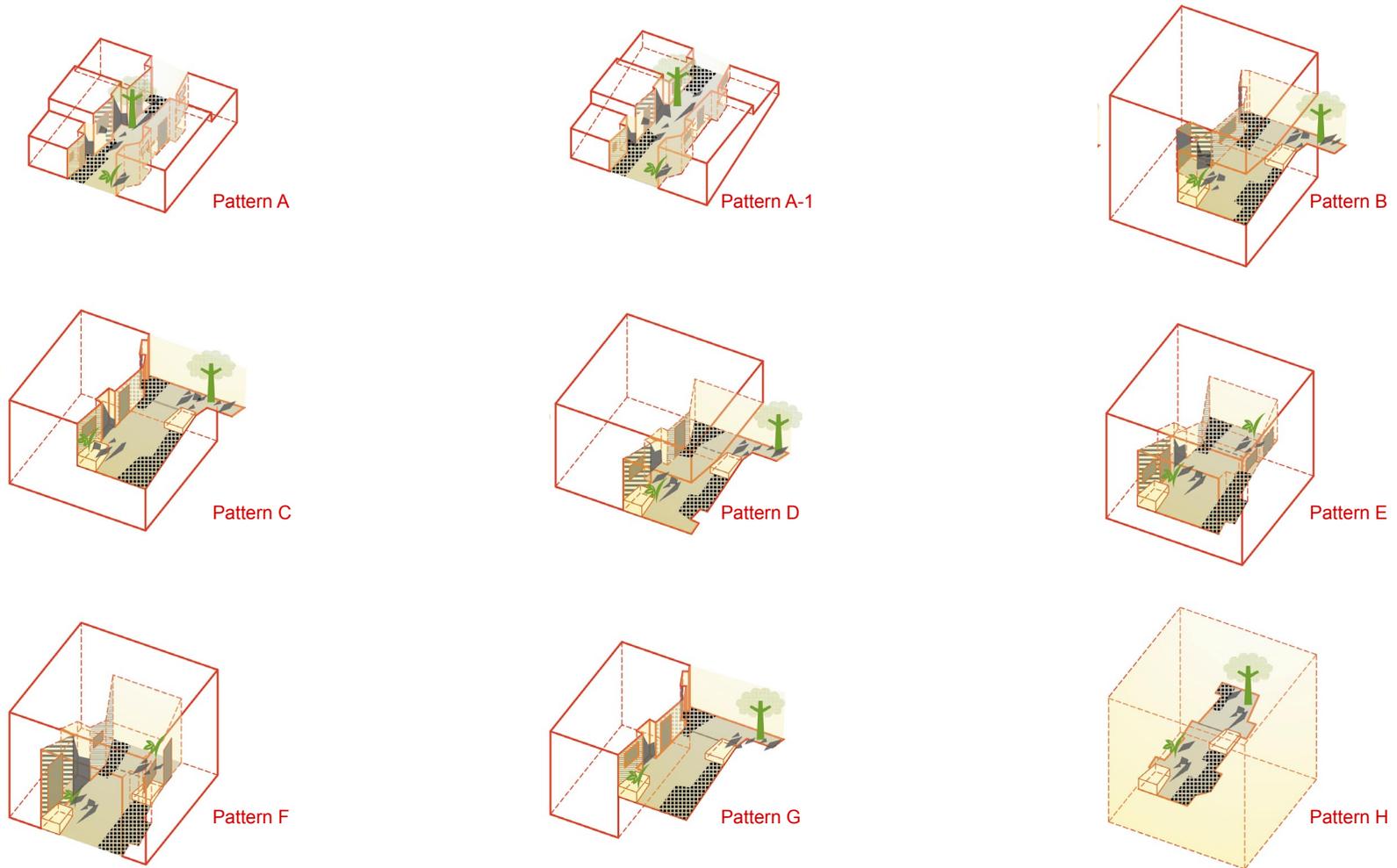


Fig 5.2.4: Nine development results

5.2.2 The Adaptation of the different connection spaces: Private Space, Semi-private space, Semi-public space, and Public Space

At this stage, based on previous studies in chapter 3, there are some weaknesses of the prototypes or special needs of this project, so it should be reconstructed or represented by *butong* techniques, following the previous derived models.

5.2.2.1 Private Space and Semi-private Space

Part 1: Performing Department- American School of ballet

Inferior position: Through analysing the basic functions and circulation in depth, it is clear that the semi-private layer between the performing studios could not provide an ideal environment: the communication space provided by the lounge only serves the upper level and is separated by the circulation route; restricted by the existing condition, the entrances of each studio are independent, instead of in the communal space.

Strategy: Refer to Pattern A and Pattern B. The renewed communal space will fix these problems by changing scales and the height of the interfaces, creating concave-convex along the circulation route, rearranging the access positions, as well as bringing in natural light and plants. The materiality will take advantage of the original design, but colour will be adjusted for the whole effect of the school. As a result, the positive movement and visual link could be created, more opportunities for communication or informal performing could be set, and a nice environment for wandering, or encountering can be built.

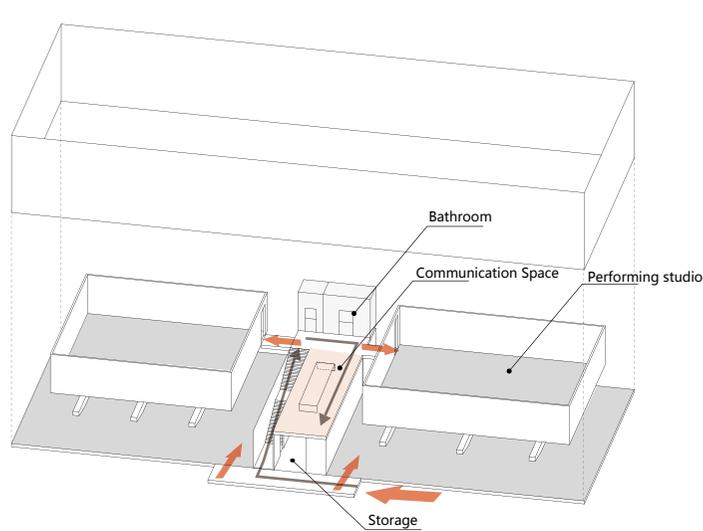


Fig 3.3.3: The original function and circulation analysis of American School of ballet

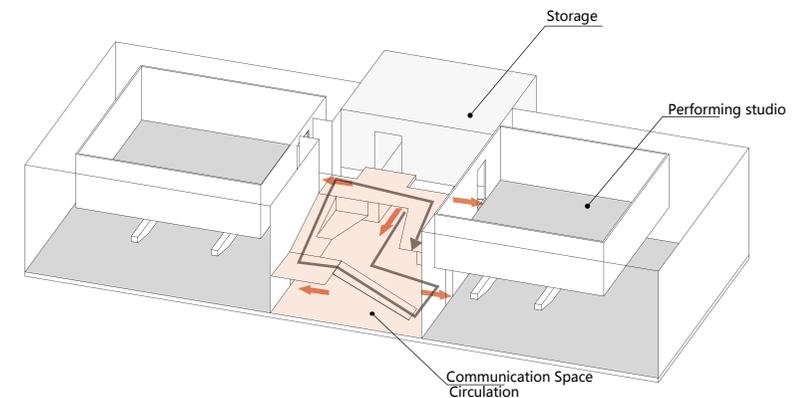
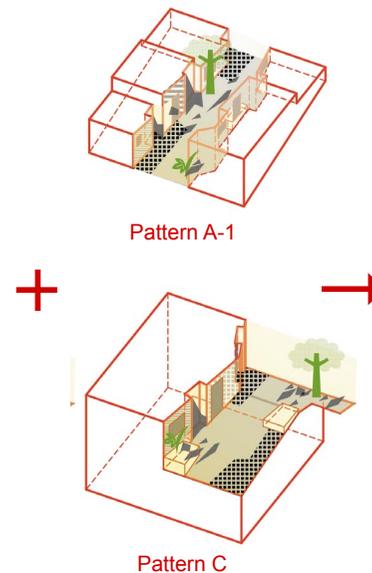


Fig 5.2.5: Performing studio stage 1 outcome

Part 2: Design Department -- Manchester School of Art

Inferior position: Based on the analysis of functions and circulation, it is clear that, in the semi-private layer, the vertical circulation could not provide a proper connection for the design spaces in different levels, although the horizontal connection and visual linking provide positive conditions for collaborative working. Also, considering that all the teachers in the Peking Opera School would communicate frequently, because of academic exchanges and regular meetings, the staff offices should not be included in the design department. Moreover, restricted by the existing situation, the position of the studio base rooms and the workshops are not in an ideal position for the Peking Opera School.

Strategy: Refer to Pattern C. The most important transformation is reforming the vertical connection space by changing the scale of it, as well as creating concave-convex along the stairs and adding shared facilities, which largely perfect the movement and visual links, and benefit communication across different levels. Other shifts about natural light, plants, and material are similar to those of the performing department.

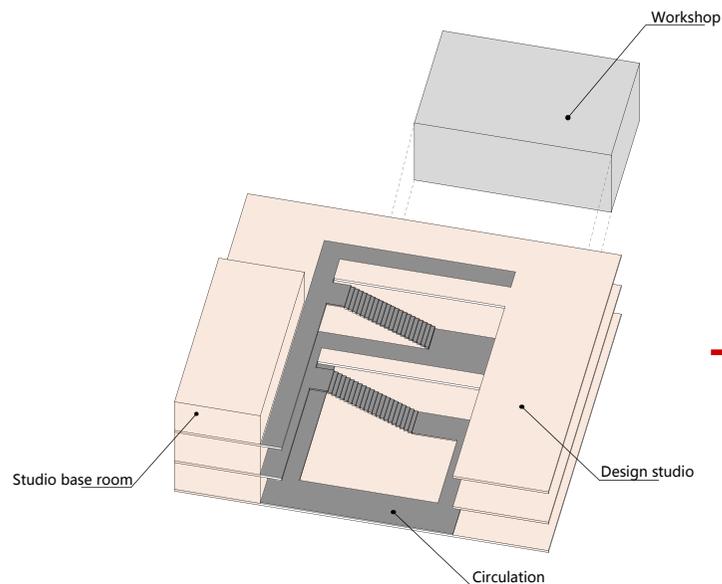


Fig 3.3.6: The original function and circulation analysis of Manchester School of Art studio

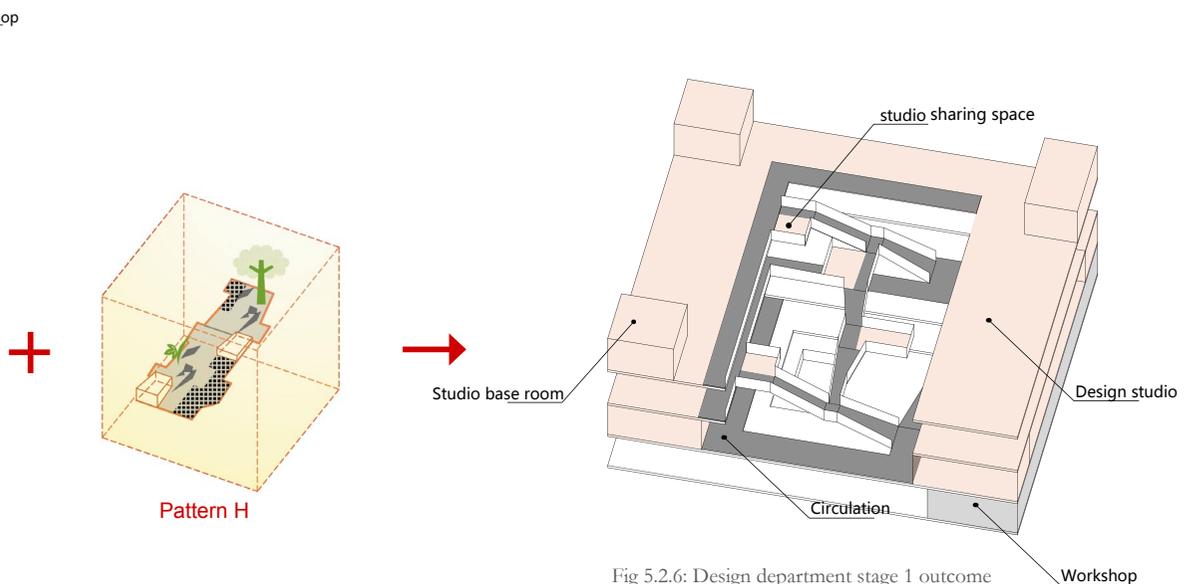


Fig 5.2.6: Design department stage 1 outcome

Part 3: Music Department -- Taller De Musics

Inferior position: From the analysis of functions and circulation, the problem about a lack of a social area in the semi-private layer is obvious. Although the scale of perimeter access is comfortable for circulation, some triggers for social activates are necessary in this communal space, which is significant for exchanging ideas, etc. Also, for the same reasons as the design department, the staff offices should not be included in the department.

Strategy: Refer to Pattern D and Pattern E. The circulation was refined by adding furniture such as chairs, performing stages and public shared facilities, etc., in order to create concave-convex and to catalyze flexible communication activities. In addition, limited by the new space requirement of the Peking Opera school complex, the position of each room will be reorganized, and the number of them will not be exactly the same as the original design. Other shifts about natural light, plants, material are similar to those of the performing department.

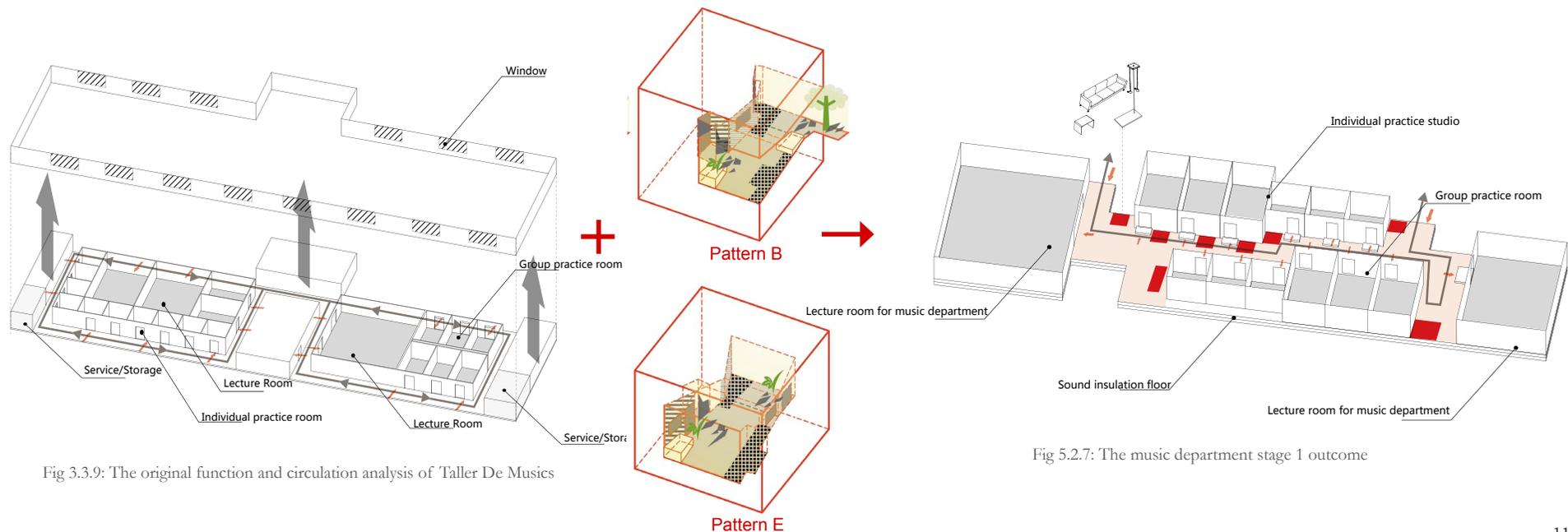


Fig 3.3.9: The original function and circulation analysis of Taller De Musics

Fig 5.2.7: The music department stage 1 outcome

Part 4: Student Accommodation – Typical Student Accommodation Building in Beijing

Inferior position: As shown on the diagram, the semi-private spaces of the student accommodation building consist of corridors, bathrooms and stairs, all of which are highly restricted by functionalism. In other words, corridors and stairs only provide horizontal and vertical circulation, and bathrooms with strong social potential are limited in a particular area without any interaction with another space.

Strategy: In order to create more interaction opportunities for students, the positions of bathrooms on each level are shifted and interact with stairs, but not in such a way as would affect the high living density provided by the building prototype. As a result, the original level restrictions are broken, replaced by a positive vertical communal space with visual and movement links. Pattern D is the good guidance for that. Refer to Pattern E. The living units will be shifted along the X axis, in order to create a social space for a horizontal corridor. All of the scales of the communal space semi-private layer will be slightly changed, and relevant facilities and small spaces will be created, in order to enrich the horizontal and vertical circulation. Other shifts will follow *hutong* techniques.

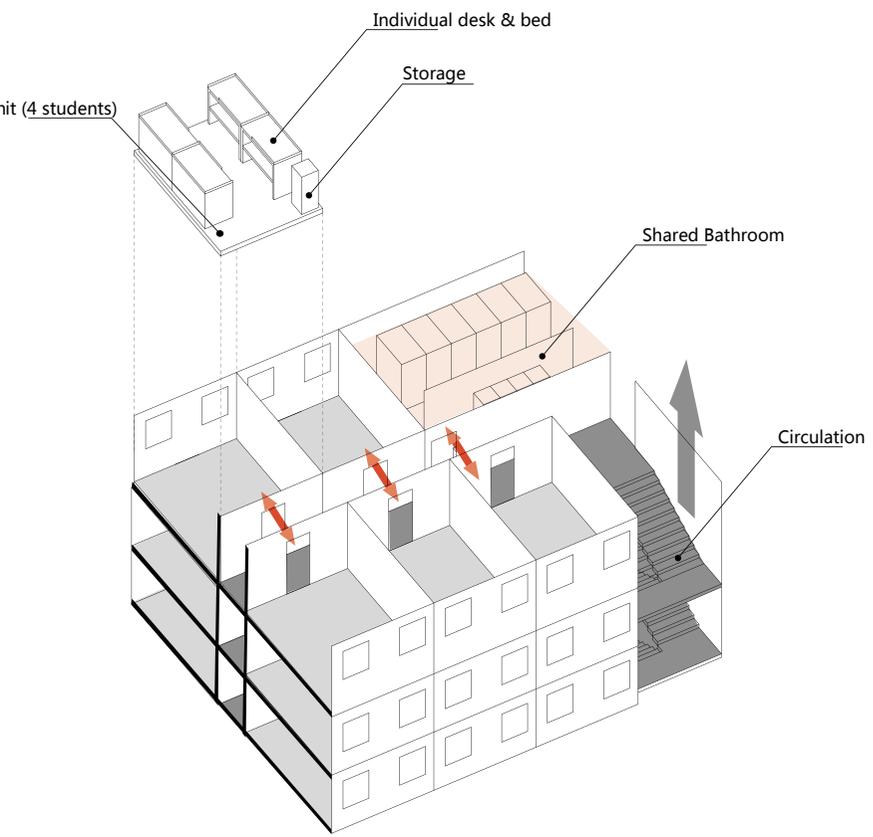
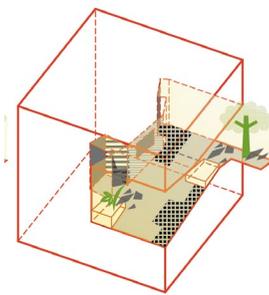


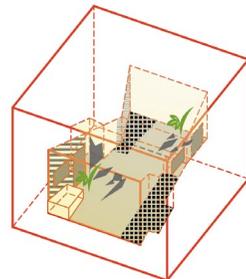
Fig 3.3.12: The original function and circulation analysis of typical Chinese student accommodation

+



Pattern B

→



Pattern E

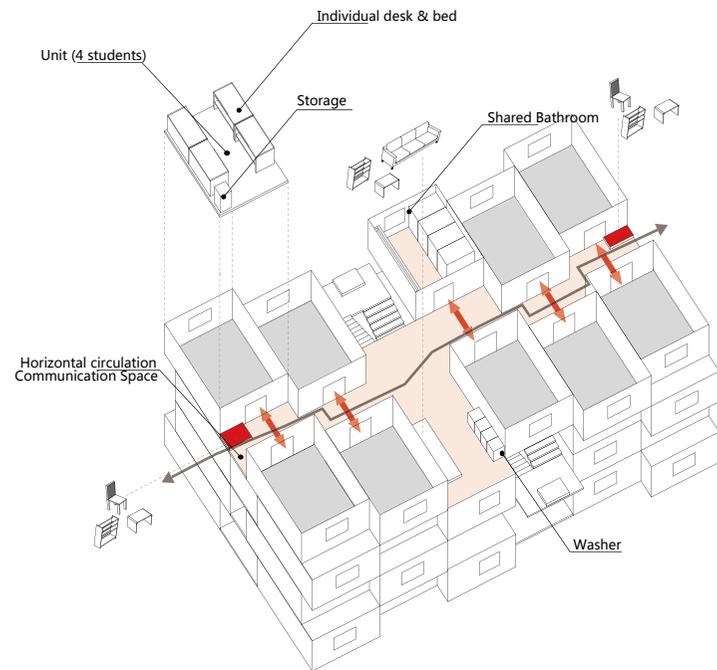


Fig 5.2.8: The student accommodation stage 1 outcome (horizontal)

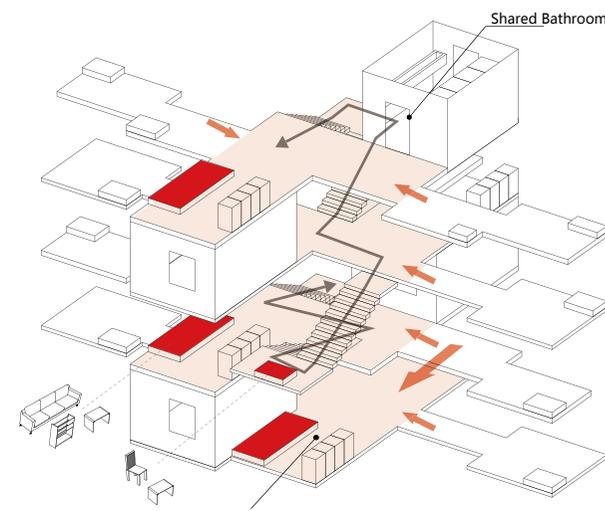


Fig 5.2.9: The student accommodation stage 1 outcome (vertical)

Part 5: The Administration and Offices – the Faculty rooms of Logan Center for the Arts

Strategy: In order to encourage collaboration all fifteen faculty rooms are clustered in two sections so that the faculty can see each other on a daily basis. All of the individual offices and meeting rooms are enclosed in an introverted space as a semi-private space, providing relevant facilities and social spaces for the staffs. Also, considering the position of the offices cluster, Pattern D and Pattern C will be the ideal guides.

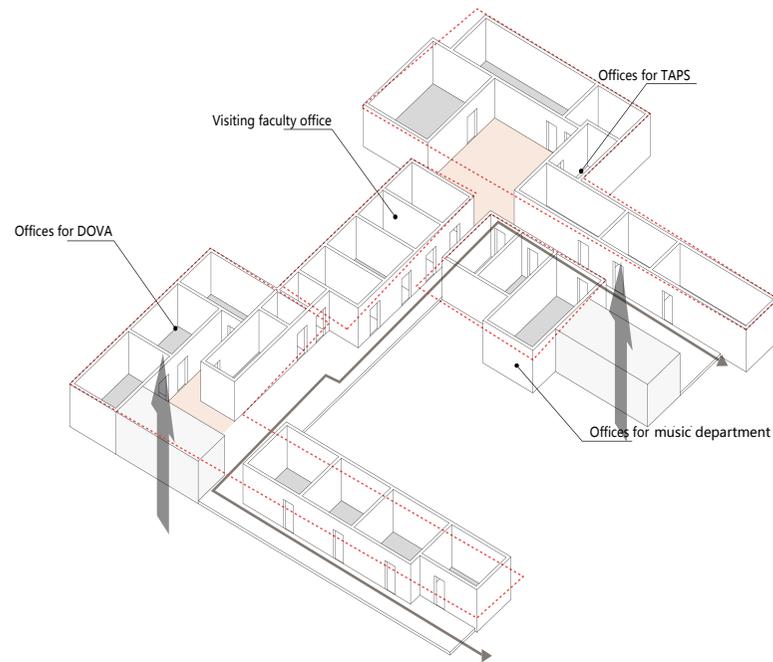


Fig 3.3.14: The original function and circulation analysis

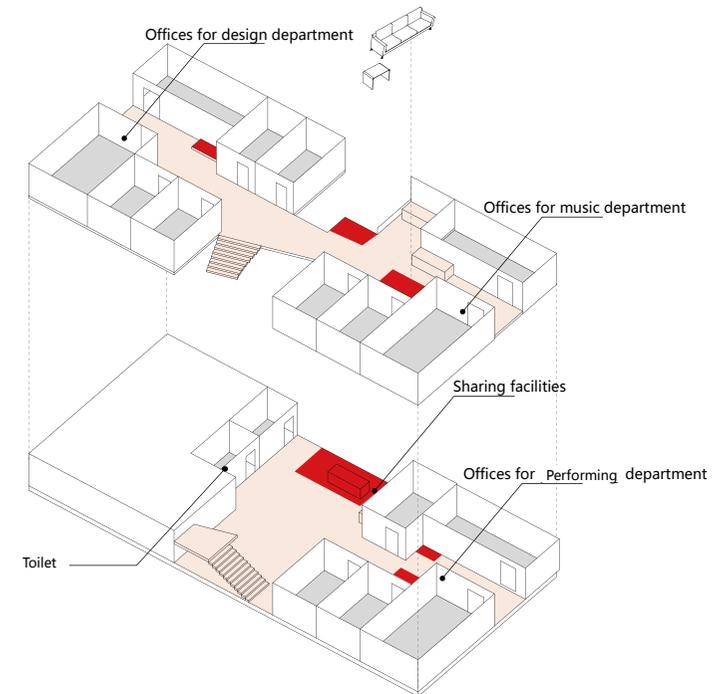
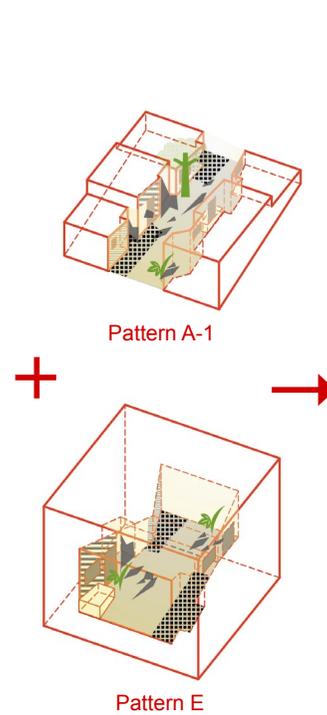


Fig 3.3.14: The original function and circulation analysis of Logan Center for the Arts

5.3.2.2 Semi-public Layer

Part 6: Atrium Space – the Main Atrium of Reed College Performing Arts Building

Inferior position: As shown on the diagram, the vertical circulation from level one to level two shows a good solution to balancing circulation and informal activities by changing the height of the stairs, but from level two to level three, the circulation is too functional.

Strategy: Refer to Pattern D. The new atrium will follow *butong* nature. The different height of stairs will intersect with each other to create concave-convex space, and more landings will be added between the two levels to get continuous social and circulation spaces. The final atrium will be like a spiral *butong*.

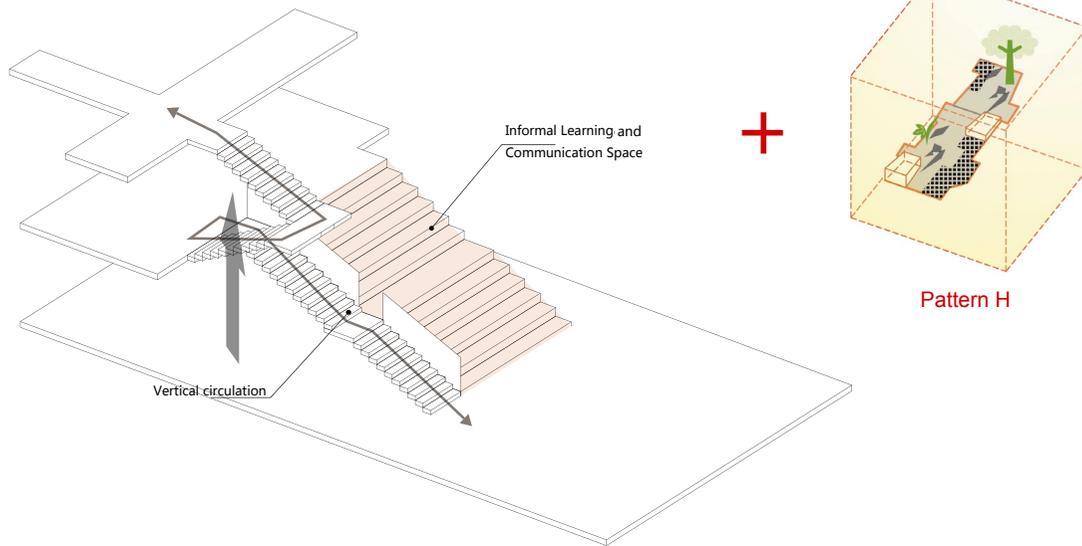


Fig 3.3.17: The original function and circulation analysis of the main atrium of Reed college Performing Arts building

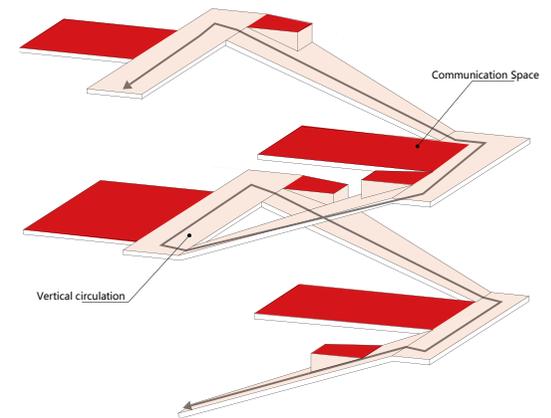


Fig 5.2.11: The secondary atrium stage 1 outcome

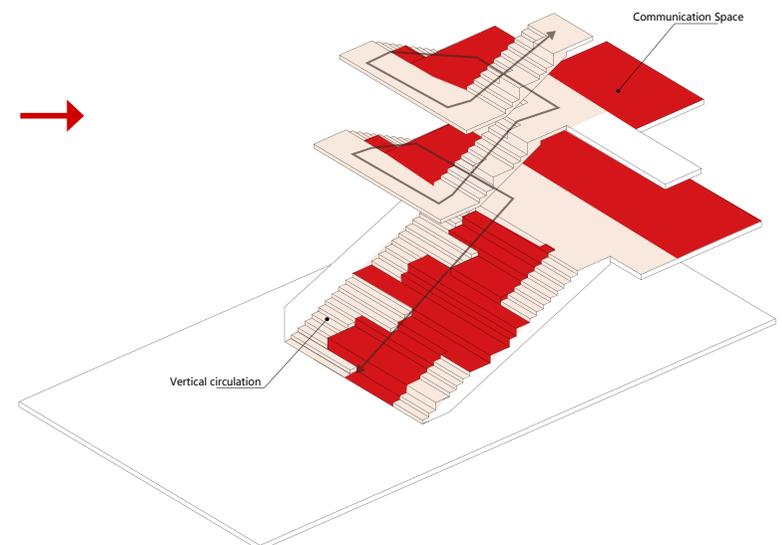


Fig 5.2.12: The main atrium space stage 1 outcome

Part 7: Researsal Studio –Teatro ofical

Inferior position: Because this prototype will be used as a semi-public atrium for the performing school, the nature of it is not only rehearsal and performance space, but also a part of circulation. The stands and performing stage, therefore, will be merged with vertical and horizontal pass ways. As shown on the diagram, the vertical circulations are too functional and not friendly enough to invite people travelling across different levels; the horizontal connections are also rigid.

Strategy: A middle stage model is created to make the horizontal pass ways become a loop, which is good for emphasising the main rehearsal stage area in the central area, and to smooth the horizontal circulation. Then, refer to Pattern D and Pattern C, the stage and the stands style of circulation system will be enriched by *butong* techniques.

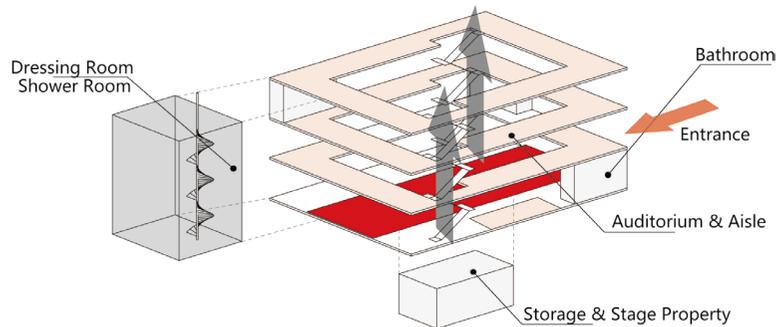


Fig 3.3.21: Ideal function and circulation relationships of Teatro ofical

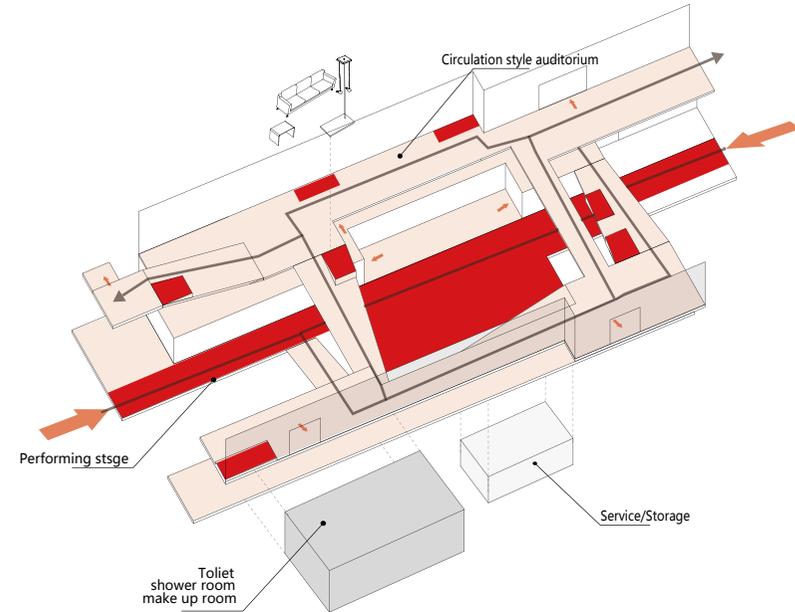
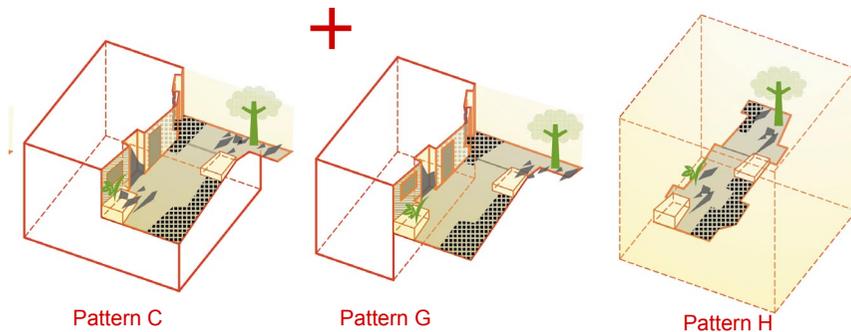


Fig 5.2.13: The rehearsal space stage 1 outcome

5.3.3.3 Public layer design

Part 8: Exhibition and Research Space – London Shunt Bar

Inferior position: Nothing needs to be refined for this prototype, but should be represented by *hutong* architectural language.

Strategy: The Peking Opera research and exhibition space is the main approach for the circulation system in the public layer in-between the building mass and directly connects with the exchange level of the subway station. The pattern of it should mainly refer to Pattern D. The height and scale of the linear journey keeps changing to define different space layers representing the original arch spaces. Also, the research, display and retail spaces and relevant facilities would be set by defining concave-convex spaces in different space layers. Other shifts will follow *hutong* techniques.

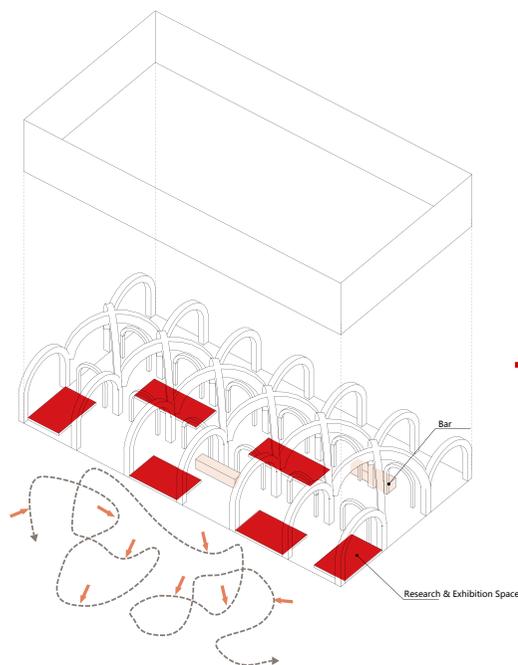


Fig 3.3.24: The original function and circulation analysis of Shunt Bar

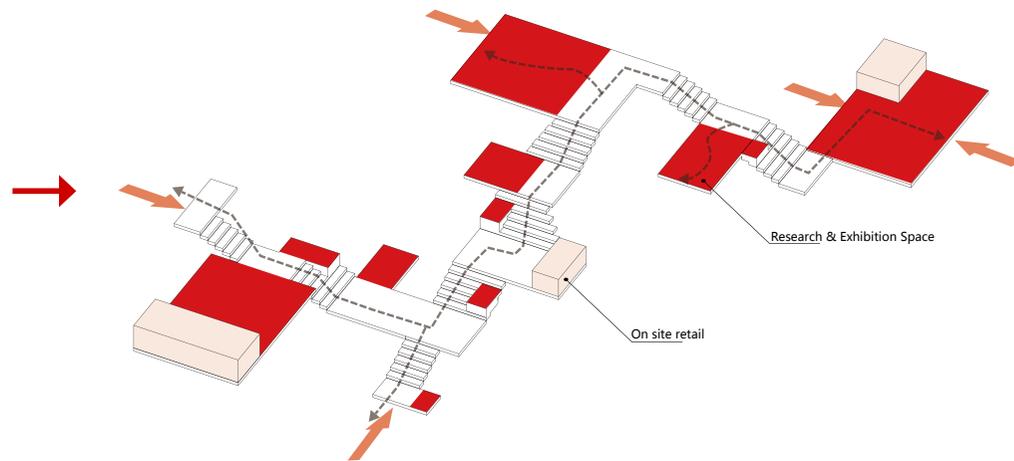
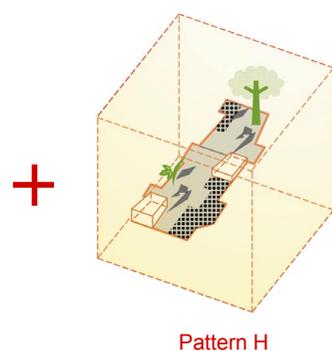


Fig 5.2.14: The research and exhibition space stage 1 outcome

Part 9: Main Theatre and Accessory Buildings –Huguang Assembly Hall

Inferior position: The interior space of this prototype does not need to be refined because of the needs of the clear and unique functional space. However, the courtyard connection space will be changed by *hutong* architectural language, because, for this project, there are more functional requirements such as traffic and social.

Strategy: Basically, for the courtyard space between the main theatre and the teahouse, the strategies will follow Pattern D, so the interfaces will be organic and irregular. The large foyer will be a coordinator for both vertical and horizontal circulation, so an atrium will replace it. The final result will follow the previous study of the *hutong* style atrium space (part 5).

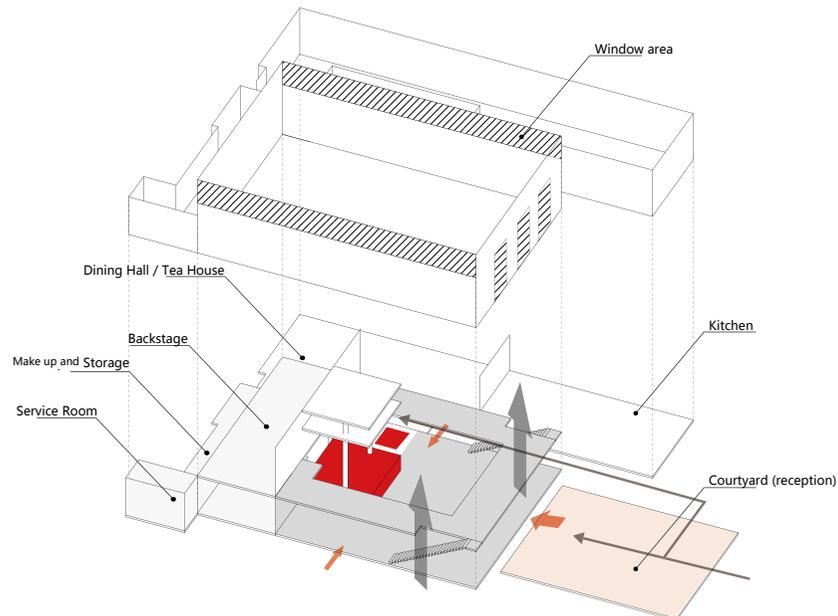


Fig 3.3.26: The original function and circulation analysis of Huguang Assembly Hall

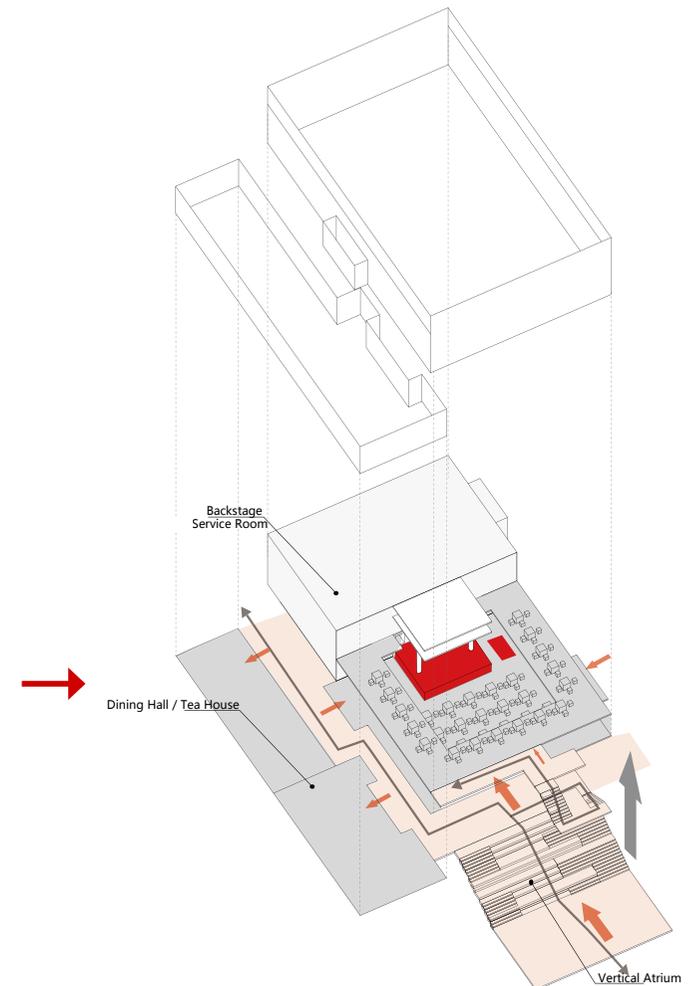
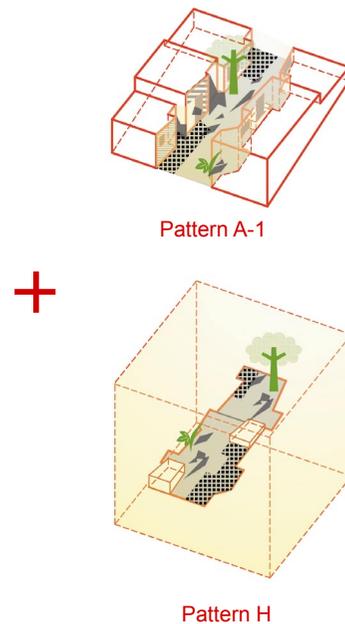


Fig 5.2.15: The main theatre stage 1 outcome

5.2.3.4 Summary of partial designs and adjust of proper scale

In order to establish the space relationships, it is necessary to make clear the scale of each room is necessary.

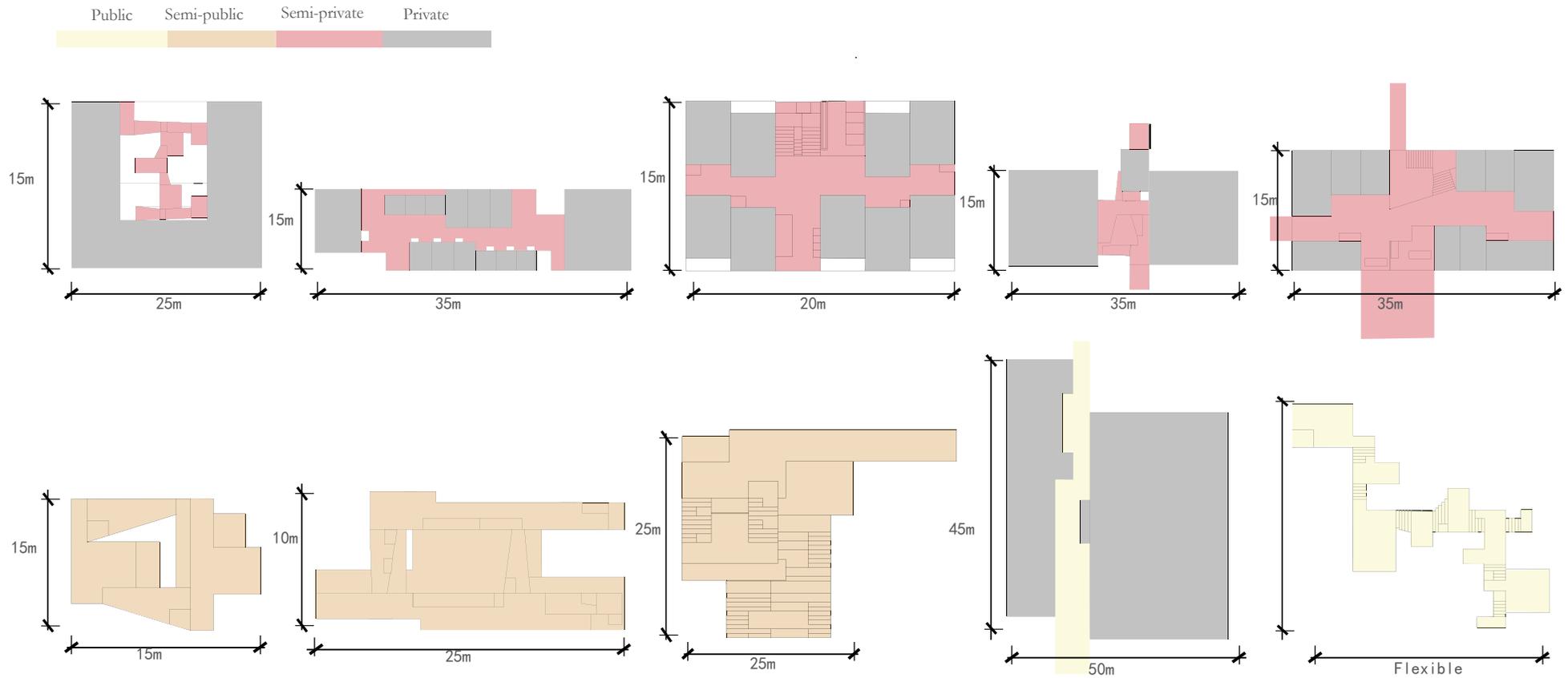


Fig. 5.2.16: Final results of different programmatic spaces

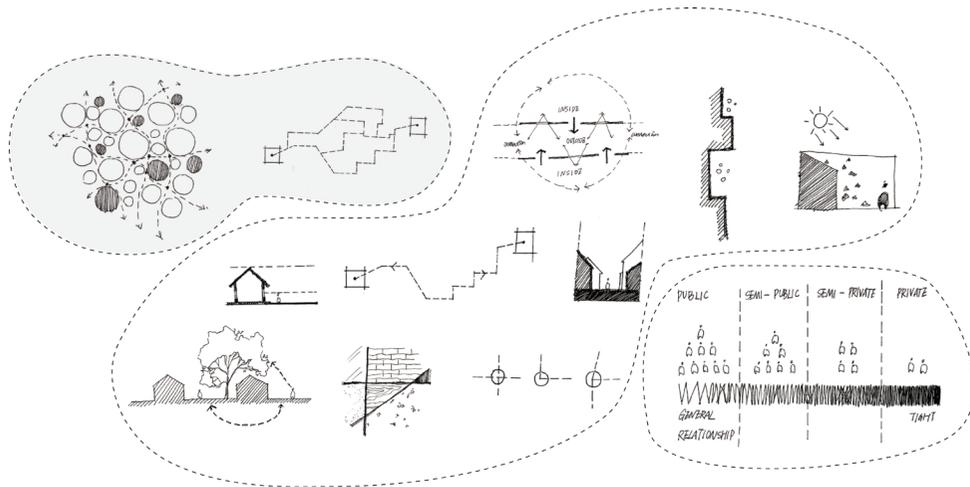


Fig. 5.3.1: The functional development based on the previous 8 derived characteristics of *hutong*

5.3 Exploration 3 – Functional Development

The main aim for this exploration is to make clear the general logic of arranging spaces in the Peking Opera school complex. The subway station spans around 150 metres and its length is longer than its width which is 40m on average, so the site above it reflects similar proportions. Because of the scale of the site, it is hard to set a simple atrium, thoroughfare, or anchor point to connect all of programmatic spaces of the school, or to create direct visual or physical connections for all of the students and staffs. As a result, taking advantage from the circulation and functional arrangements style of *hutong* to create pedestrian flows to connect people is the first essential move. Although my analysis of hutong spatial composition in two-dimensions is a good start point for this process, it is not complex enough to arrange such a large building mass (horizontal circulation span of 150 metres, vertical circulation depth of 15 metres). A three-dimensional *hutong* study should be done.

3.1 The Development Study for Functional Relationships of Three-Dimensional *Hutong*

In order to meet original hutong space principles, there should be a series of space linking logic to define the new space relationships (fig 5.3.2).

1. Define the spatial relationships between *hutong*, community groups, and public usage in two-dimensions, in order to form the basic linear unit.
2. More linear unit link together to define the planar space. Link several linear units together to define planar space.
3. A three-dimensional system is formed by random combination of linear units in different orientations.
4. Increase the length of the hutong space, and increase the number of community groups and public usage spaces.
5. Create more spatial links between linear units in three-dimensional space to get many intersections contributing to traffic convenience.
6. Fold the linear system in order to get many turning corners, allowing the formation of more complex patterns in three-dimensional space. This forms the basic unit of *hutong* style three-dimensional space.
7. Following the previous development logic, increase the number and the density of the spatial units to get more complex clusters.
8. Keep increasing the spatial units and the final spatial cluster could be infinite. Use the same logic for the other three levels.

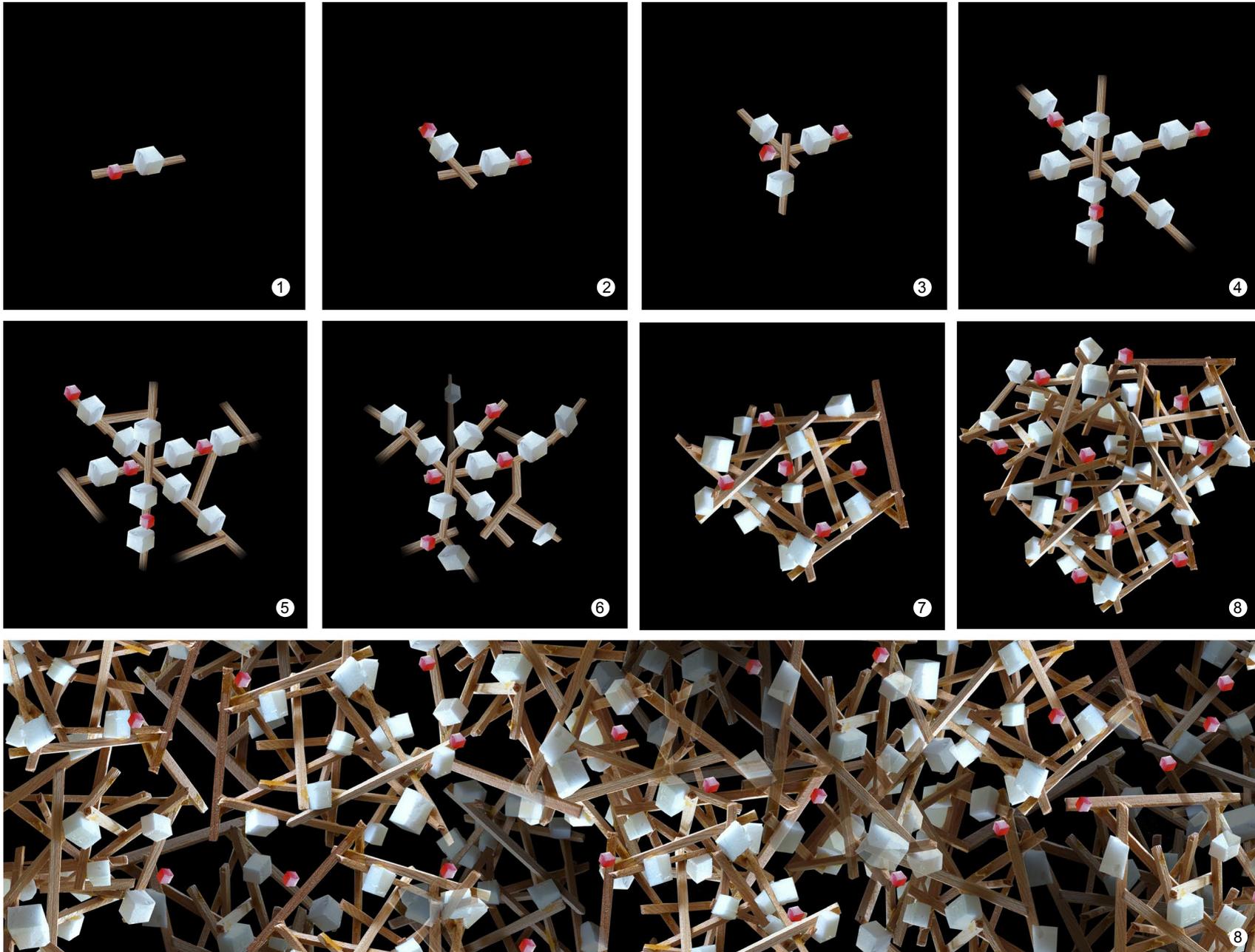


Fig 5.3.2: The development study for functional relationships of three-dimensional *butong*

5.3.2 The Adaptation of the 3D functional development into the school complex

This step is to get the physical relationships between the different social layers for the different functions of the school complex, developed from the previous study model. Based on *butong* techniques, the functions which are shared by all school students and staff should be mixed in with the space occupant's various clusters, such as studio clusters, office clusters, and design clusters, in order to create pedestrian flows for the purposes of communication and interaction. The strategies from function relationship of three-dimensional *butong* perform a similar space relationship in the Peking Opera School in the public and semi-public layer. (figs 5.3.3-4).

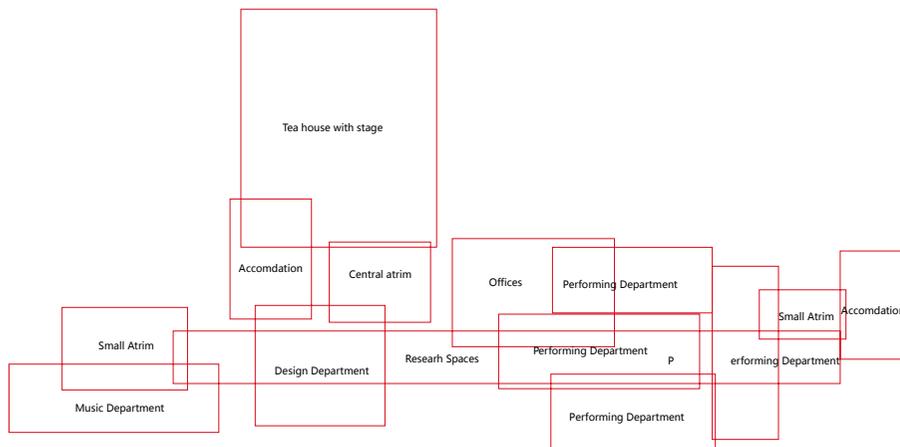


Fig 5.3.3: Programme layout of the main spaces elements to get the proper location for the ten main elements, and add public usage function in to the structure.

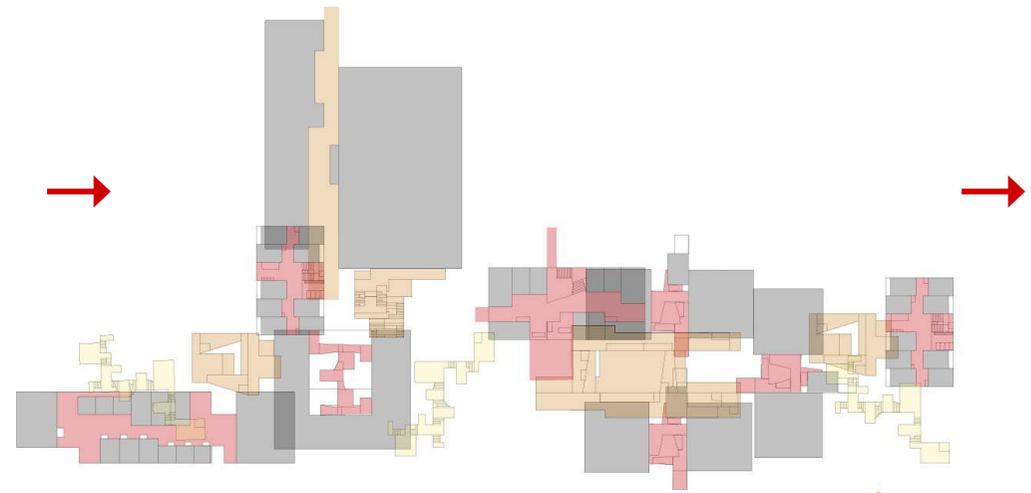


Fig 5.3.4: Following the scale of the different programme to rearrange the plan

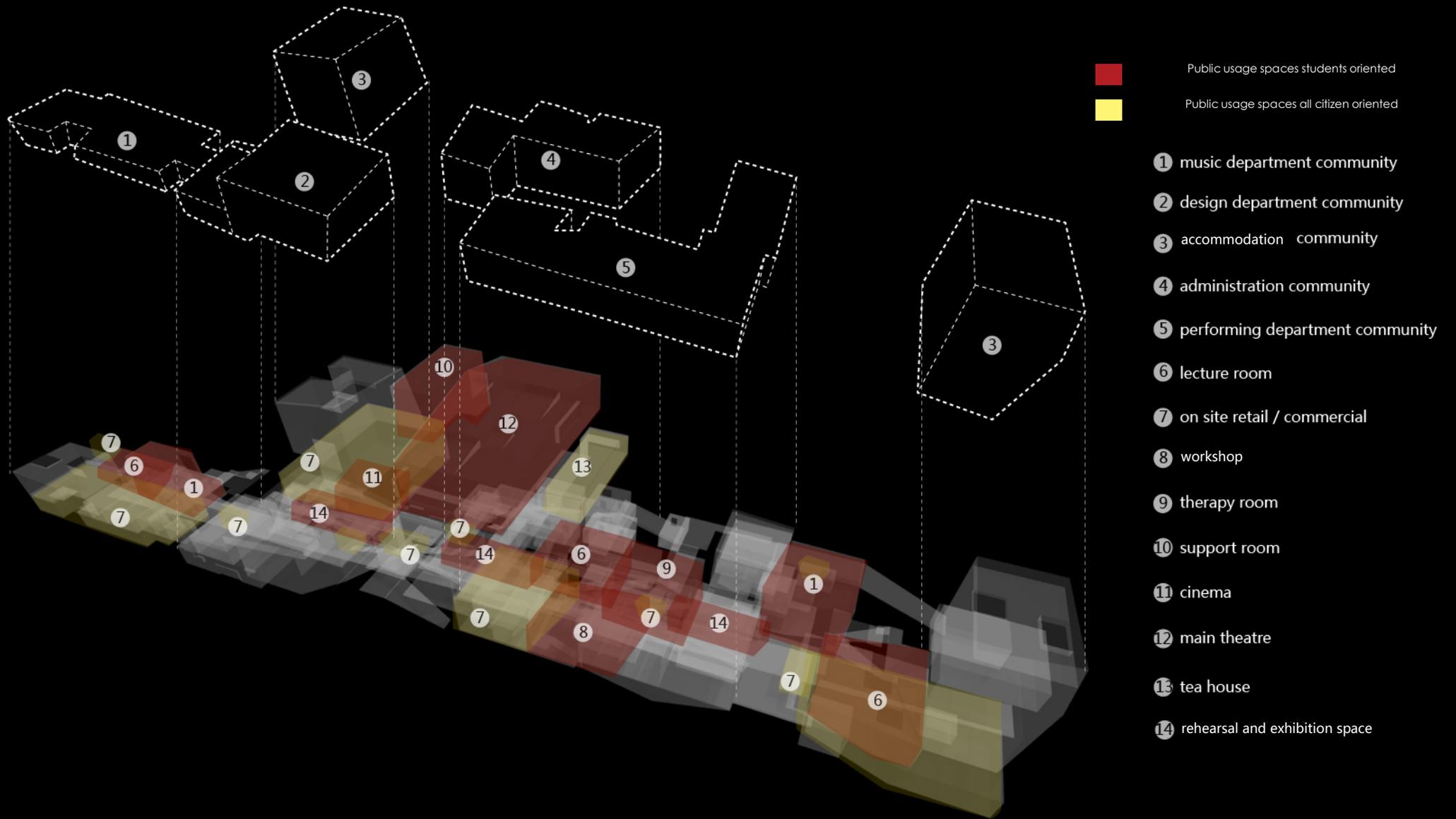


Fig 5.3.5: the final result of the programme layout

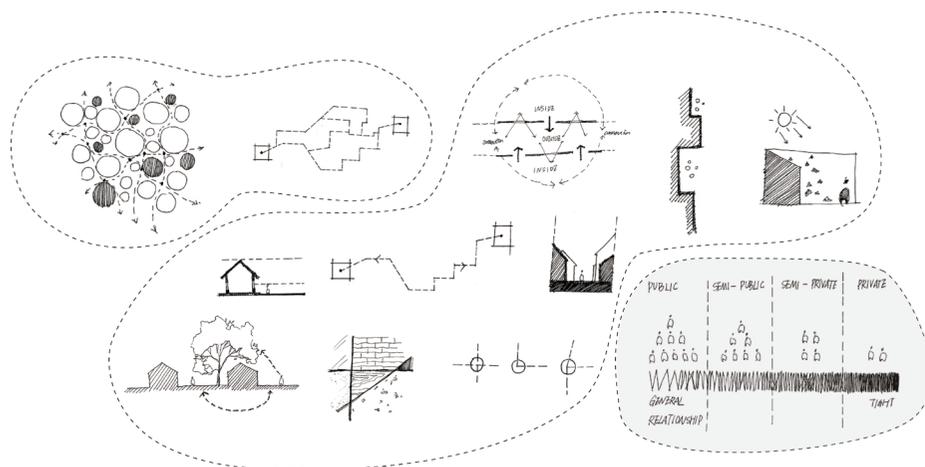


Fig 5.4.1: The space layer development based on the previous 8 derived characteristics of *hutong*

5.4 Exploration 4 – 3D Space Layer Arrangement

5.4.1 The Adaptation of the 3D space layer development into the school complex

This step is to get the routes in the public layer for all the school occupants and visitors. Considering walking efficiency, the views and several suitable starting points, the pathways in the public layer have been designed with multiple routes that will travel across different levels (fig 5.4.2). All of public facilities including research and exhibition space, on site retailing and public services rooms are arranged in this layer.

The simplified horizontal pathways in the public layer are mainly on three levels, the B1 level, the ground level, and the level between the first and second floors. The route underground will keep its complex pattern, because of the functional requirements of research and exhibition spaces. The routes on the ground floor are connected to the surrounding streets as part of the urban grid. The inbetween level crosses the main entrances on the upper floors, which gives visitors a clear sense of direction to their destination. (fig 5.4.3)

Then, for the the semi-public layer, in order to balance the vertical and horizontal linking systems, four atria are set in their high density areas. They also reflect the function of the semi-public layer, which provides sharing facilities for all school students and staff, and provides a transition space between public and semi-private spaces (fig 5.4.4).

Finally, similar with last step, the semi-private layer should be connected with the semi-public layer, and its relationships with the private layer have made clear in the exploration 2 (fig 5.4.4).

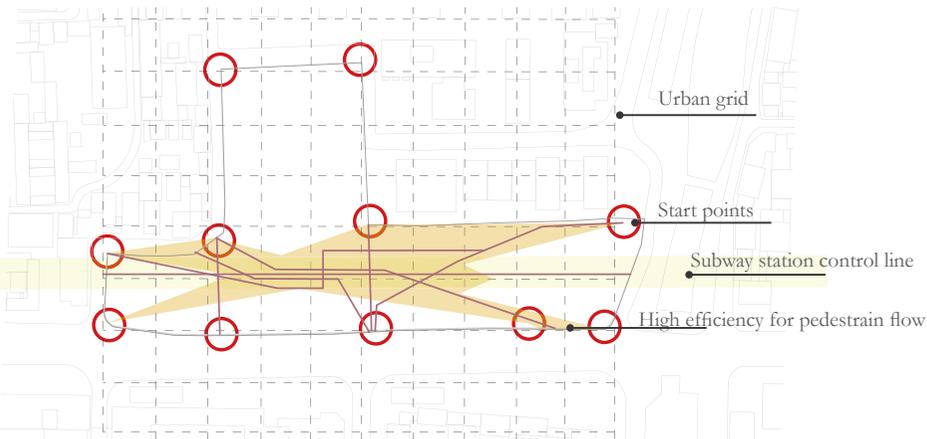
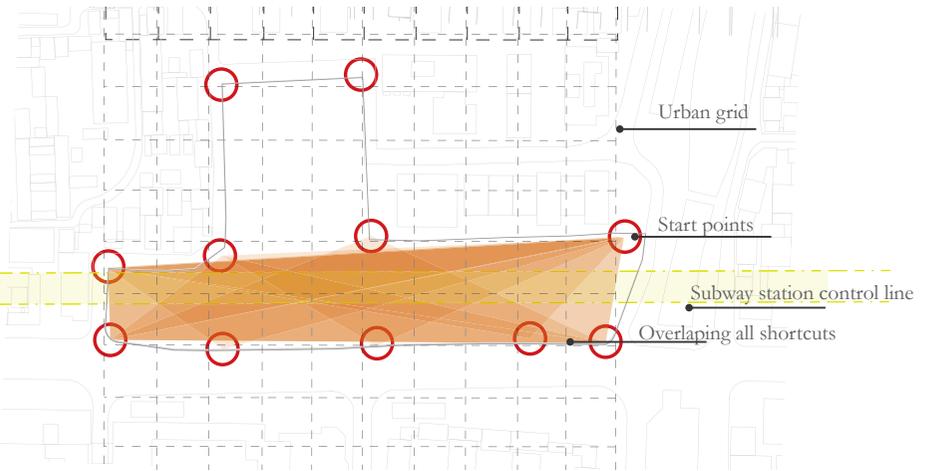
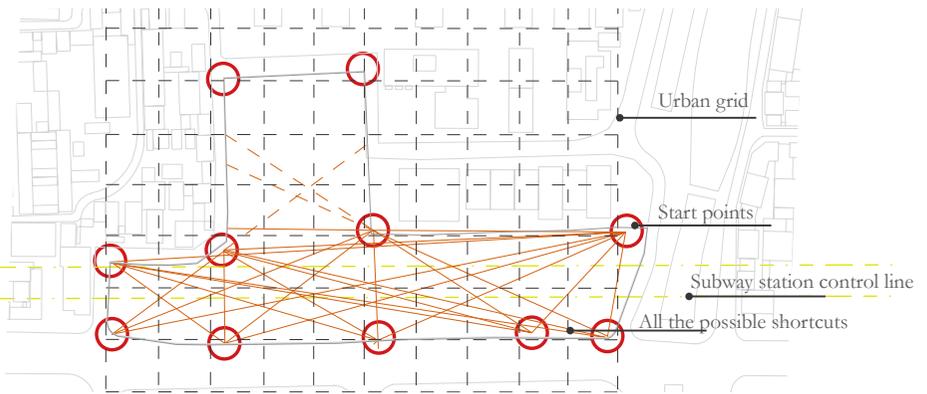


Fig 5.4.2: The generation of the proper site shortcuts

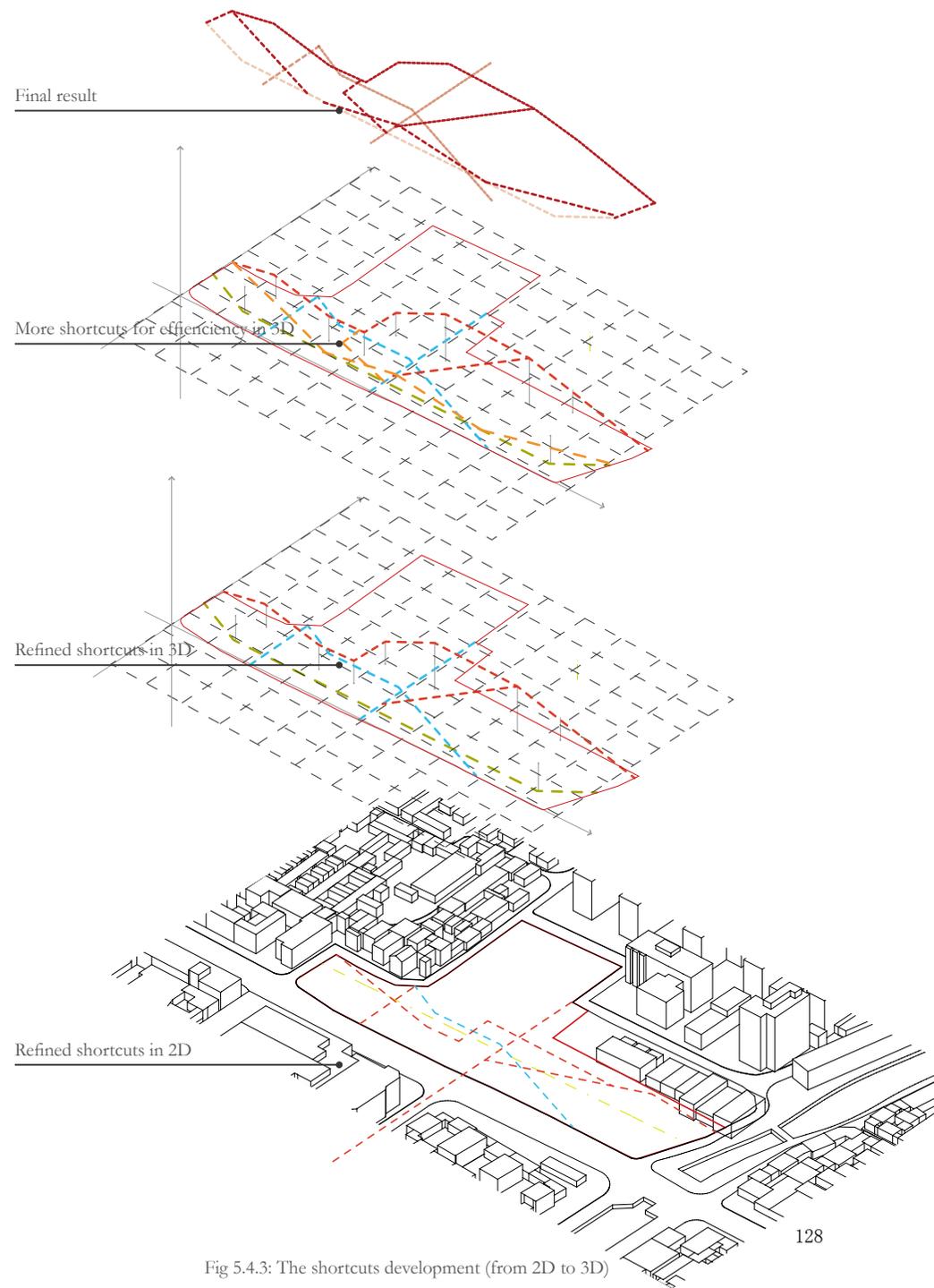


Fig 5.4.3: The shortcuts development (from 2D to 3D)

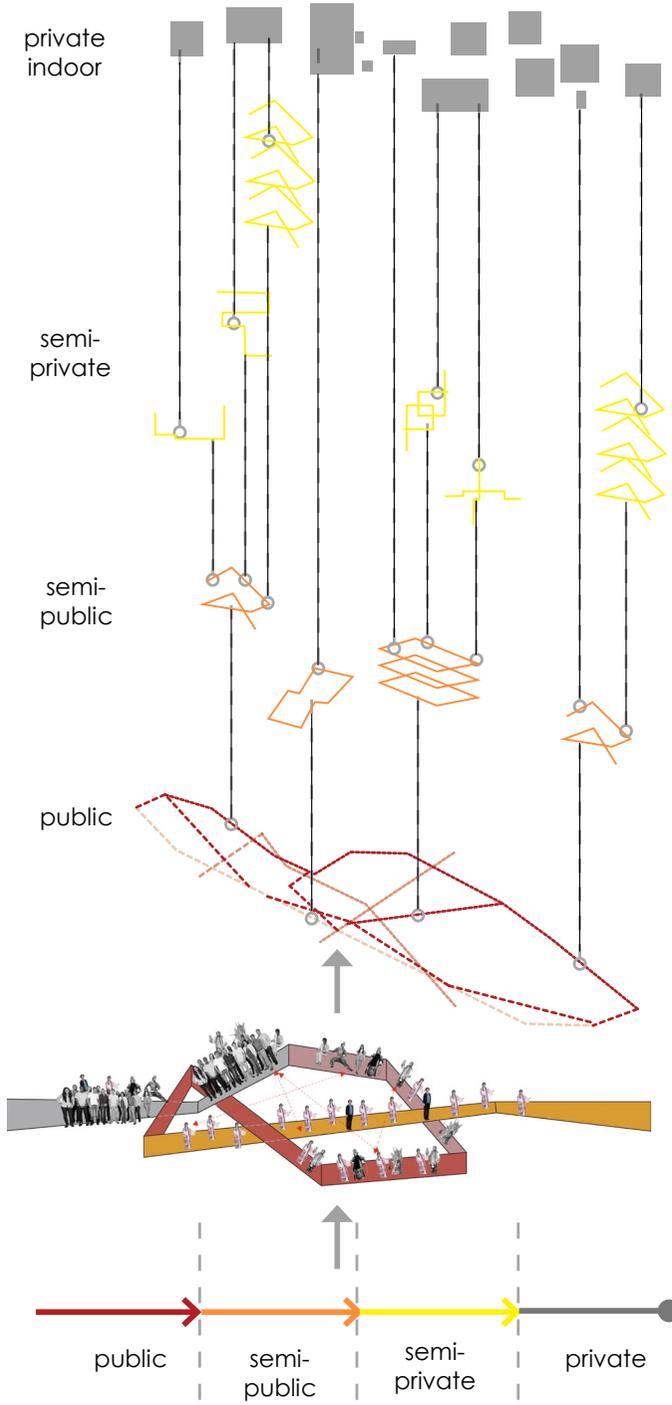


Fig 5.4.4 The social layer 3D development - The strategies from function relationship of three-dimensional hutong perform a similar space relationship in the Peking Opera School in the public, semi-public, semi-private and private layer.

5.5 Organizing different programme clusters

Basing on the previous studies about the function relationship, the circulation relationship, the urban interference, and the programmatic characteristics of the school complex, a basic structure of the complex has formed. However, a derived problem should be studied and resolved; how to organize and connect the intersecting spaces created by different spaces within different social layer (figs 5.5.1-2).

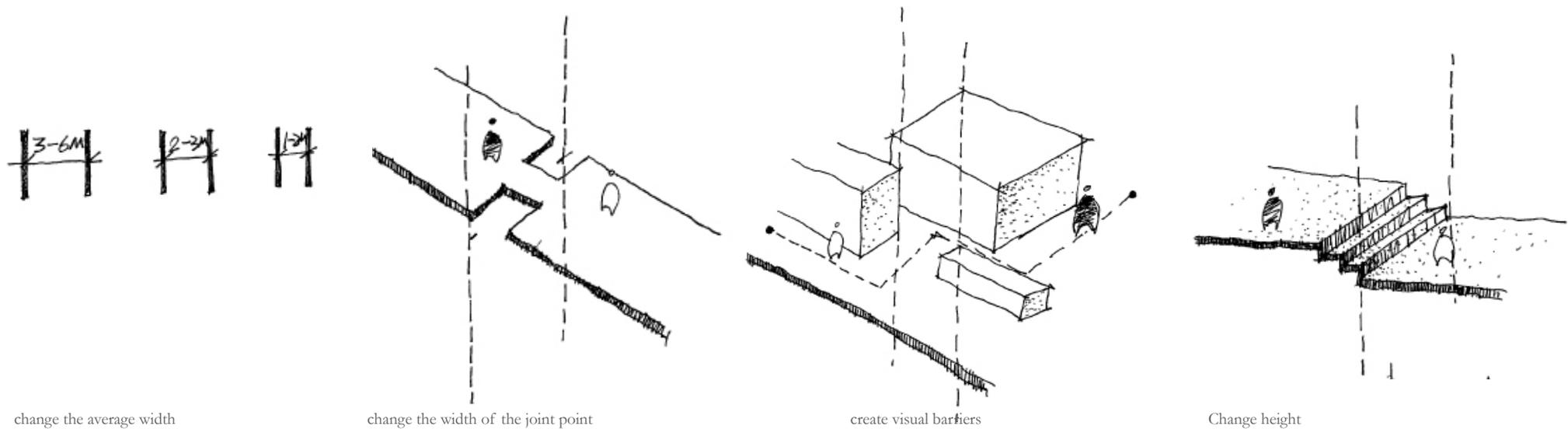
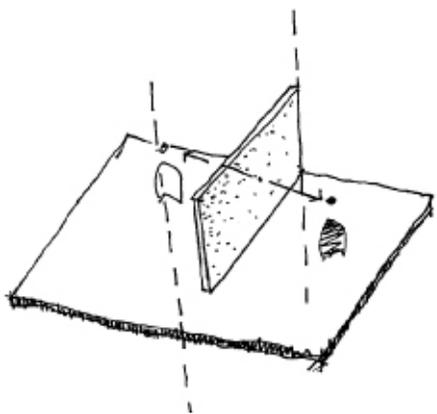
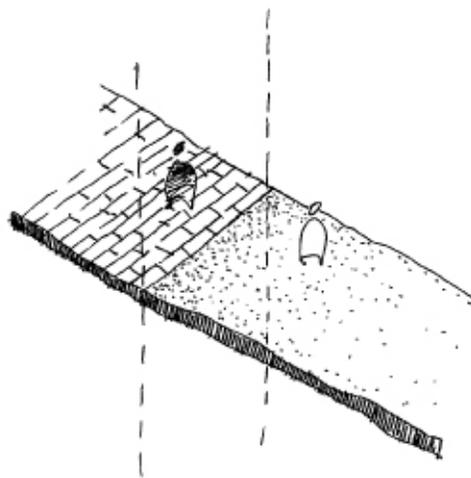


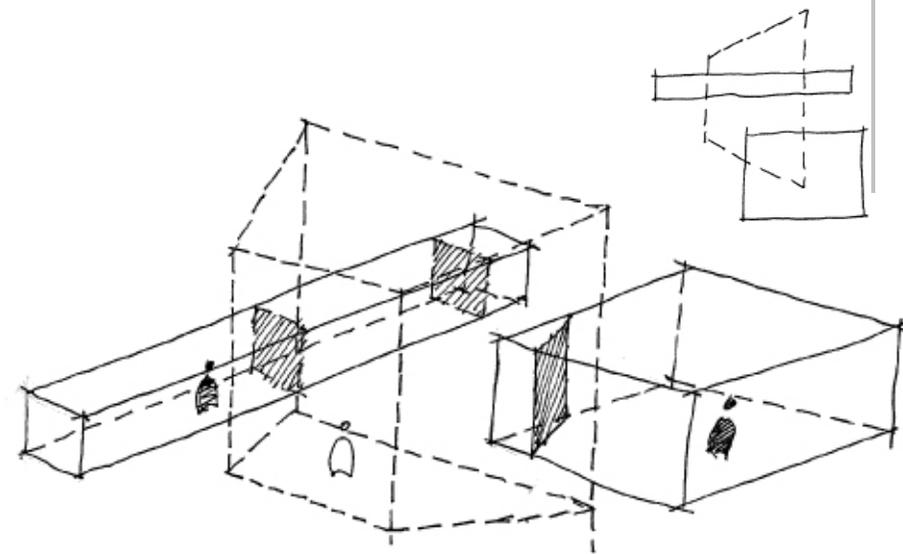
Fig. 5.5.1: The strategies of how to define two spaces within different social layer



create movement barriers



different materials



Keep the original spatial characteristic



Semi-Private+ Private

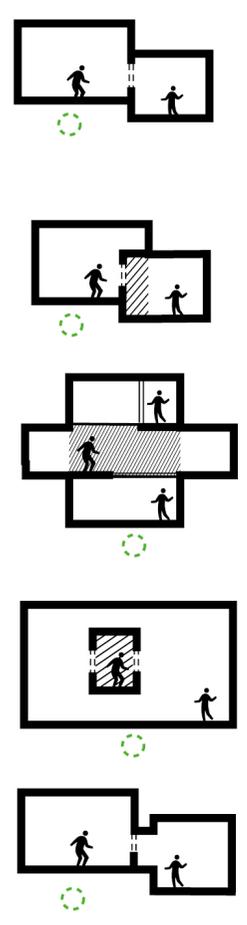
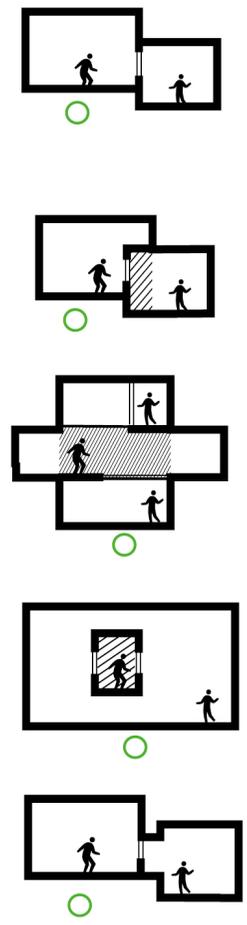
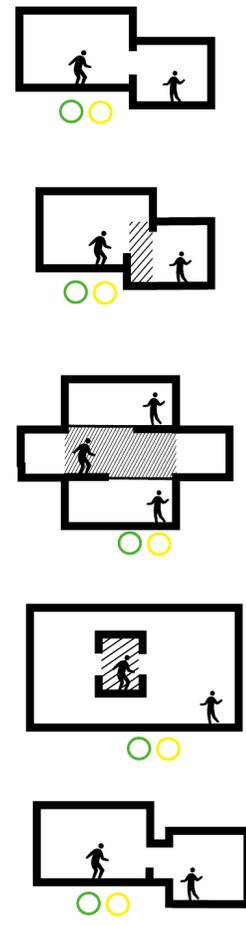
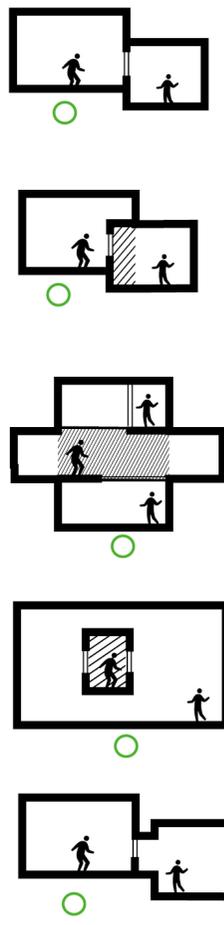
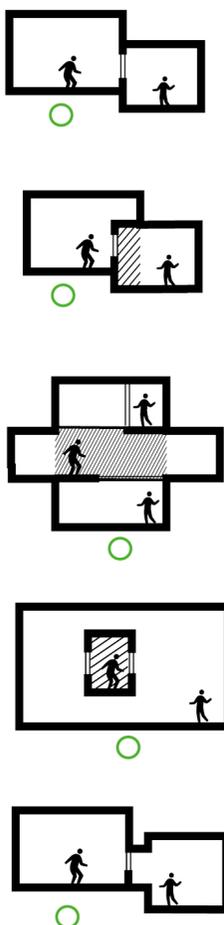
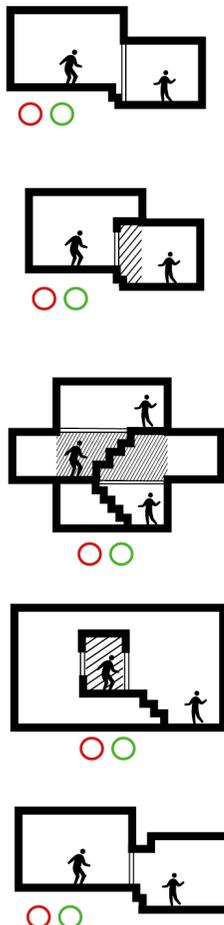
Semi-Public +Semi-Private
(within different community)

Semi-Public +Private
(within different community)

Semi-Public +Semi-Public
(within different community)

Semi - Private+ Semi- Private
(within different community)

Private+ Private
(within different community)



5.6 Exploration 6 – Structure

A structural system needs to be developed that not only holds the school complex, but also ties the new building to the subway station underneath. There are two structural systems contributing to the project: the girder bridge structure system and frame structure system. The structural drawing examines how a structure system could be developed. (fig 5.6.1-2)

For the bridge structure, a series of trusses supported by steel columns and spanning 15 to 20 metres, bear the vertical loads from underneath (underground) floors and stairs. In order to bring natural light to the subway station and to allow good visual connections, cables that join with the trusses replace the frame structure to bear vertical loads from stairs and floors. It generates the aesthetic of the architecture by avoiding many thick pillars that block the field of view, and creates a sense of lightness and transparency. The detailed drawing examines how a cable joint connects with the truss and the floor and it will be shown in the final presentation. Also, these complex vertical and horizontal circulation systems join together and weld with the surrounding frame structure, in order to form a stable structure to avoid lateral movement.

Other parts of the building complex utilise a steel frame structure, where the span of between pillars changes with different spatial requirements.

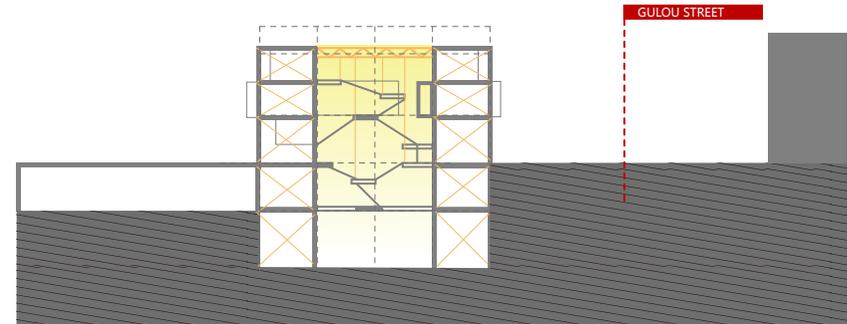


Fig 5.6.1: The concept of the structural design

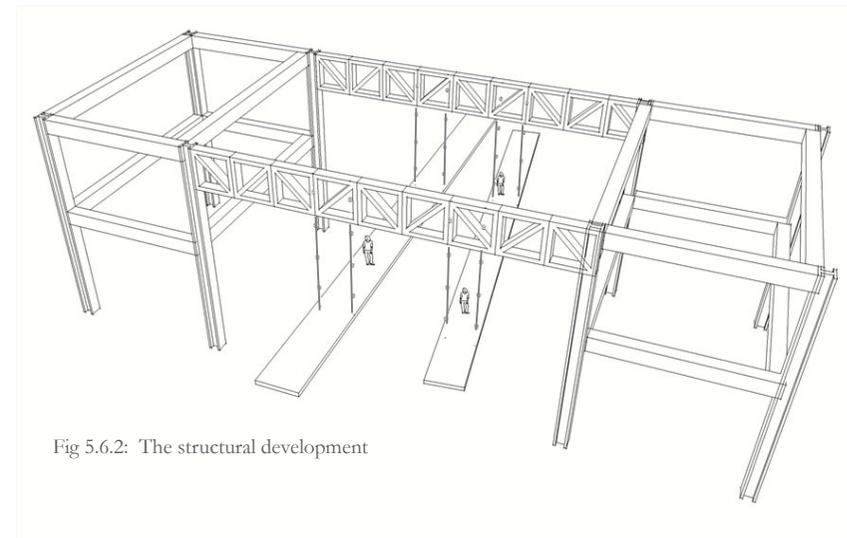


Fig 5.6.2: The structural development

5.7 Exploration 7 –Materiality

As the architect Wang Shu said, “I think the material is not just about materials. Inside it has the people’s experience, memory — many things inside. So I think it’s for an architect to do something about it.” For this project, recycled materials, especially grey bricks, which are easily gathered from the ancient city, will be used. Grey brick is an essential building material for almost all of houses in Beijing’s historical centre, and is one of the significant icons of Beijing’s ancient city as well. Therefore, it will be the main material component of the new building complex, although its position and pattern will remain flexible and multiple.

Also, colourful glass, concrete, steel and timber elements will be used. These will not only enrich the space, but also communicate the special functional requirements of different individual rooms. The main principle of mixing these different materials is following particular patterns derived from the *butong*, and breaking up the size of the building, while still allowing the building to appear as a unified whole.

As shown on the figure 5.7.2, different ways of collaging the materials together with the grey brick different options have been explored.



Fig 5.7.1: Grey bricks



Fig 5.7.2: The material collage pattern

5.8 Exploration 8 – Architectural Language

In order to balance the relationship with surrounding buildings, the architectural language of this project is largely influenced by the Chinese traditional house's pattern. First and foremost, the whole building complex is broken down into small scale blocks to bring the feeling of intimacy and avoid blocking the view of people. All of these make the shape of this project as a whole. In addition, in order to remind people the building complex is a performing school complex, the different architectural language was plug-in the project, which is a series of irregular shape. They share the same architectural language and provide the feeling of Chinese traditional house as well.

In general, the main materiality of the small scale blocks is grey brick and grey brick collage which I have mentioned in page 133. The irregular shapes use a transparent material – glass, which brings more natural light into the building during day time, and also highlights the building through artificial light during night time.

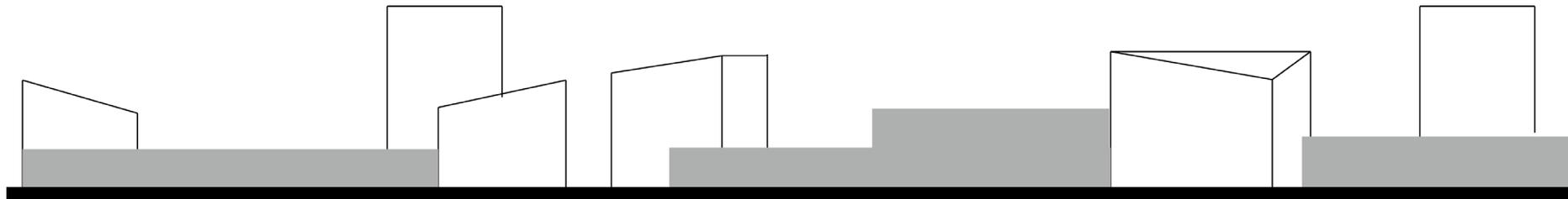


Fig 5.8.1: Final architectural language

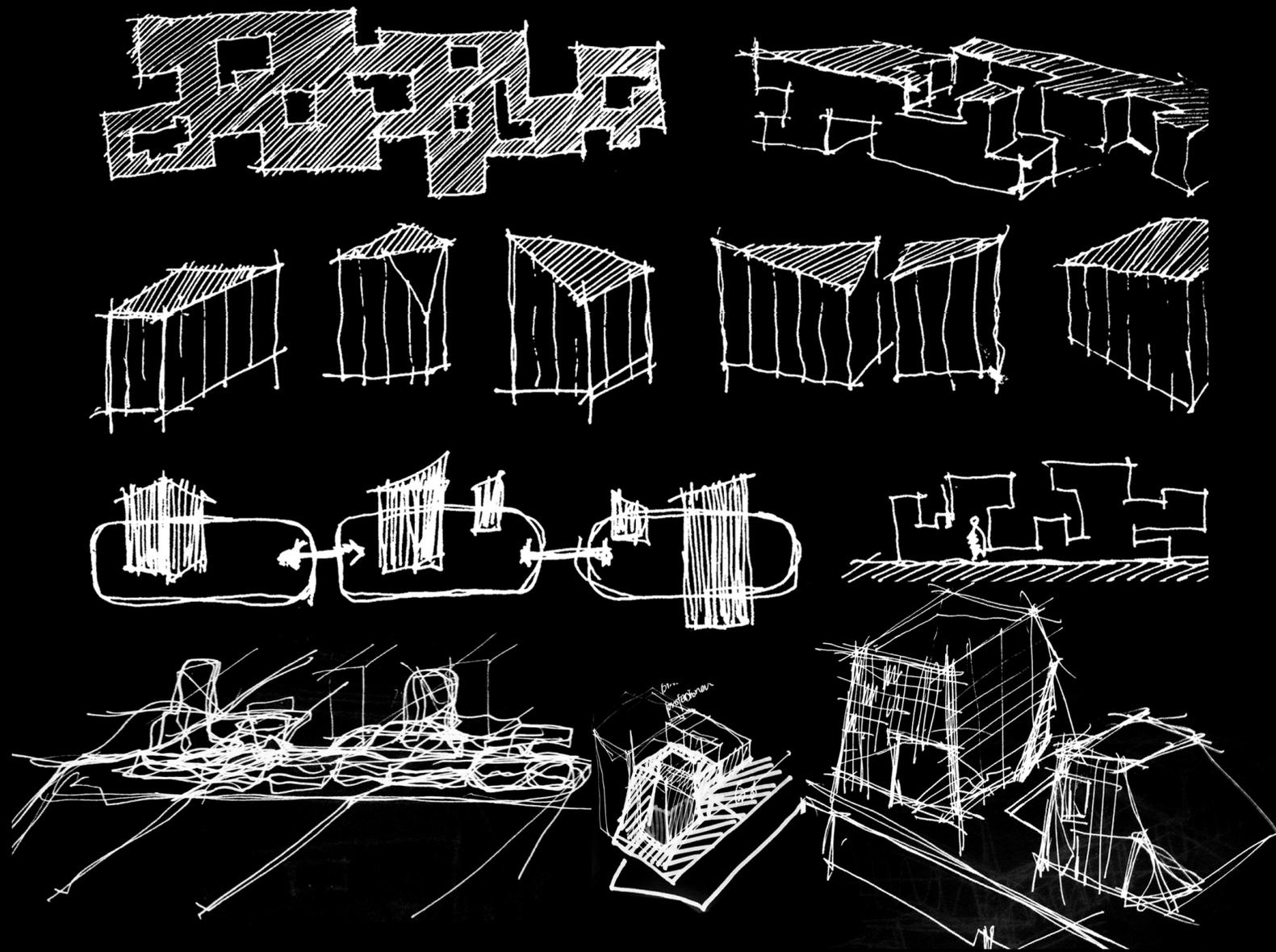


Fig 5.8.2: The study drawings of architectural language

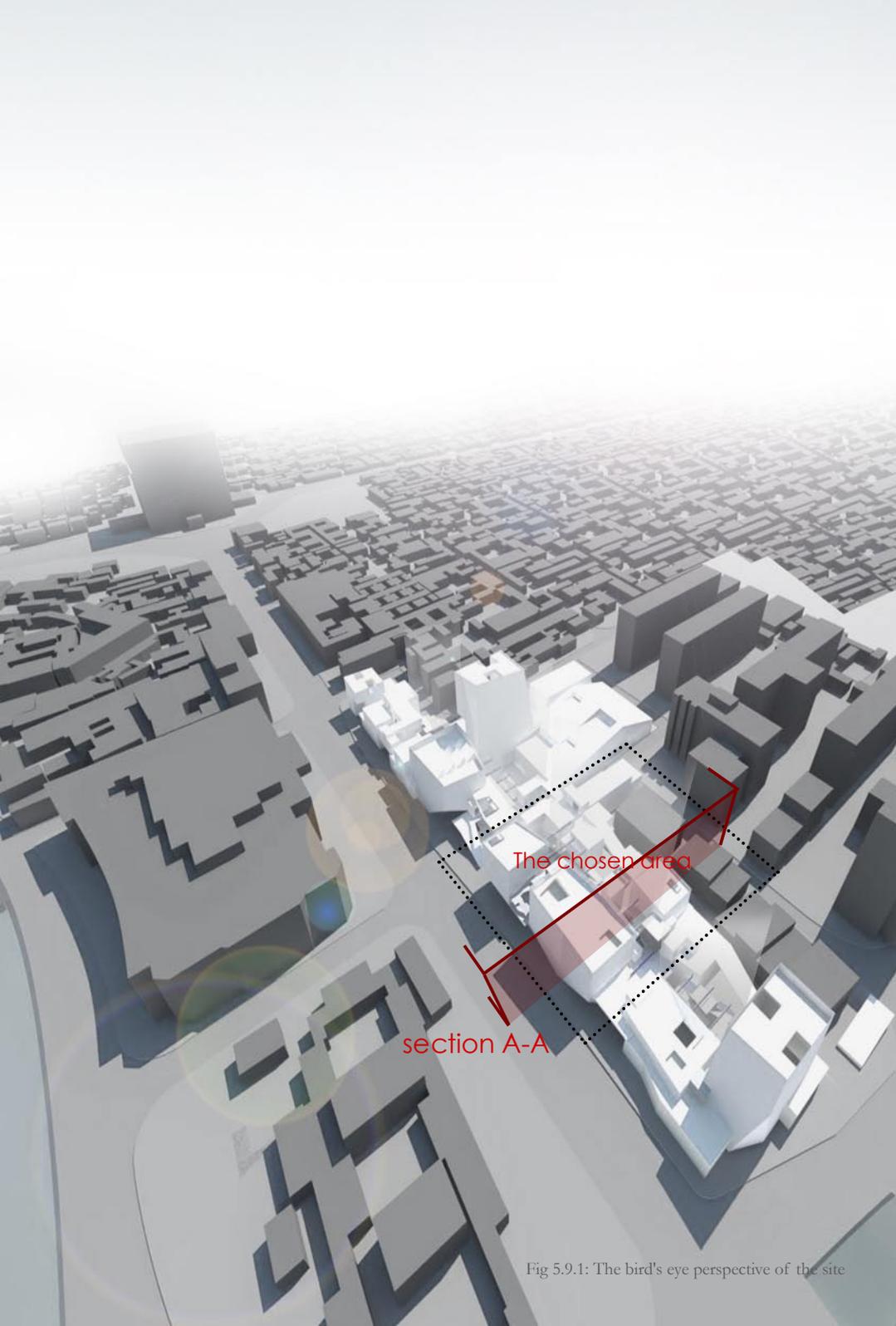


Fig 5.9.1: The bird's eye perspective of the site

5.9 Exploration 9 –Developed Design

Following the previous functional and the circulation studies, the general plan of the school and the spatial relationships between each functional cluster is clear. One representative example on the south side of the site shows the design development in detail (fig 5.9.1). Other parts of the building share a similar developmental logic, as will be revealed in the final presentation.

For this part, three different performing studio groups, an administration department, the research and exhibition space, a lecture room, a public therapy centre, a bookshop, several service rooms and a teahouse were arranged by a rehearsal space in the semi-public layer (fig 5.9.2).

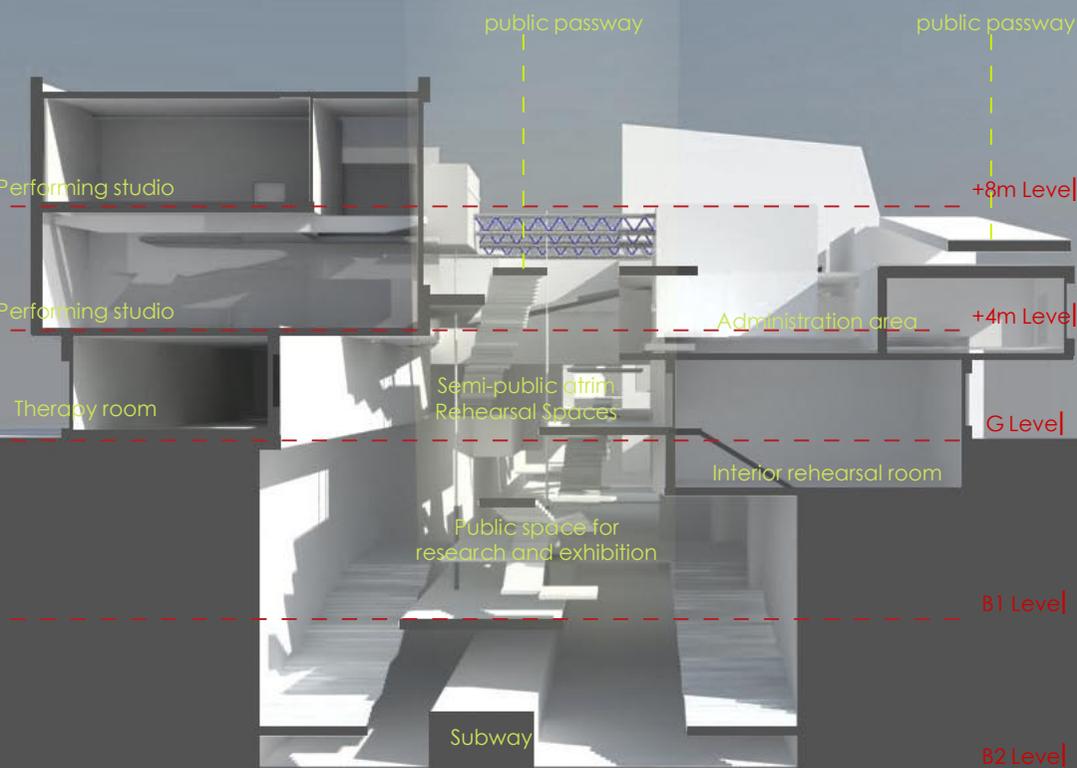


Fig 5.9.2: Section A-A

B2 Level: Subway Access

Because the main function of this level is accessing the subway keeping this level efficient and easy to navigate is very important. Minimal programmed spaces include some basement bars, retail and small performing stages along the side of the subway station to enrich the subway journey. The upper floor, which hangs above, provides a visual link with the communal space of the school?

B1 Level: Subway Exchange

The descent down to the subway exchange level is designed as an extension of the street life above. It is also a key anchor point between the school realm and the subway realm. Public access areas on this level contain places to sit, shop, dine and interact with performers. The characteristics taken from *hutong* are therefore more obvious compared with the subway access level.

The circulation from Ground Level to the B1 Level for subway passengers is separate from that for the school students and passengers who would like to spend time in the area and wander around. Four formal entrance tunnels are linked with this level, which maximises efficiency. Between the ground floor and B1 level, many informal entrances and passageways providing performance and research spaces for the school and connect with the public circulation of the Peking Opera School. These laneways and platforms allow the school to penetrate the subway station and provide the vertical transportation. The service rooms such as ticket offices and staff rooms are set in the end of B1 Level.

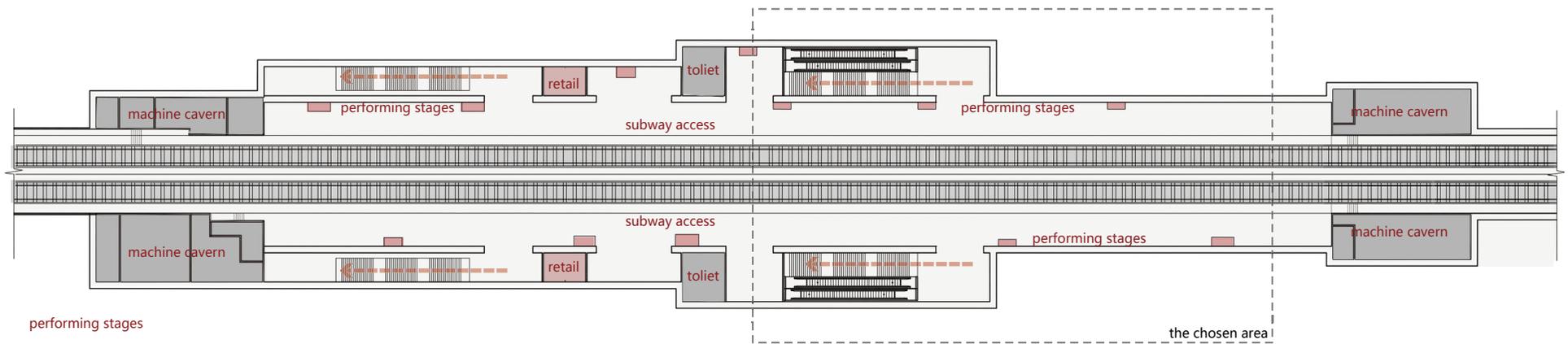


Fig 5.9.3: The B2 plan

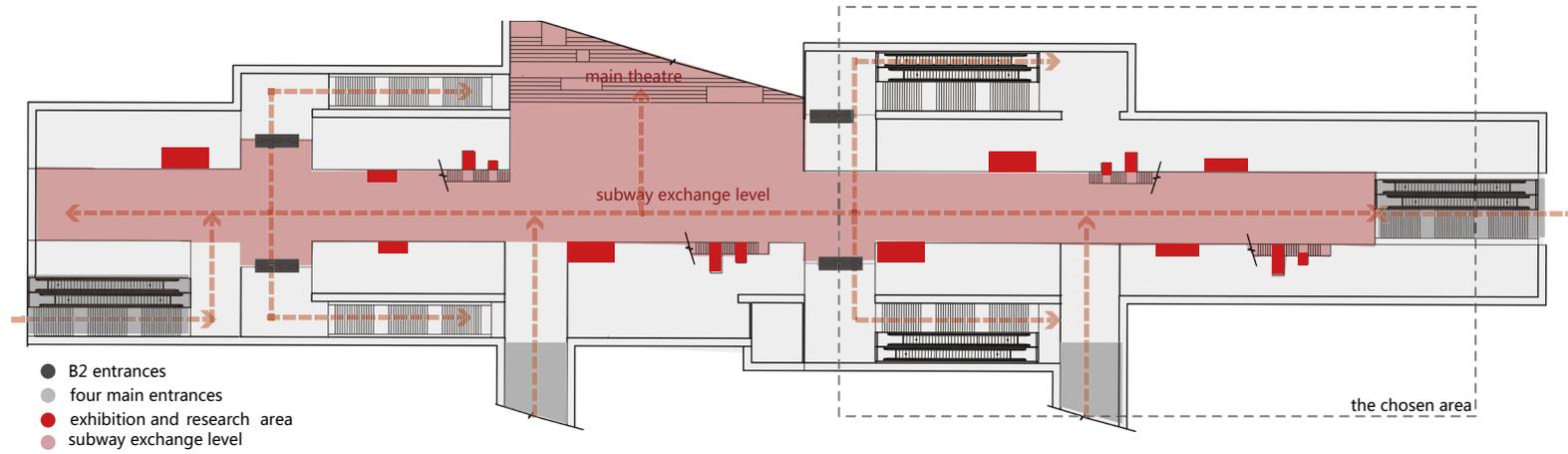


Fig 5.9.4: The B1 plan

Ground Floor

There are some public facilities on the ground floor, and also some semi-public facilities for the school, but the circulation around and to them is designed so that the public cannot easily enter them and interrupt what is happening. For this part, the ground floor contains a public physiotherapy centre located on the west side of the site, along *Dianmen Dajie*, serving the public and the school. A performing studio group for *dan* and a lecture theatre for all departments are on the east side of the site. All of these are organized by the rehearsal studio, which belongs to a semi-public space. Circulation in this area is designed to help control movement in order to avoid interruptions from the public. For example, the rehearsal atrium acts as a transitional pathway, which links with the lecture and the studio groups are on the 3m level above the ground floor.



Fig 5.9.5: The ground floor plan of the chosen area

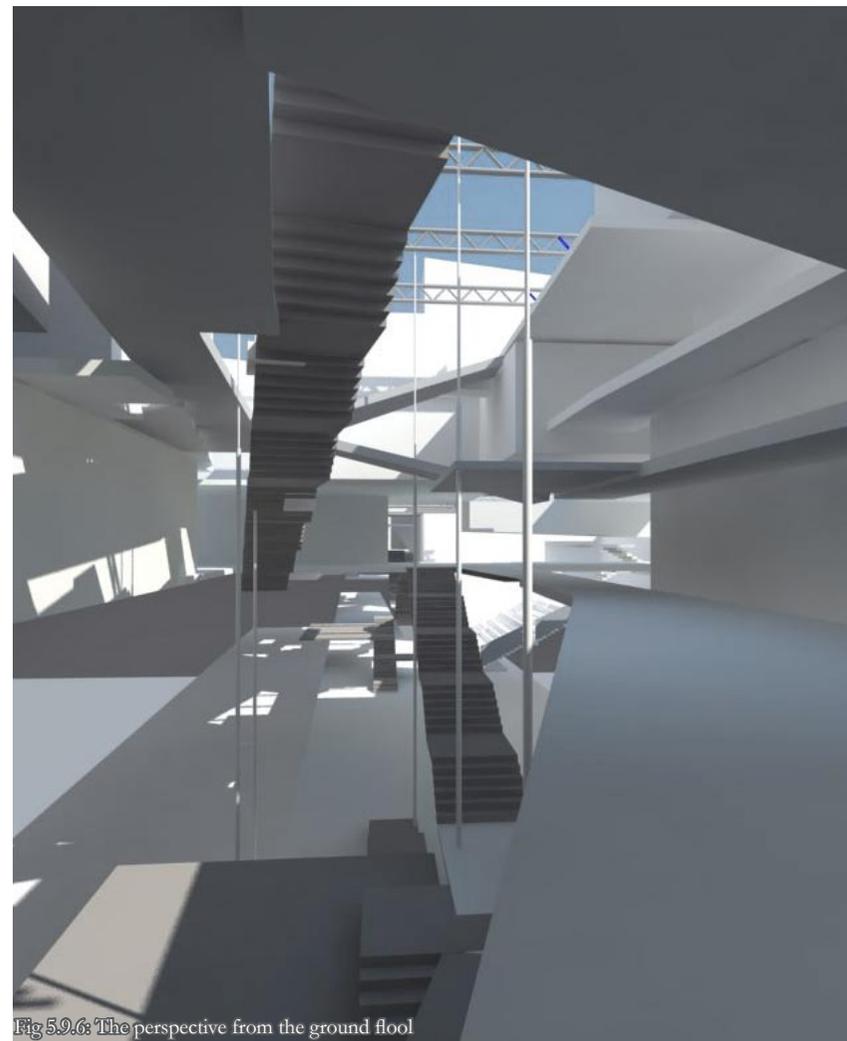


Fig 5.9.6: The perspective from the ground floor

First and Second Floors:

The two higher floors are all dedicated to studio and office use. One studio group belongs to *sheng* and *jing*, the other belongs to *chou* and secondary performers. All of them are arranged in relation to the rehearsal atrium in the same way as the ground floor. In this way, the vertical and horizontal circulation provided by the atrium are crisscrossing each other, providing a continuous journey which travels up and down through various spaces. Each studio group occupies several floors of a certain area, instead of being assigned to a single floor. This makes it easier for different groups of students to mingle. In addition, a pathway in public layer runs through the atrium, in order to connect the public with other parts of the school. The general width of the public circulation layer is wider than semi-public circulations, so that it is easy to read and navigate by pedestrians. Walking through this space creates an experience of integration with the school realm, and the visibility of student activities would add liveliness to the public experience.



Fig 5.9.7: Level +4m Plan of the chosen part

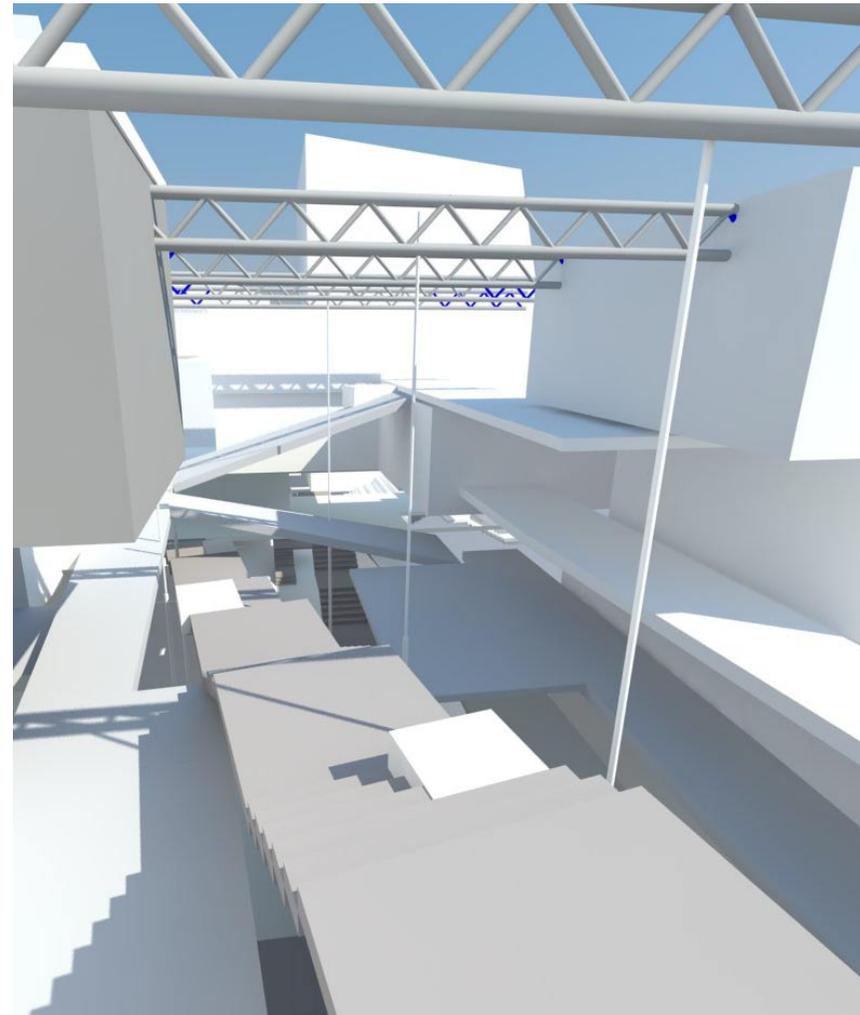


Fig 5.9.8: The perspective on level +6m

Summary

This exploration shows the dynamic contours of the building form. In general, all of the spaces in different social layers could be properly affected and organized by the techniques of *butong*. The decentralized functional arrangement creates pedestrian flows and gives people more opportunities to meet each other. The linear nature increases the sense of movement within the different spaces (research and exhibition space, rehearsal atrium space, the subway station space etc.) Many turning corners, different routes and scales enrich the entire journey, much as they do in the *butong*. Different spatial layers have their own unique characteristics to fulfil different requirements of function and create a unique identity for the building for school occupants and visitors.

6.0 Conclusion

6.1 The potential of *hutong*:

Hutongs can often be difficult to read, but these timeless spaces can be described as complex systems of architectural, social and cultural layers. This project attempts to adapt *hutongism* into a contemporary context—as perhaps an ideal prototype for the Peking Opera School, which is a possibility under consideration though there are many others possibilities for this kind of scheme yet to be explored. In general, for this project, it has been used as an anchor for a combination of sites in Beijing’s ancient city to include Peking Opera education and engage in a mutually beneficial dialogue between the two through a combination of three important aspects.

Through its design, the project brings the process of Peking Opera education into the public eye, in order to promote inheriting this intangible cultural heritage of Beijing and to catalyze this traditional opera into a modern update. The decentralized functional arrangement of the new school becomes the trigger to generate penetrative flow, while the strategy of *hutongism* drives circulation spaces to hybridize with the social, educational, research, and relaxation spaces, creating an organic and efficient system. All of these take advantage of the *hutong*’s unique physical characteristics, especially the concave-convex space in it. In this way, *hutongism* is a concept that privileges different activities simultaneously, one that originates from a different time and way of communicating that is not driven entirely by functional requirements, which is different with modernism’s design methodologies.

In addition, the nature of dealing with the relationship between privacy and the public realm of the *hutong* could be an ideal design strategy for the school’s social and safety problems. Taking advantage of that, this project provides four communal social layers for school occupants and visitors, in order

to provide proper social environments. Instead of blocking the way between two spaces with different levels of privacy, *hutongism* provides a continuous journey that is yet full of suggestive movement to define the different space layers. The pedestrian would slowly have revealed to them the complexity, abundance and ambiguous spaces of the new design.

Alternatively, *hutongism* at the Peking Opera School greatly respects the existing site and context. For one thing, it has the advantage of an underground subway station, and extends this into this educational facility. For another thing, it uses the *hutongism* strategies, which transform this building complex as a part of the DNA of Beijing ancient city, so the building volume is broken down into smaller pieces, while the many *hutong*-style pathways cutting through the building reconnect the disrupted circulation of the city and also revive street life.

6.2 Critical Regionalism in Beijing’s ancient city

Critical Regionalism emphasizes the importance of “placeness” by considering contextual elements such as scenery, historical references and light, without falling into imitation and traditionalism.¹ This project provides a possible answer to this trend. It follows the evolving logic of the Beijing ancient city to create a continuous three-dimensional *hutong* system that reconnects historical context to the run down area of Beijing’s ancient city, while maintaining the high land need of modern society. From a long-term perspective, *hutongism* will not only benefit the Beijing ancient city socially, but also in terms of the economic and environmental aspects. This project is a useful beginning for using local ways to solve local problems, and mitigates the strong global presence of contemporary architecture.

41 Botz-Bornstein Thorsten, "WANG Shu and the Possibilities of Architectural Regionalism in China", *Nordic Journal of Architectural Research*, 21, No 1 (2009): 5.



Fig 6.0.1: The importance statue of *hutong* in Beijingers' daily life
Two people are playing chess in the ruined hutong area with some nature of hutong
Reproduced from: <http://paulwong.tuchong.com/albums04393808>

7.0 Bibliography

Books

Alexander, Christopher. *A Pattern Language*. New York: Oxford University Press, 1977.

Ching, Francis D. K. *Architecture: Form, Space, and Order*. Hoboken : John Wiley & Sons, Inc., 2007.

Goldstein, Joshua. *Drama Kings: Players and Publics in the Re-creation of Peking Opera*. Berkeley. CA: University of California Press, 2007.

Greco, Claudio and Carlo Santoro. *Beijing: the New City*. Milan, Italy: Skira, 2008.

Jacobs, Jane. *The Death and Life of Great American Cities*. Harmondsworth: Penguin, 1964.

Zhu, Jianfei. *Chinese Spatial Strategies: Imperial Beijing, 1420-1911* London: Routledge, 2012.

Li, Yuehong. *Study on Typology of Beijing Hutong Siheyuan*. Beijing : China Architecture and Industry Press, 2009.

Orsini, Margherita. *Dashilar Hutong*. Milan: Politecnico di Milano, 2014.

Rizzardi, Pier Alessio. *The Condition of the Chinese Architecture: Elaboration of a critical approach*. Beijing: China Architectural and Industry Press, 2014.

The present and Future of Architectural Design in Contemporary China Research Group. *The present and Future of Architectural Design in Contemporary China*. Nanjing: Southeast University Press, 2014.

Journals

Wichmann, Elizabeth. "Tradition and Innovation in Contemporary Beijing Opera Performance." *TDR*, 34, no. 1 (1990): 146.

Thorsten, Botz-Bornstein, WANG Shu and the Possibilities of Architectural Regionalism in China, *Nordic Journal of Architectural Research*, 21, No 1 (2009): 5.

Websites

Arc Space. "Laban Dance Center." accessed December 19, 2013. <http://www.arcspace.com/features/herzog--de-meuron/labandance-centre/>.

ArchDaily. "Logan Center for the Arts, University of Chicago / Tod Williams Billie Tsien Architects." Last updated Nov 22, 2012. <http://www.archdaily.com/296212/logan-center-for-the-arts-university-of-chicago-tod-williams-billie-tsien-associates/>.

Archdaily. "Manchester School of Art / Feilden Clegg Bradley Studios." Archdaily, last updated December 16, 2013. <http://www.archdaily.com/458040/manchester-school-of-art-feilden-clegg-bradley-studios/>.

Archdaily. "Music School Concept 'Taller de Musics' / Dom Arquitectura." last updated September 12, 2012. <http://www.archdaily.com/270376/music-school-project-concept-taller-de-musics-dom-arquitectura/>

Archdaily. "Sanlitun South / LOT-EK Architecture & Design." last modified January 14, 2013. <http://www.archdaily.com/318090/sanlitun-south-lot-ek-architecture-design/>.

Bao A. "Dashila." accessed September 6, 2014. <http://www.bao-a.com/dashila.html>.

Chen, Naibin. "Protection of the State." accessed September 10, 2014. http://www.gucn.com/Service_CurioAuction_Show.asp?Id=2428818

Conley, Allison. "Perceived Fragmentation." last updated Spring 2013. http://issuu.com/allisonconley/docs/dt_conley_042413_issuu_h2.

"Dashilar." accessed September 10, 2014. <http://app.cnmo.com/iphone/153834/>

Fischer Dachs Associates. "Opsis Designs Reed College Performing Arts Building." last updated June 11, 2011. http://fda-online.com/news_detail.php?id=77694.

Goggin, Rob. "Beijing." accessed June 9, 2015. <https://www.pinterest.com/>

pin/302656037431722350/

"Huguang Guild Hall Opera House." accessed September 11, 2014. <http://www.huguangguildhall.com/introduction.html>.

Instanthutong. "The Patterns of the Urban Fabric of Beijing's Hutong." last modified December 1, 2010. <http://www.bricoleurbanism.org/>

"Kaogongji." accessed September 10, 2014. <http://amuseum.cdstm.cn/AMuseum/jianzhu/content/chunquizhanguo/text/kaogongji.html>

Levitt, Tom. "Chinese Cities Feel Loss of Street Life and Community." *Reimagining China's Cities: Towards a Sustainable Urbanisation*. Accessed 2014. http://issuu.com/chinadialogue/docs/reimagining_chinas_cities_journal.

Liu, shahe. "The meaning of Jing." last modified April 20, 2004. http://news.xinhuanet.com/book/2004-04/20/content_1430145.htm

Luo, Yafeng. "No.40 Dabaishun hutong." accessed April 10, 2014. <http://news.artxun.com/luoyafeng-1629-8141515.shtml>

Morley, Alexander. "*The Informal Formal*." accessed 2014. http://issuu.com/adavinmorley/docs/final_final_draft_pgs

New York Times. "For First Time, Architect in China Wins Top Prize." Last Updated February 27 2012. http://www.nytimes.com/2012/02/28/arts/design/pritzker-prize-awarded-to-wang-shu-chinese-architect.html?_r=0.

News Plus. "A Tour Through the Hutongs of Beijing." accessed September 1, 2014. <http://english.cri.cn/7146/2013/12/05/2921s801839.htm>.

Opsi Arch. "Performing Arts Building REED COLLEGE." accessed September 9, 2014. <http://www.opsisarch.com/blog/project/reed-college-performing-arts-building/#>.

Scofidio, Diller & Renfro. "School of American Ballet." accessed September 10, 2014. <http://www.dsny.com/#/projects/school-of-american-ballet>.

Taikoo Li Sanlitun. "Architecture and Design." accessed September 4, 2014. http://www.taikoolisanlitun.com/eng/about_the_village/Pages/index.aspx

Tours China. "Beijing Hutong&Siheyuan." accessed September 1, 2014. <http://www.tourchina.com/travel-beijing/hutong-siheyuan.htm>

Travel China Guide. "Beijing Bell and Drum Towers." accessed September 1, 2014. <http://www.travelchinaguide.com/attraction/beijing/bell.htm>

Unesco. "The Central Axis of Beijing." last modified January 29, 2013. <http://whc.unesco.org/en/tentativelists/5802/>

Wang, Yongchao. "Reappear the disappeared hutongs in Beijing." accessed July 10, 2015. http://blog.sina.com.cn/s/blog_6768a3cc0102v5ry.html

Wikipedia. "Beijing." last modified September 10, 2014. http://en.wikipedia.org/wiki/Beijing#Ming_dynasty

Wikipedia. "Beijing opera." accessed September 9, 2014. http://en.wikipedia.org/wiki/Peking_opera

Wikipedia. "History of Beijing." last modified September 13, 2014. http://en.wikipedia.org/wiki/History_of_Beijing

Wikipedia. "Hutong." last modified August 18, 2014. <http://en.wikipedia.org/wiki/Hutong>

Wikipedia. "Line 8, Beijing Subway." last modified August 14, 2014. http://en.wikipedia.org/wiki/Line_8,_Beijing_Subway

Wikipedia. "Peking Opera." accessed September 9, 2014. http://en.wikipedia.org/wiki/Peking_opera#cite_note-30

Wikipedia, s.v. "Shunt (theatre company)." accessed September 10, 2014. [http://en.wikipedia.org/wiki/Shunt_\(theatre_company\)](http://en.wikipedia.org/wiki/Shunt_(theatre_company))

Zhou, Ruru. "Beijing Opera." accessed April 10, 2014. <http://www.chinahighlights.com/travelguide/beijing-opera/>

8.0 Appendix 1

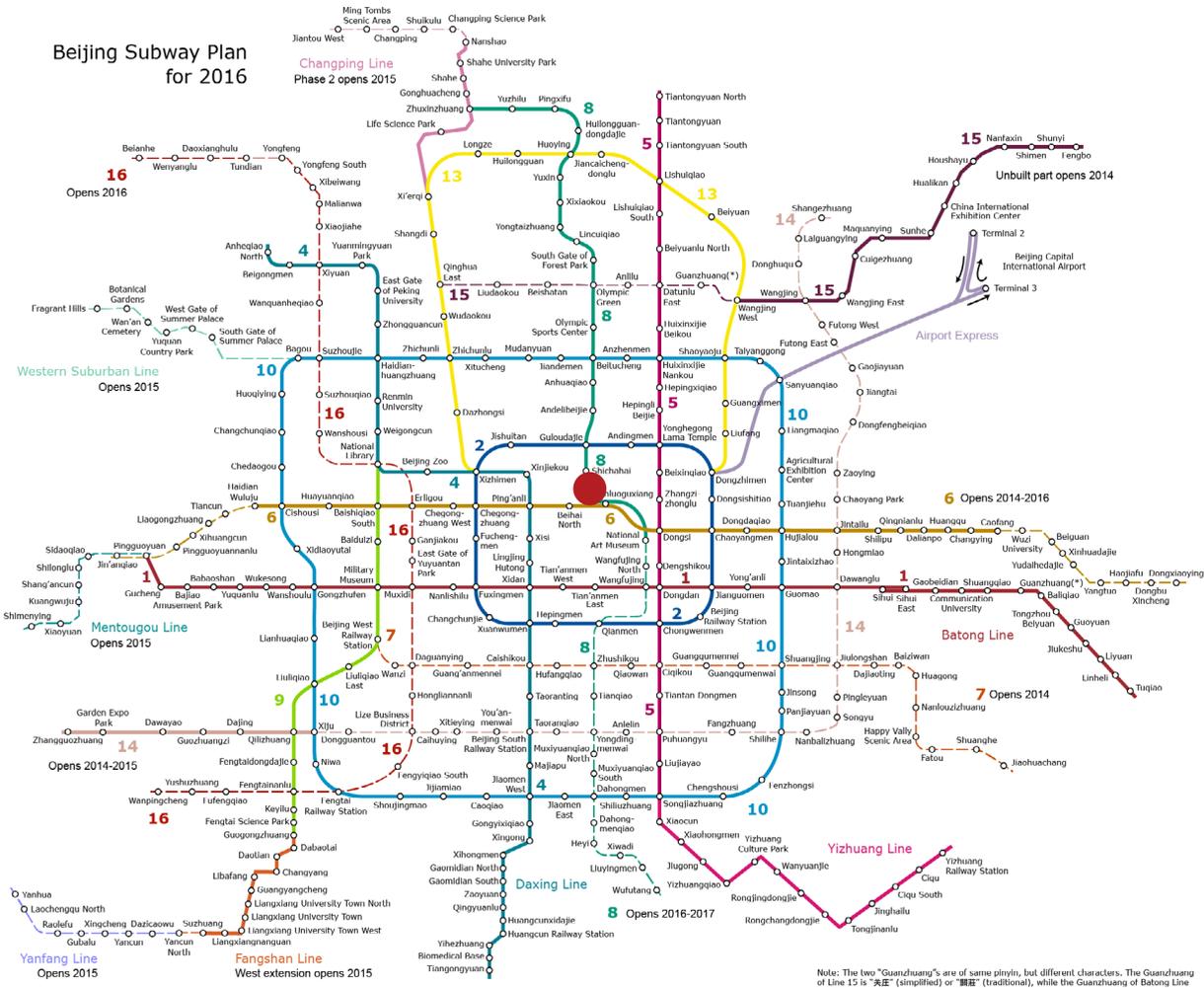
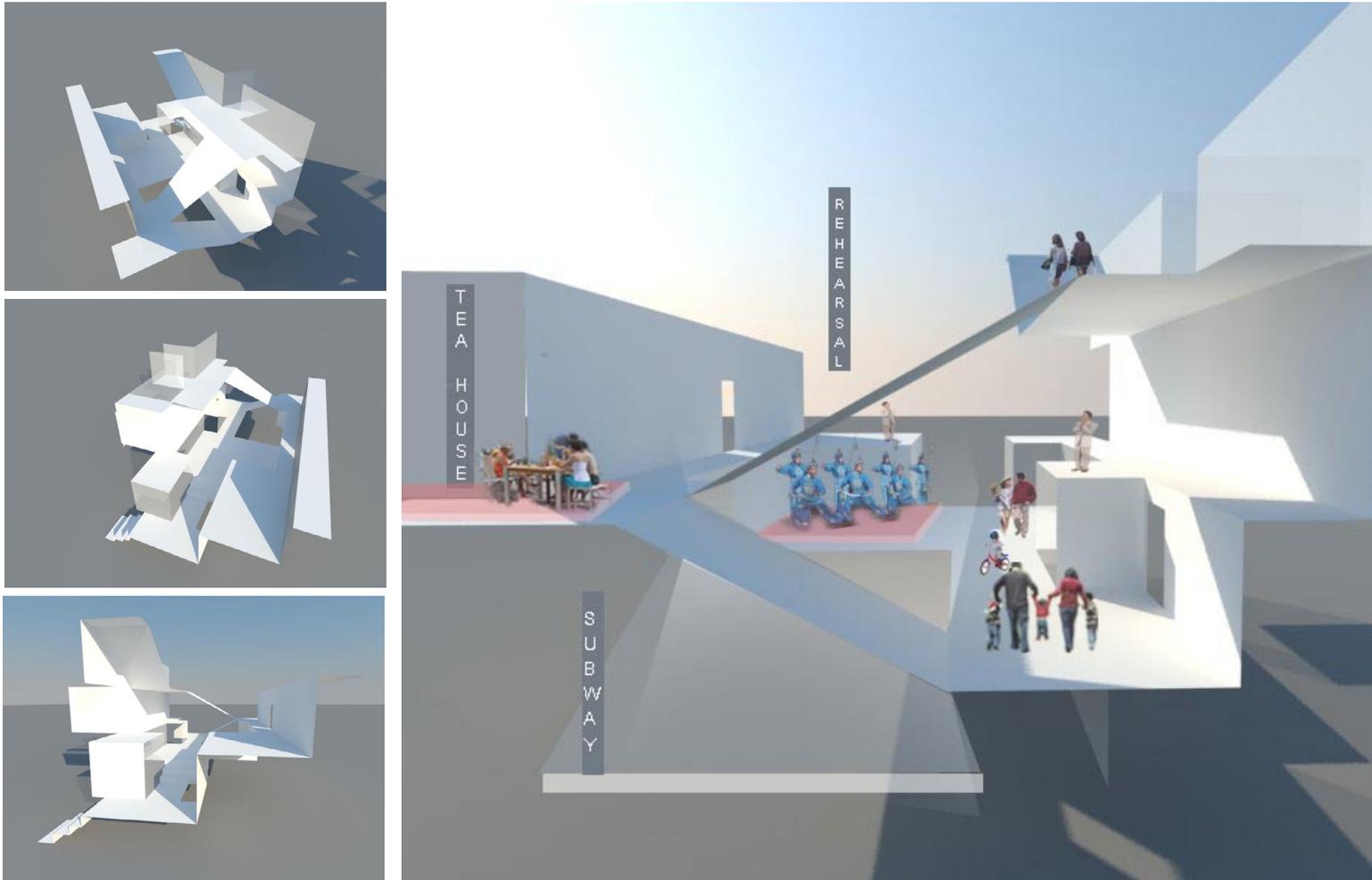


Fig 8.0.1: The map of Beijing Subway system; the chosen site is above the *shichabai* station



Figs 8.0.2-4: The study models



Figs 8.0.5-8: The study models showing how the DNA of *butongism* could be inherited by modern building prototype

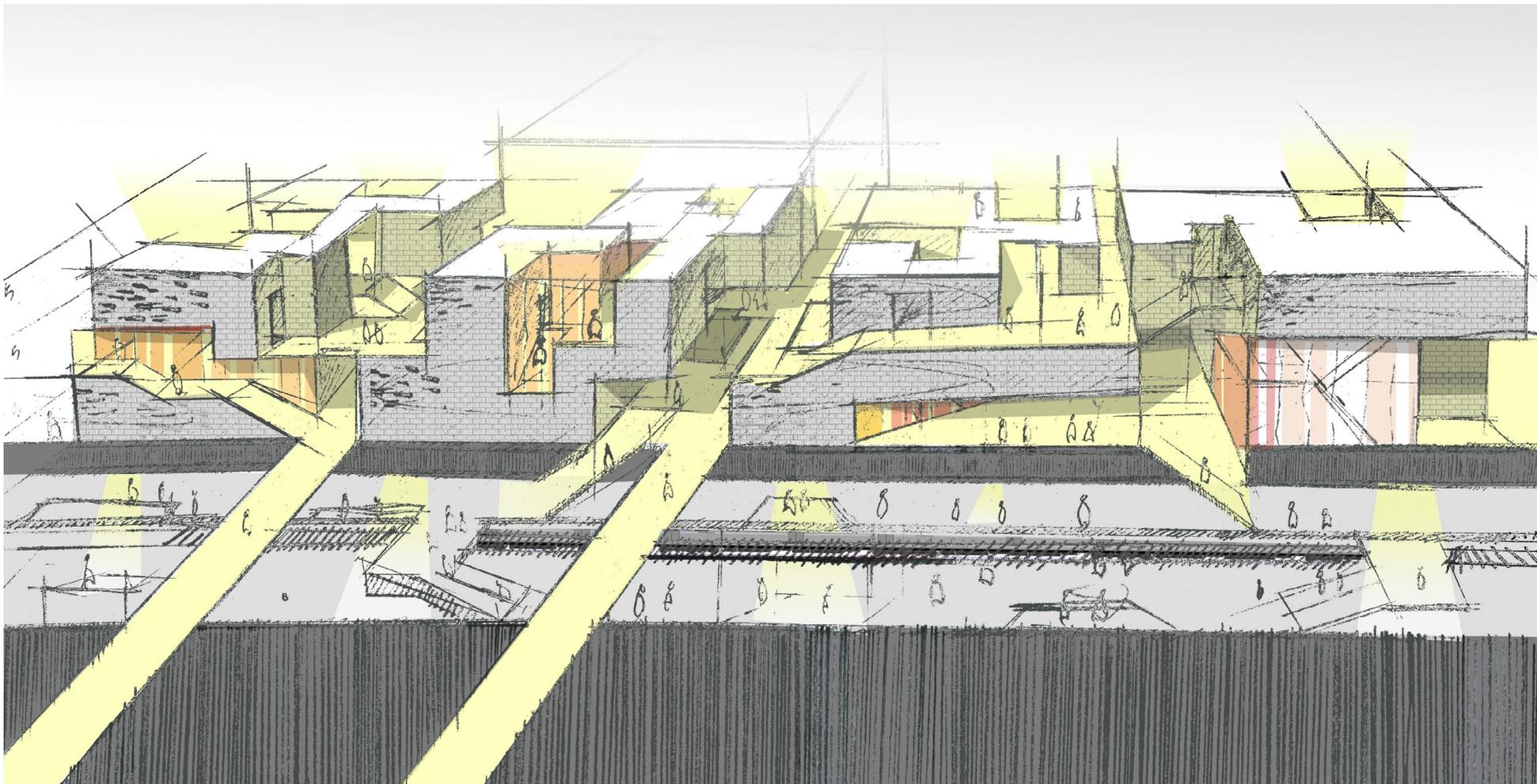
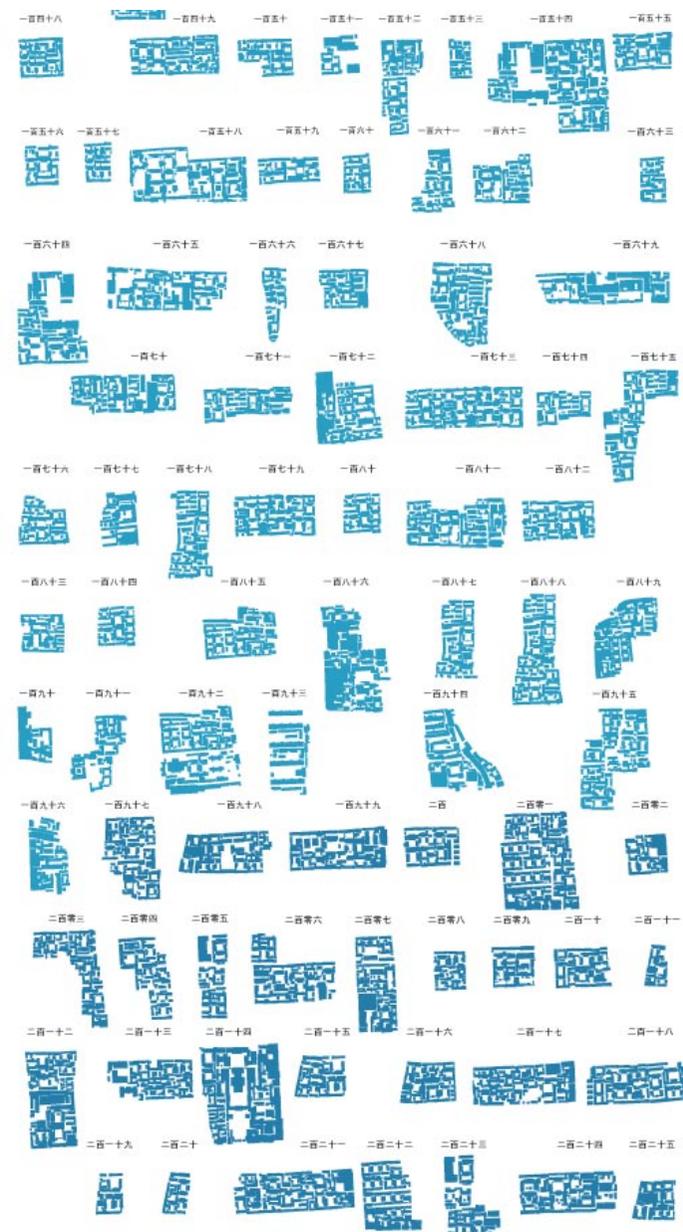
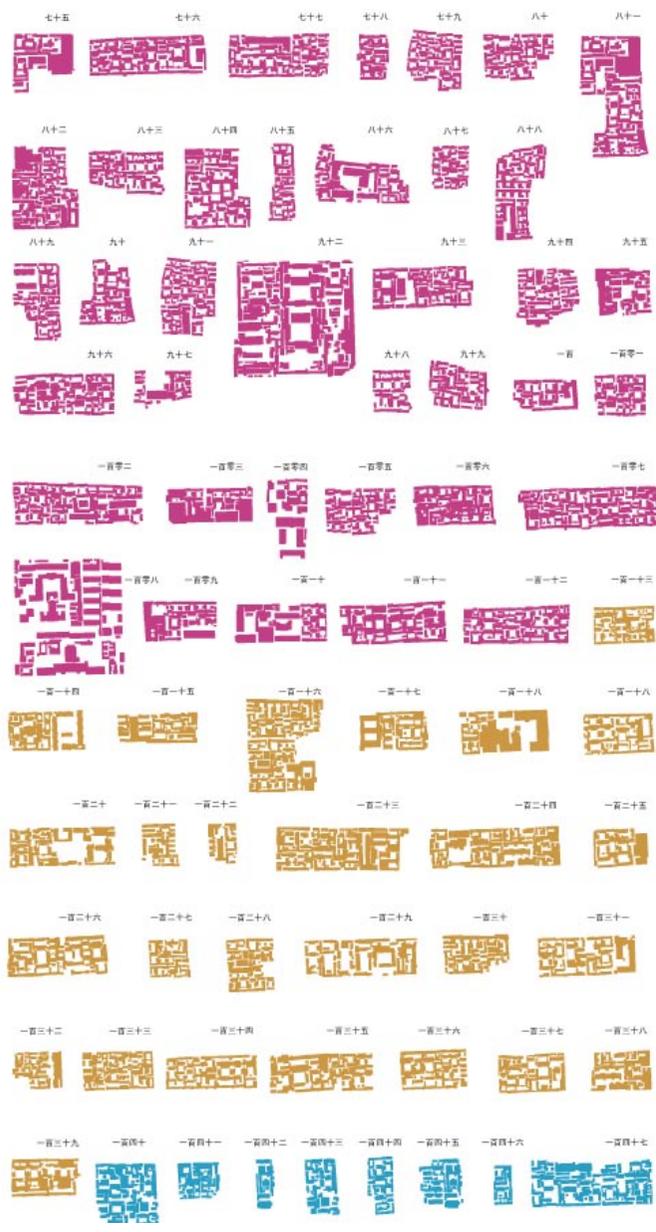
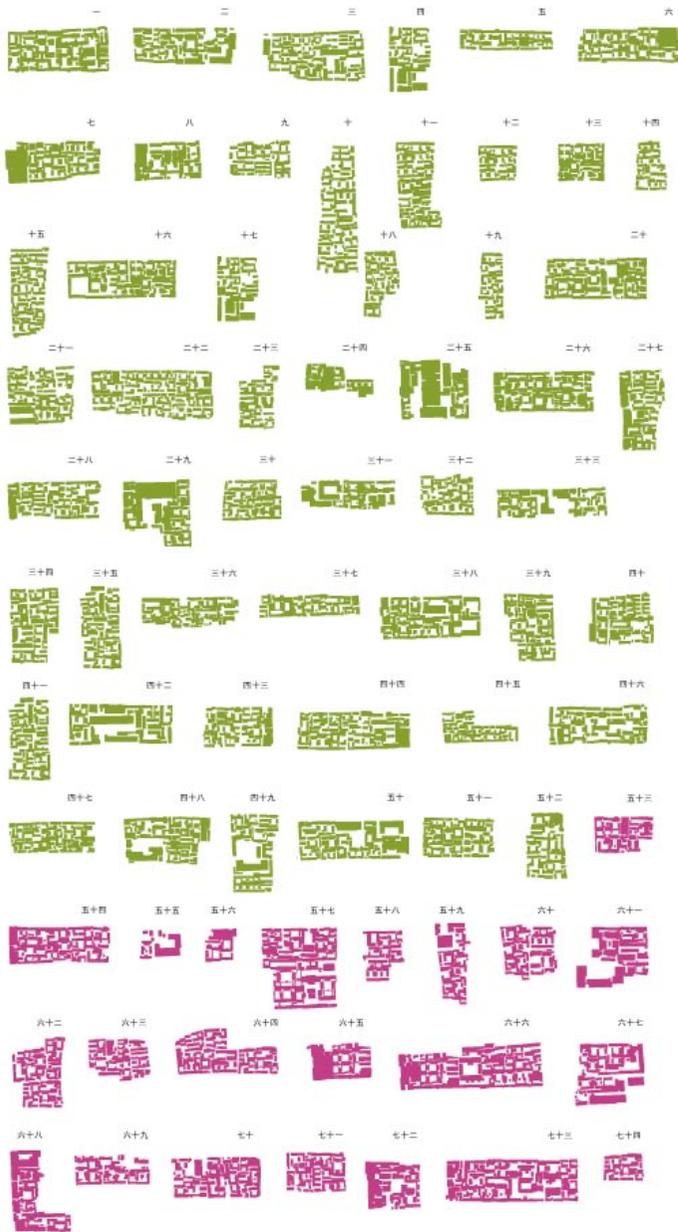


Fig 8.0.9: The early proposal for the project



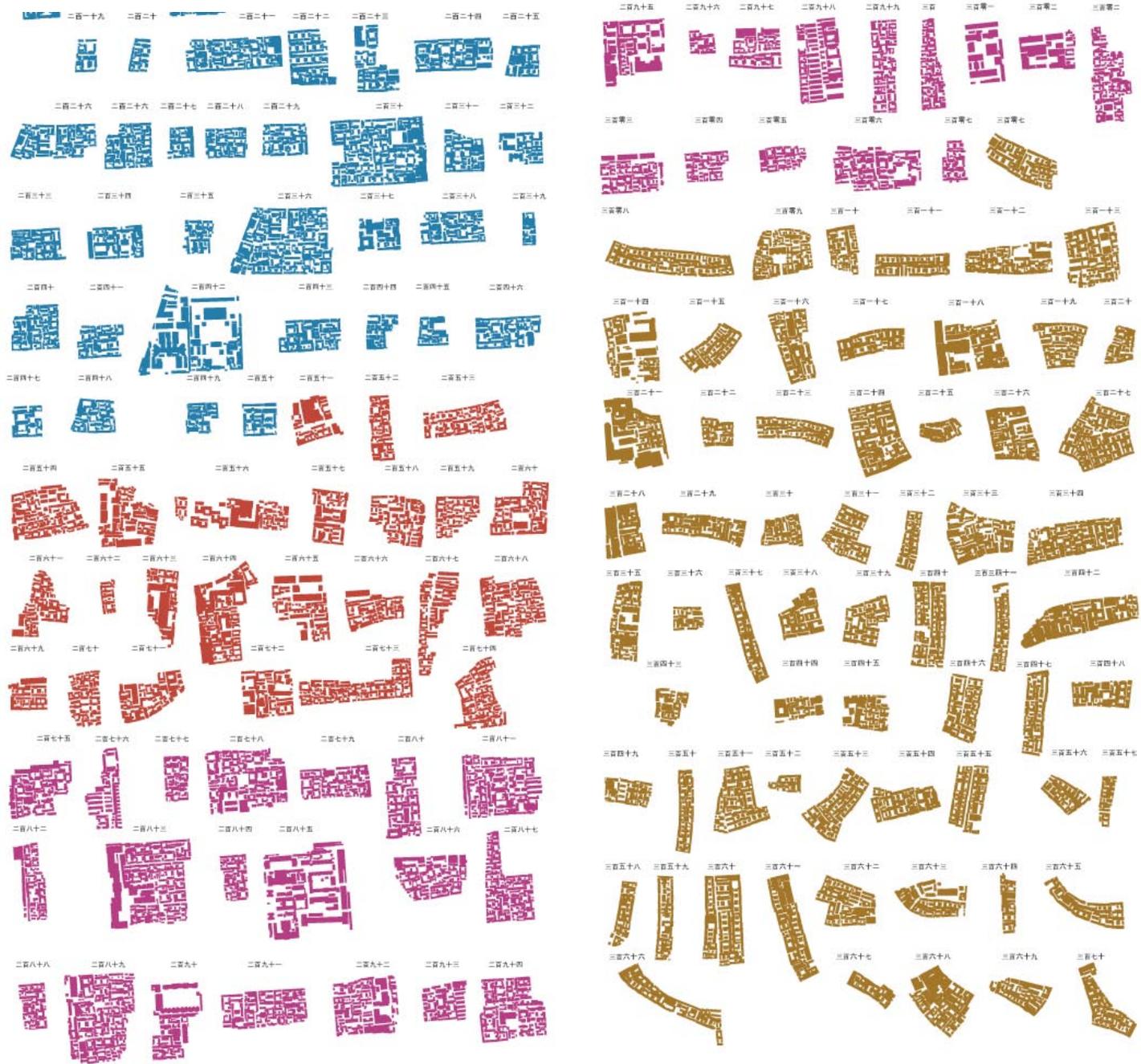


Fig 8.0.10: 370 of the 1500 patterns of the urban fabric of Beijing's hutong from Instant Hutong's Community Catalogue 2007. Part of Instant Hutong's Community Catalogue 2007, a catalog of hutong block patterns laid out as a "series of 1500 communities of courtyard houses cut out and isolated from the map of downtown Beijing".

8.1 Appendix 2



Fig 8.1.1: The project title

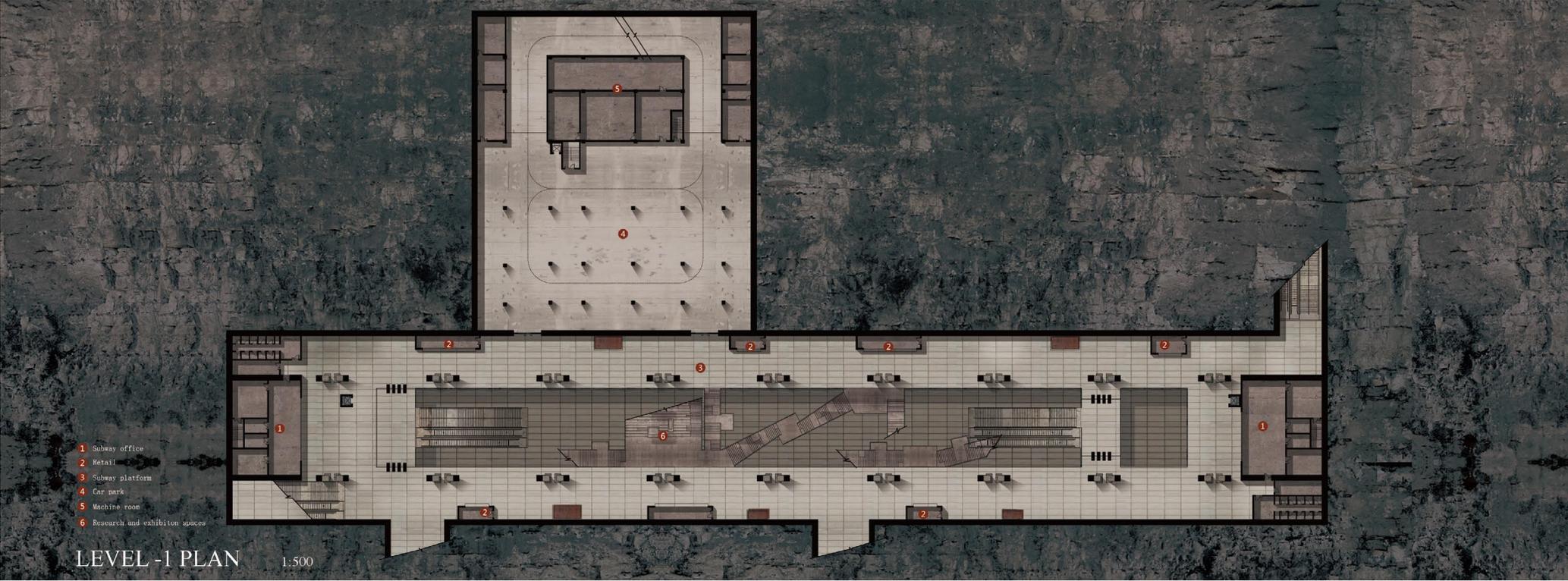
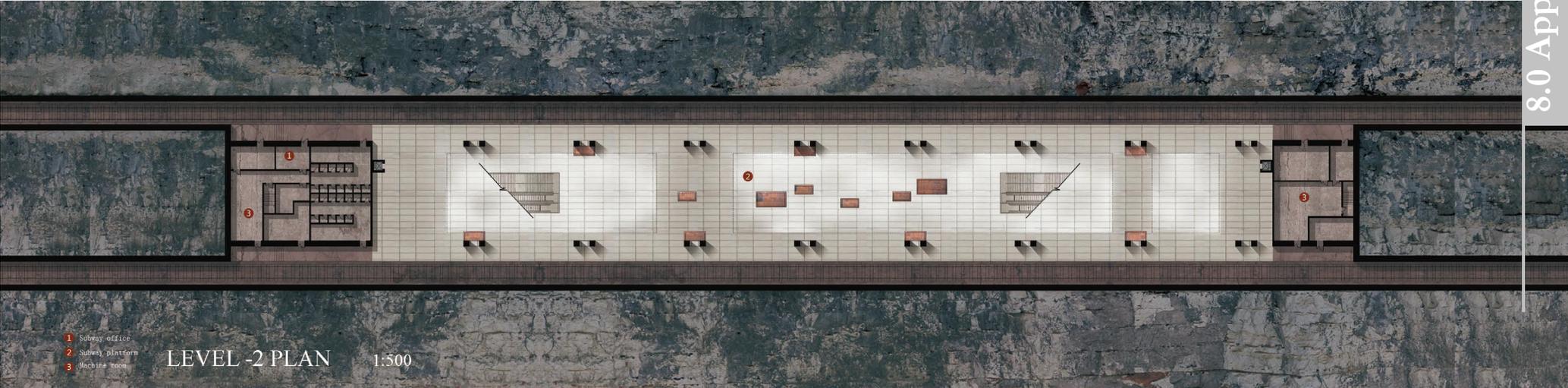


Fig 8.1.2: Level -2 plan

Fig 8.1.3: Level -1 plan



Fig 8.1.4: The ground floor plan



LEVEL 2 FLOOR PLAN

1:500

- 1 Library
- 2 Music Department
- 3 Design Department
- 4 Lecture room
- 5 Retail
- 6 Administration
- 7 Rehearsal Space
- 8 Performing Studio
- 9 Make up room
- 10 Storage
- 11 Student Accommodation
- 12 Commercial

Fig 8.1.5: The level 2 floor plan

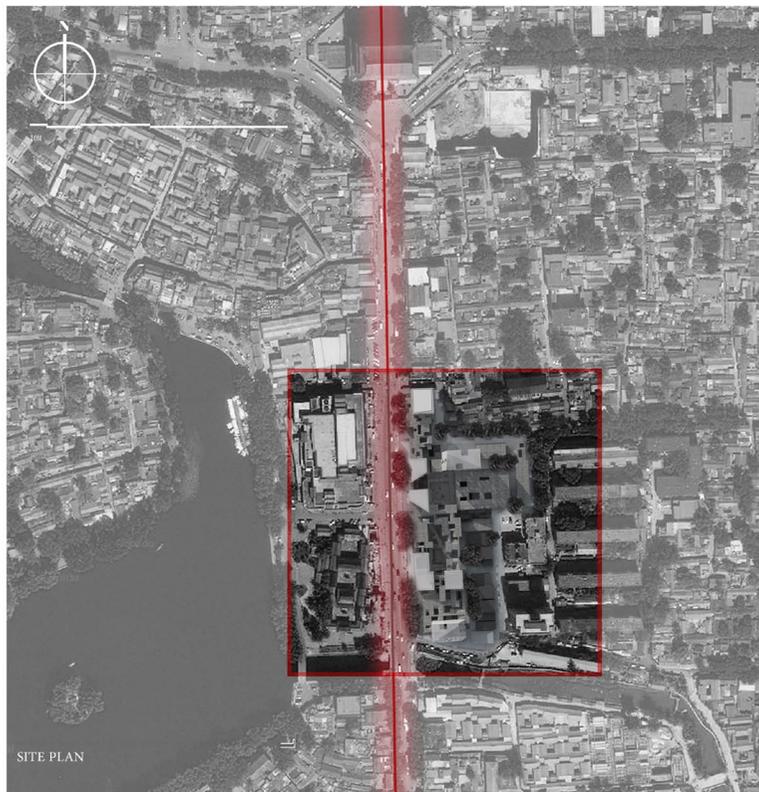
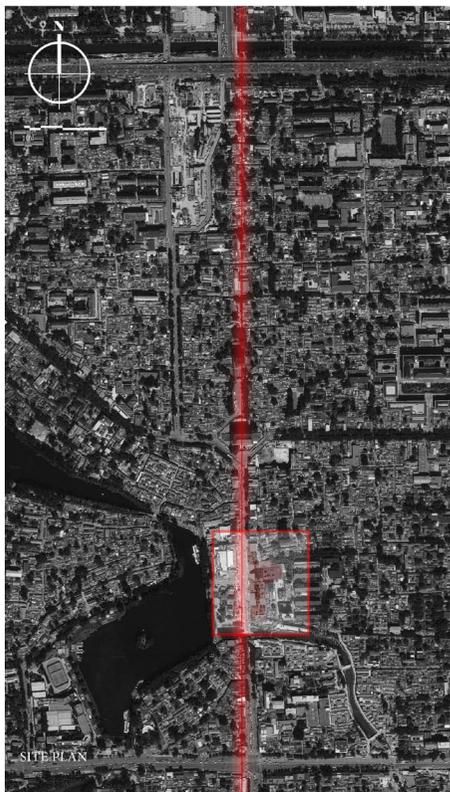
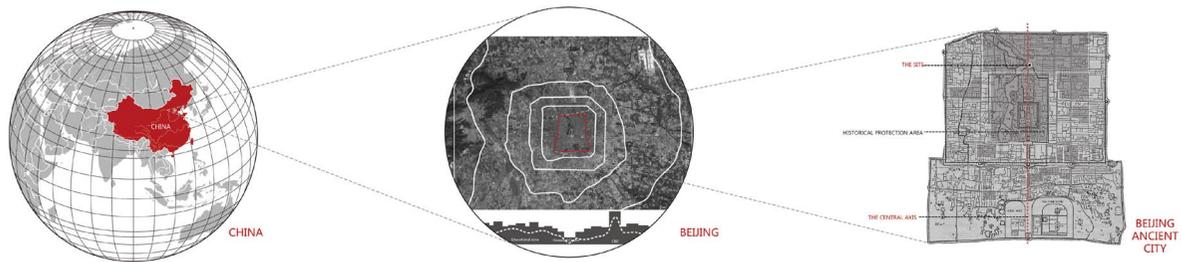
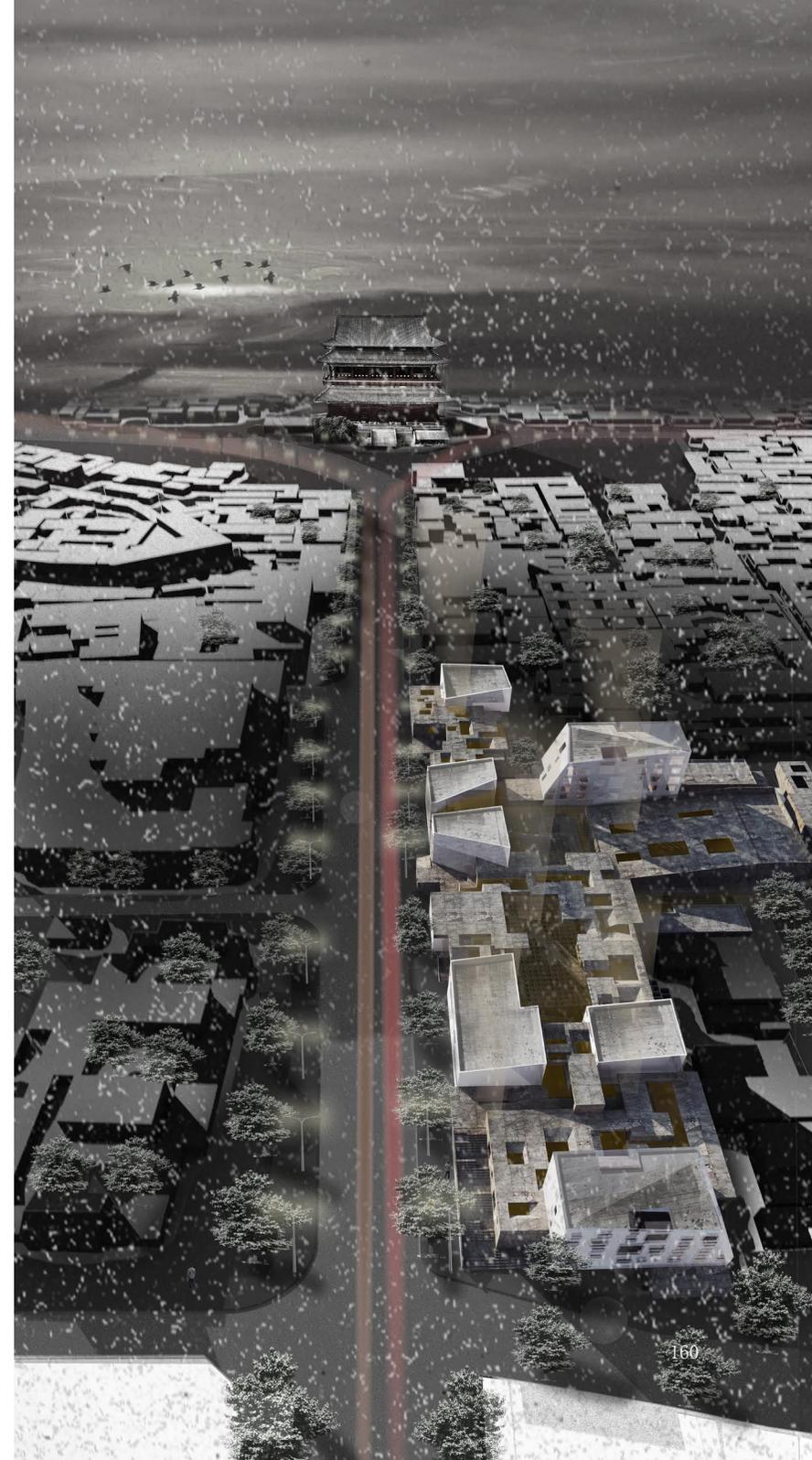


Fig 8.1.6: The location of the project and the site plan
 Fig 8.1.7: The bird's eye perspective of the project



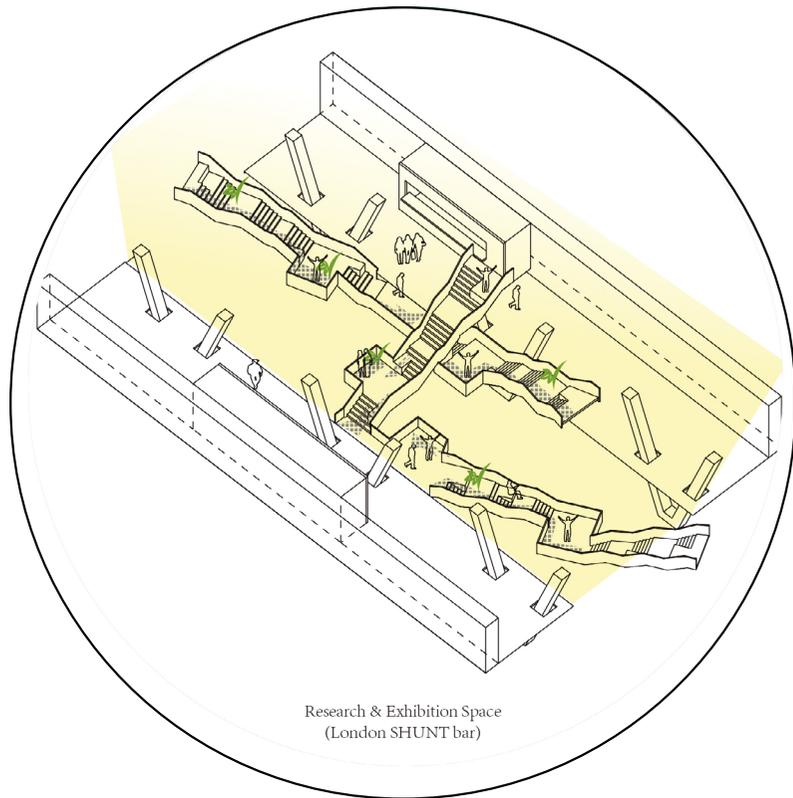


Fig 8.1.8: The diagram of research and exhibition space

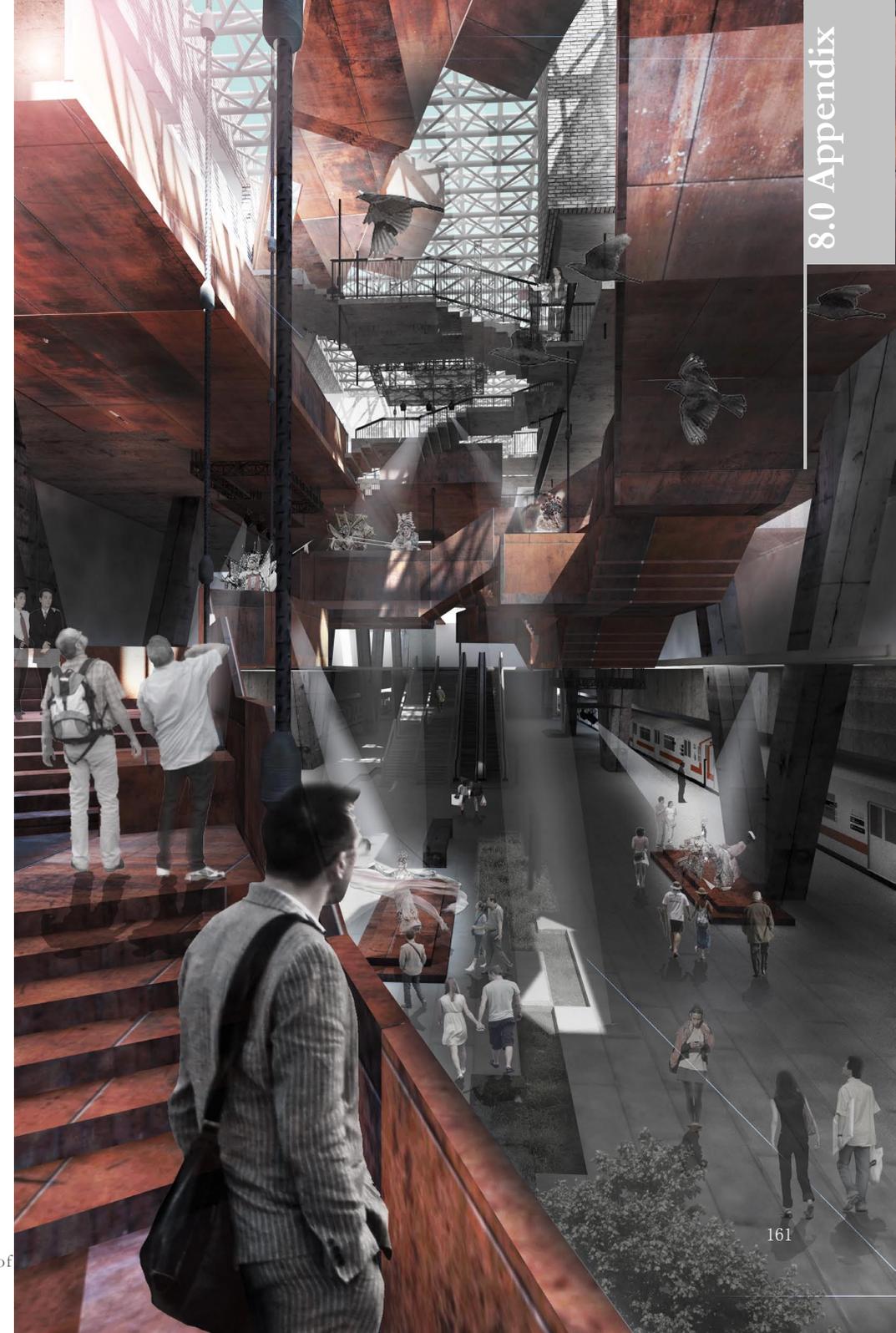


Fig 8.1.9: The perspective of research and exhibition space

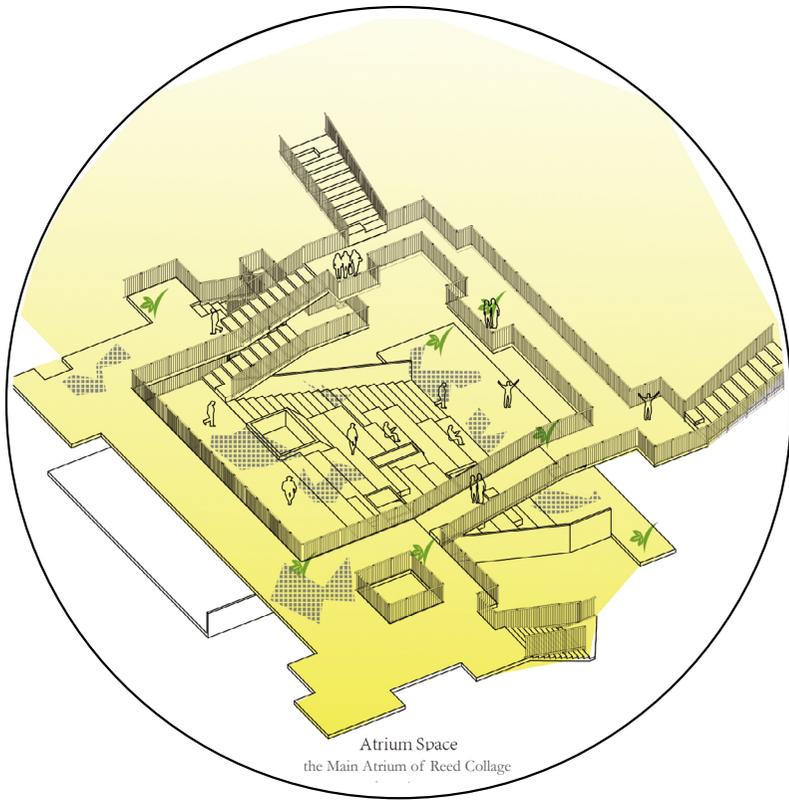


Fig 8.1.10: The diagram of the atrium space

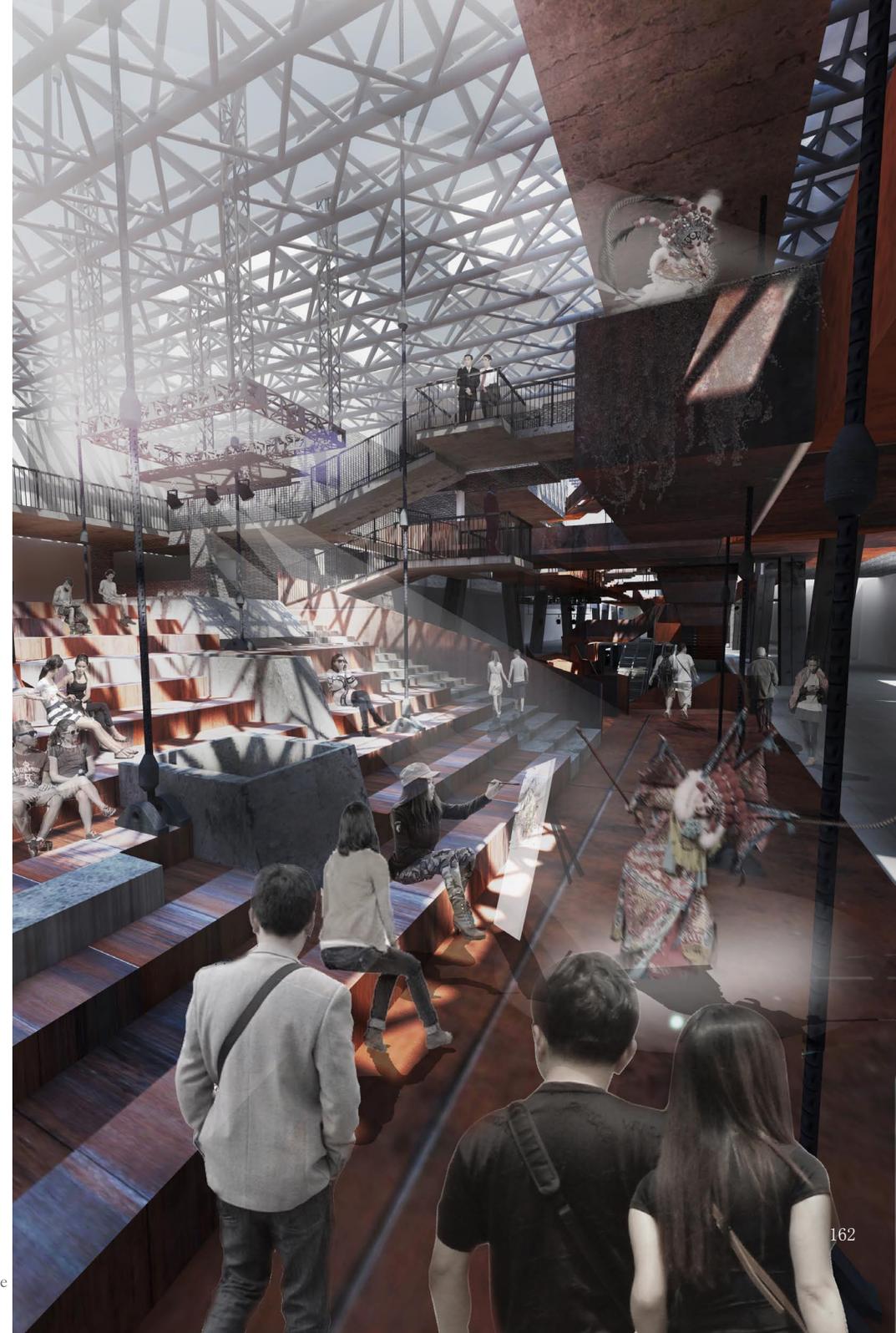


Fig 8.1.11: The perspective of the atrium space

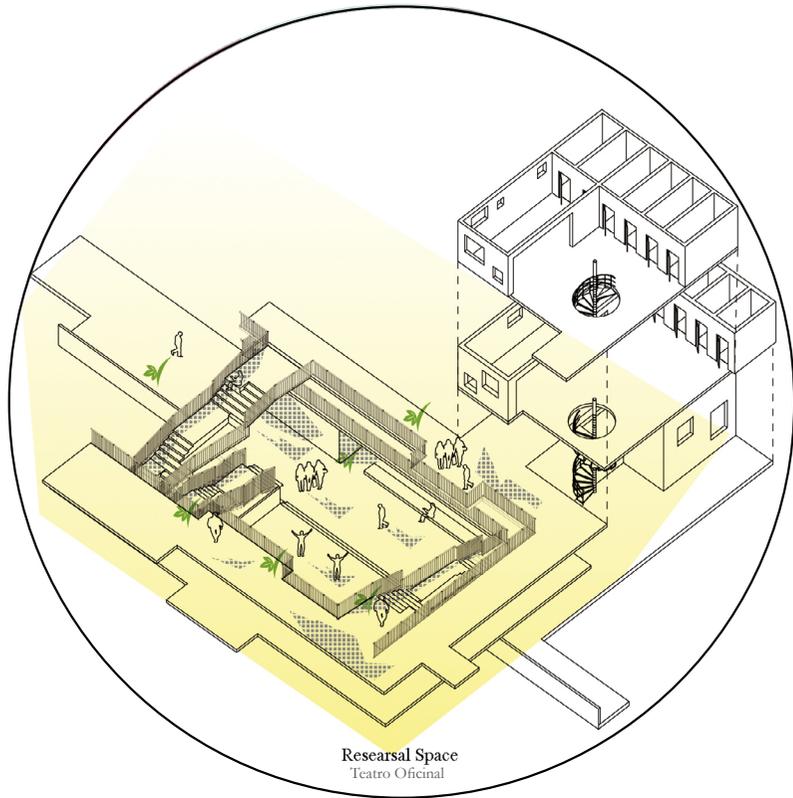


Fig 8.1.12: The diagram of rehearsal space



Fig 8.1.13: The perspective of rehearsal space



Music Department
(Taller De Musics)

Fig 8.1.14: The diagram of the music department



Fig 8.1.15: The perspective of the music department

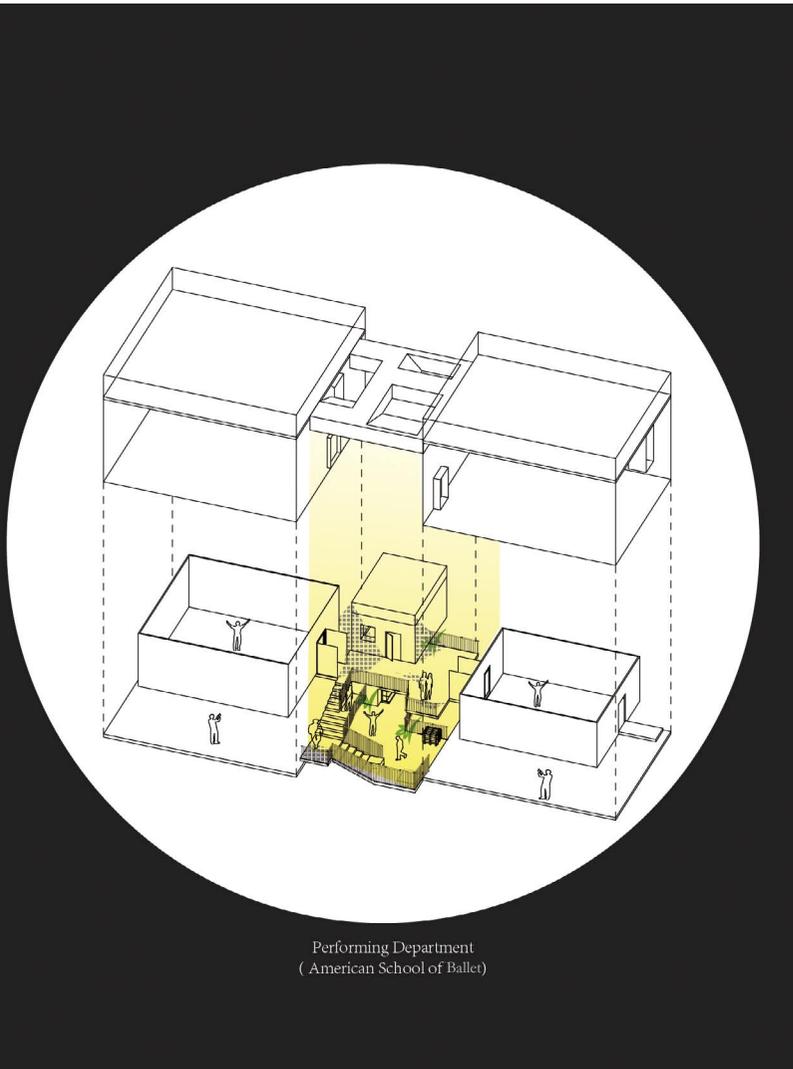
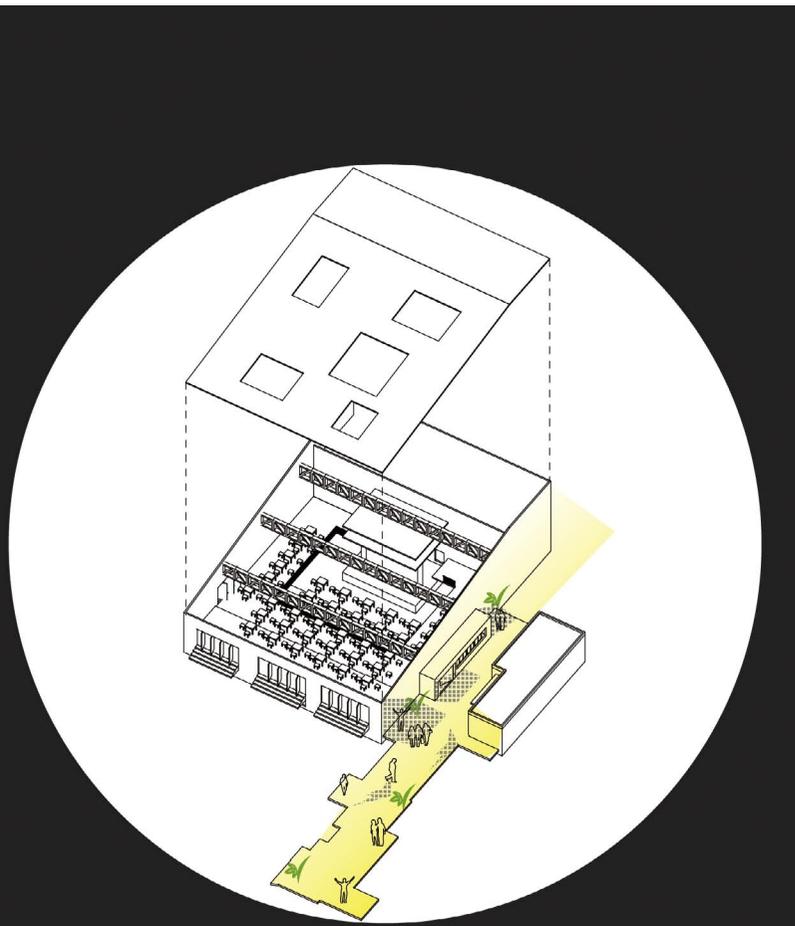


Fig 8.1.16: The diagram of the performing department



Fig 8.1.17: The perspective of the performing department

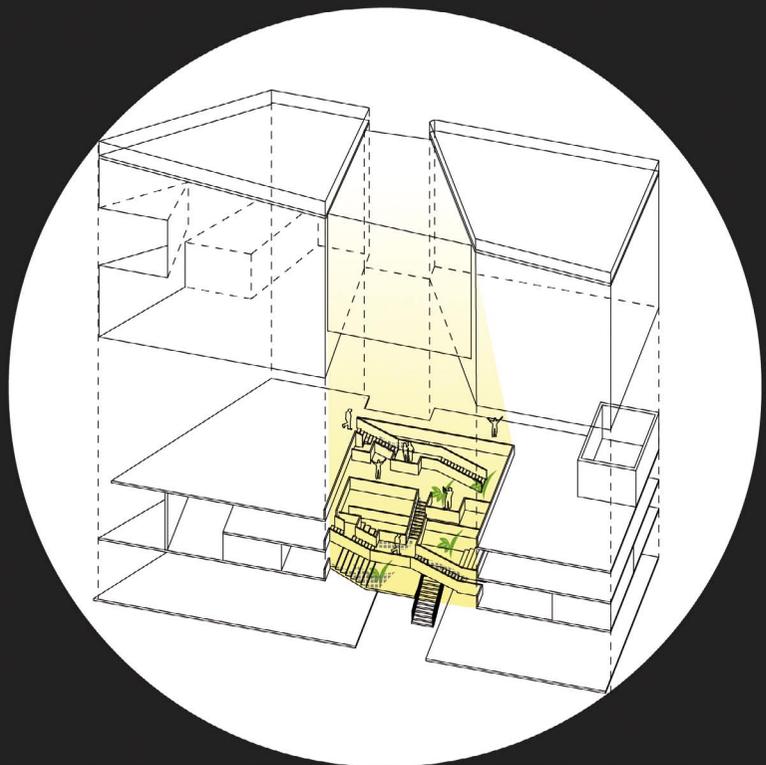


Main Theatre and Accessory Buildings
(Huguang Assembly Hall)

Fig 8.1.18: The diagram of the main theatre and accessory buildings



Fig 8.1.19: The perspective between the main theatre and accessory buildings

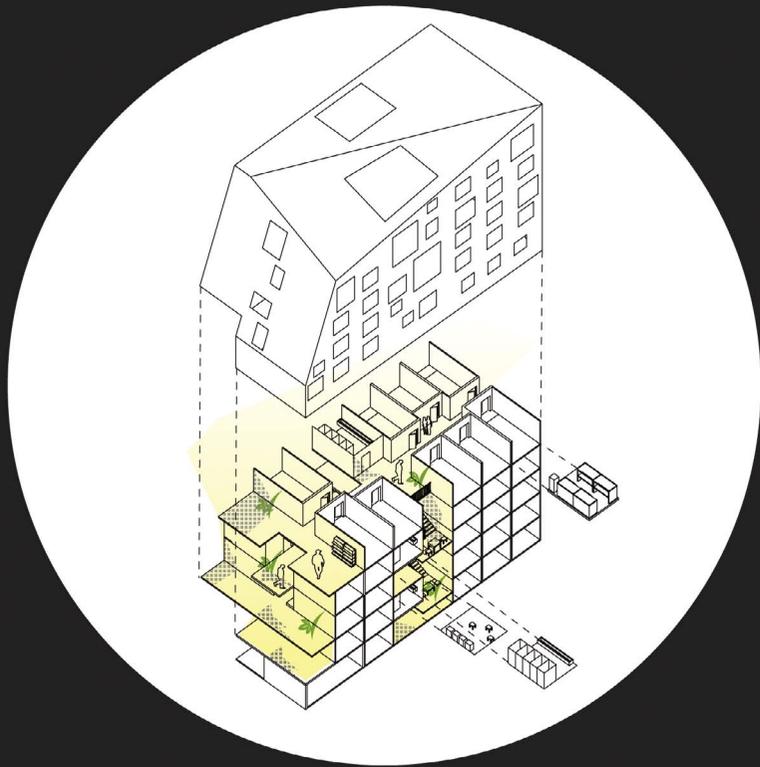


Design Department
(Manchester School of Art)

Fig 8.1.20: The diagram of the design department



Fig 8.1.21: The perspective of the design department

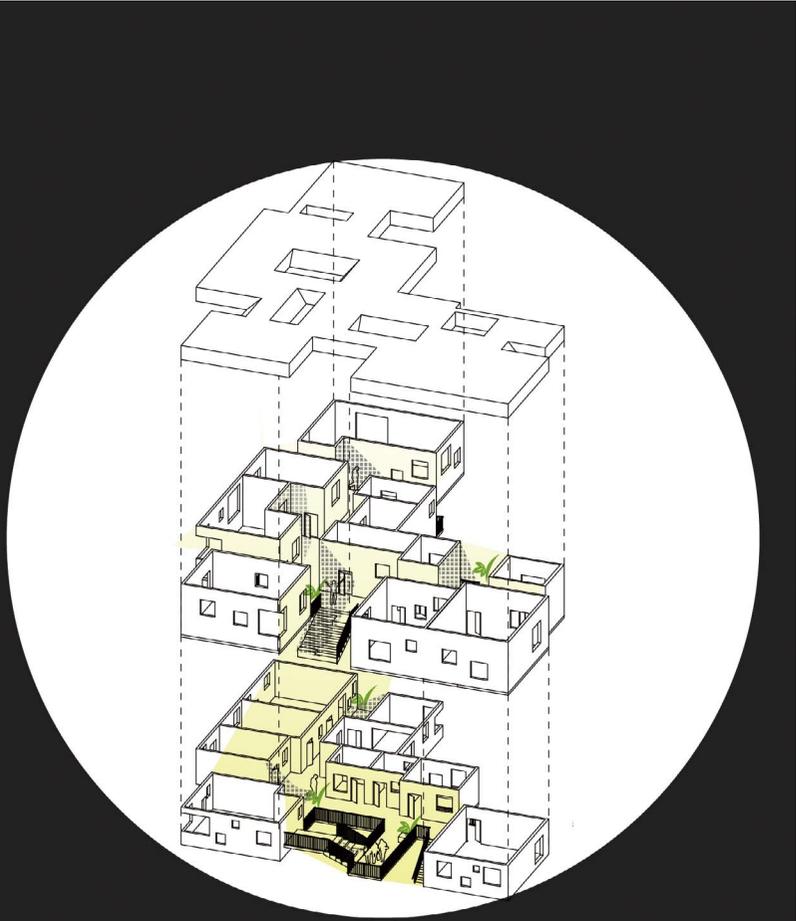


Student Accommodation
(Typical Student Accommodation
Building in Beijing)

Fig 8.1.22: The diagram of the student accommodation



Fig 8.1.23: The indoor perspective of the student accommodation



The Administration and Offices
(the Faculty rooms of Logan
Center for the Arts)

Fig 8.1.24: The diagram of the offices



Fig 8.1.25: The perspective of the offices

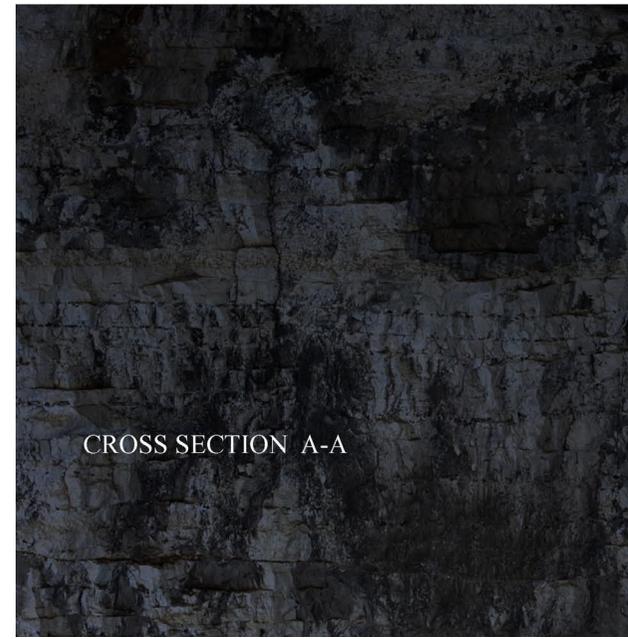


Fig 8.1.26: The cross section A-A



Level 2

Ground Floor

Level -1

Level -2

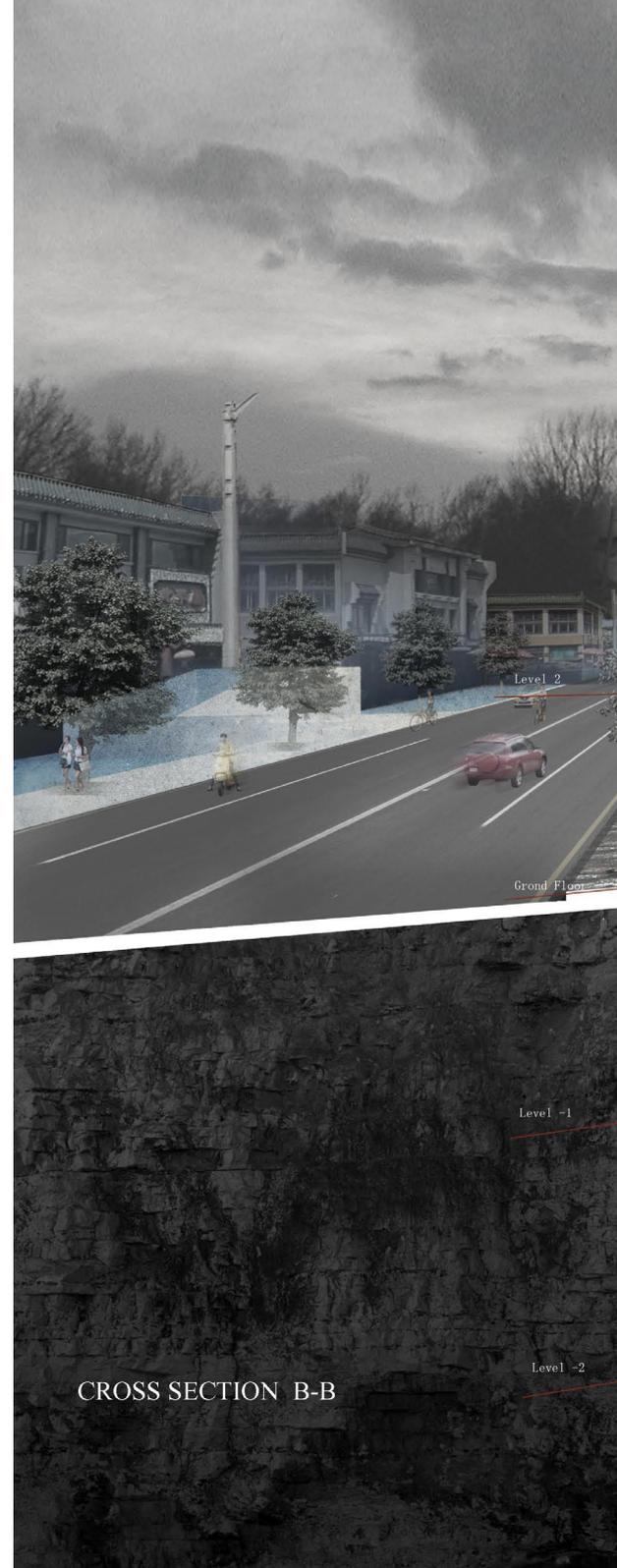
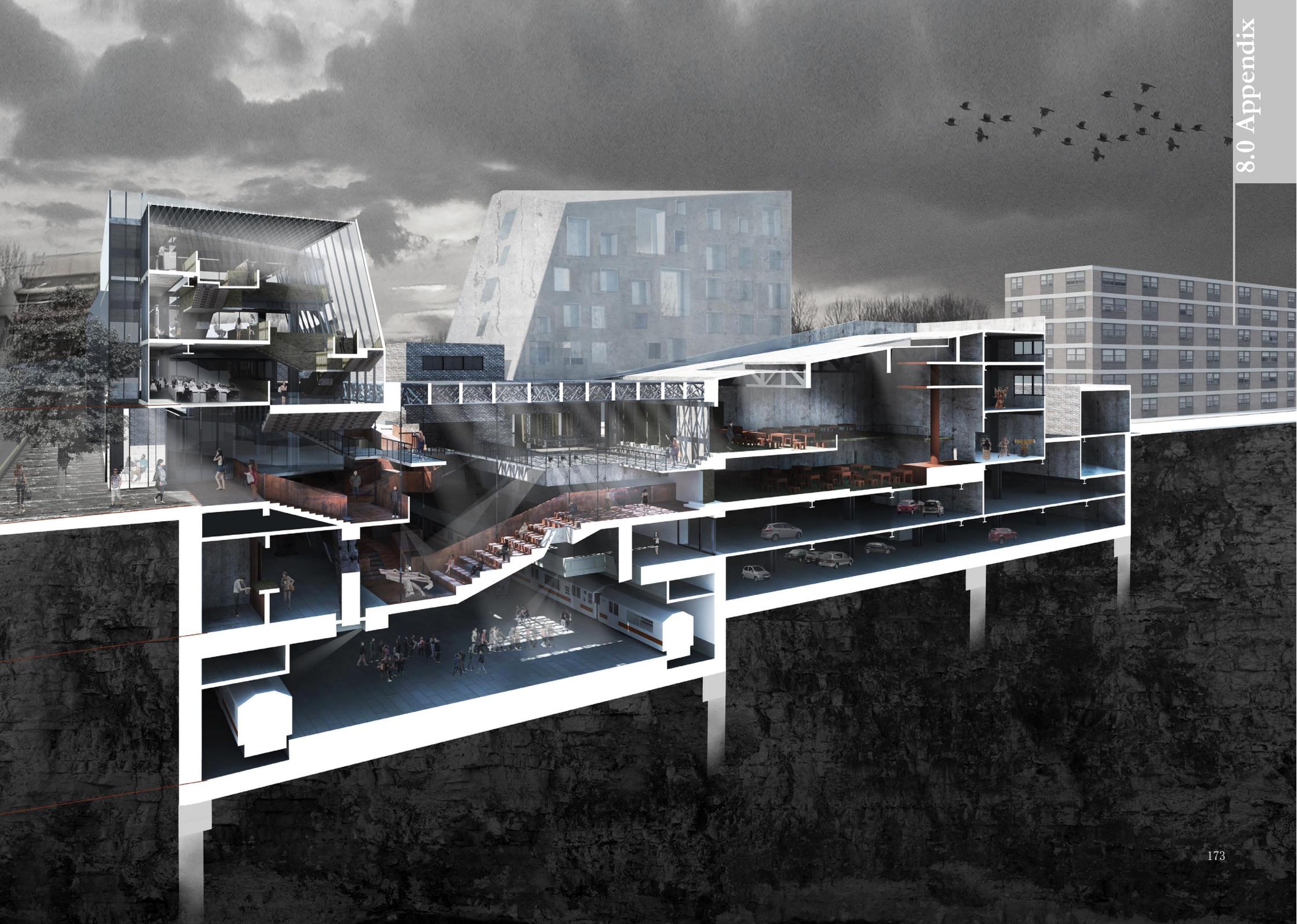
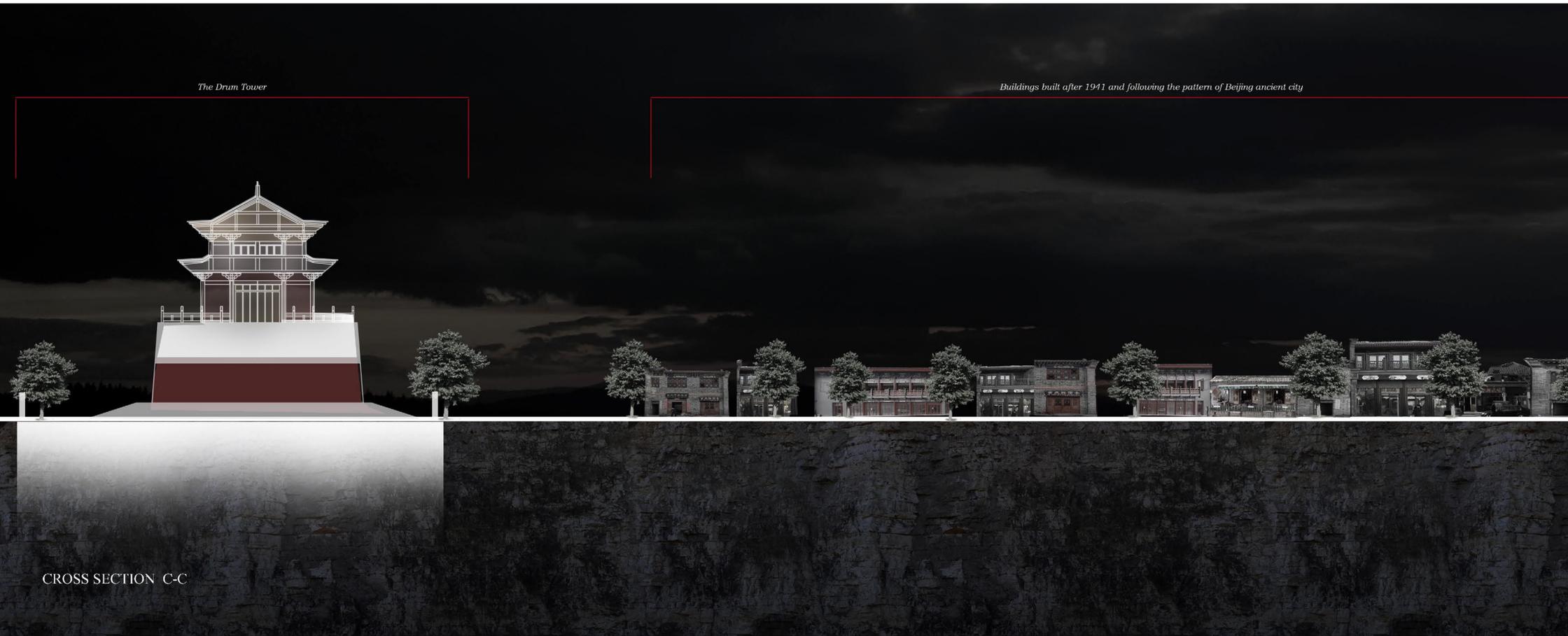


Fig 8.1.27: The cross section B-B



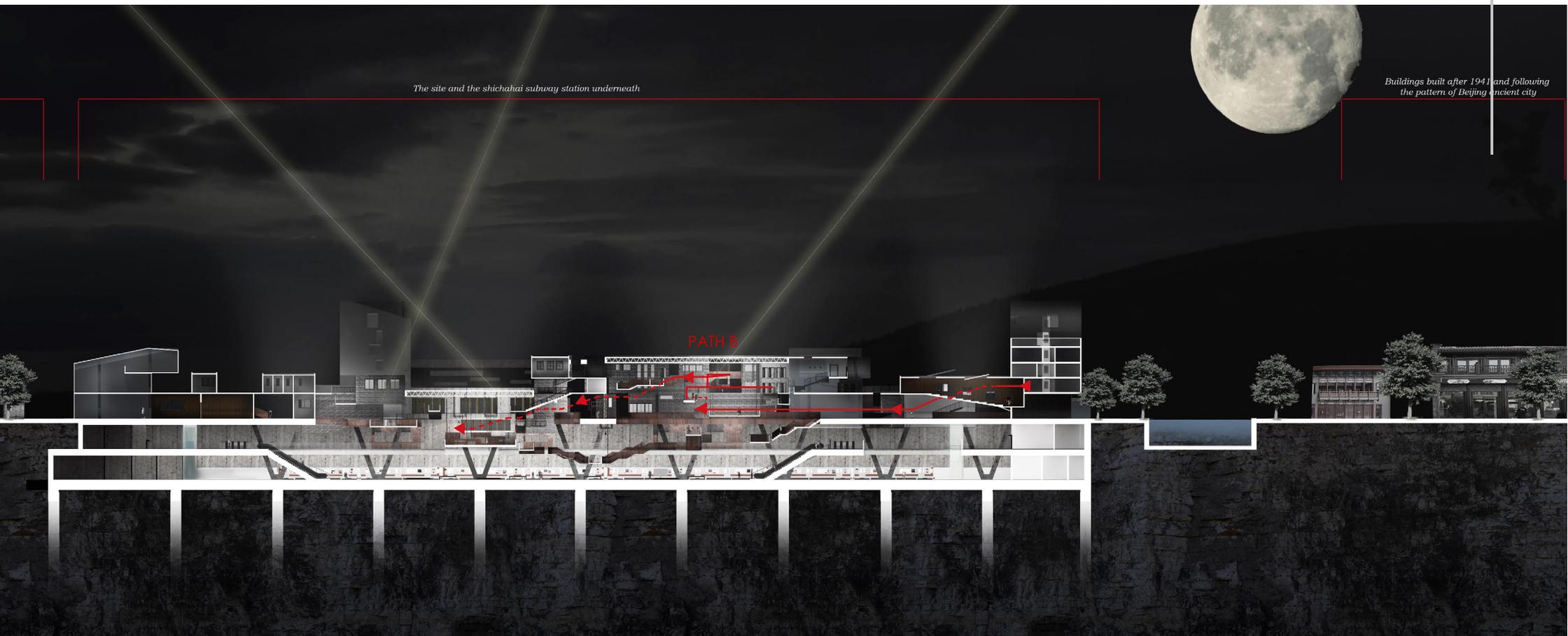
The Drum Tower

Buildings built after 1941 and following the pattern of Beijing ancient city



CROSS SECTION C-C

Fig 8.1.28: The cross section C-C



The site and the shichahai subway station underneath

Buildings built after 1941 and following the pattern of Beijing ancient city

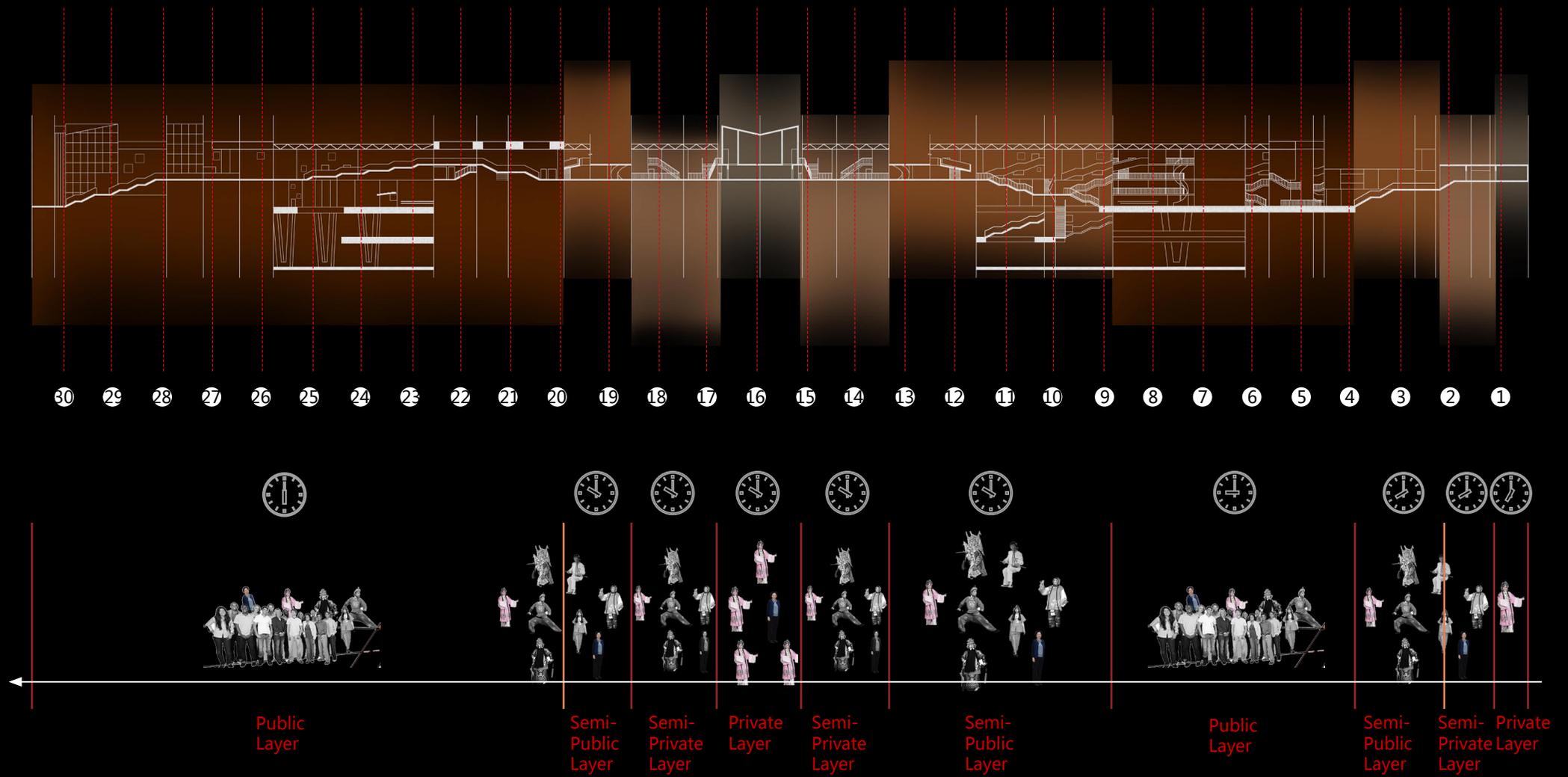


Fig 8.1.29: The PATH B cross sections analysis

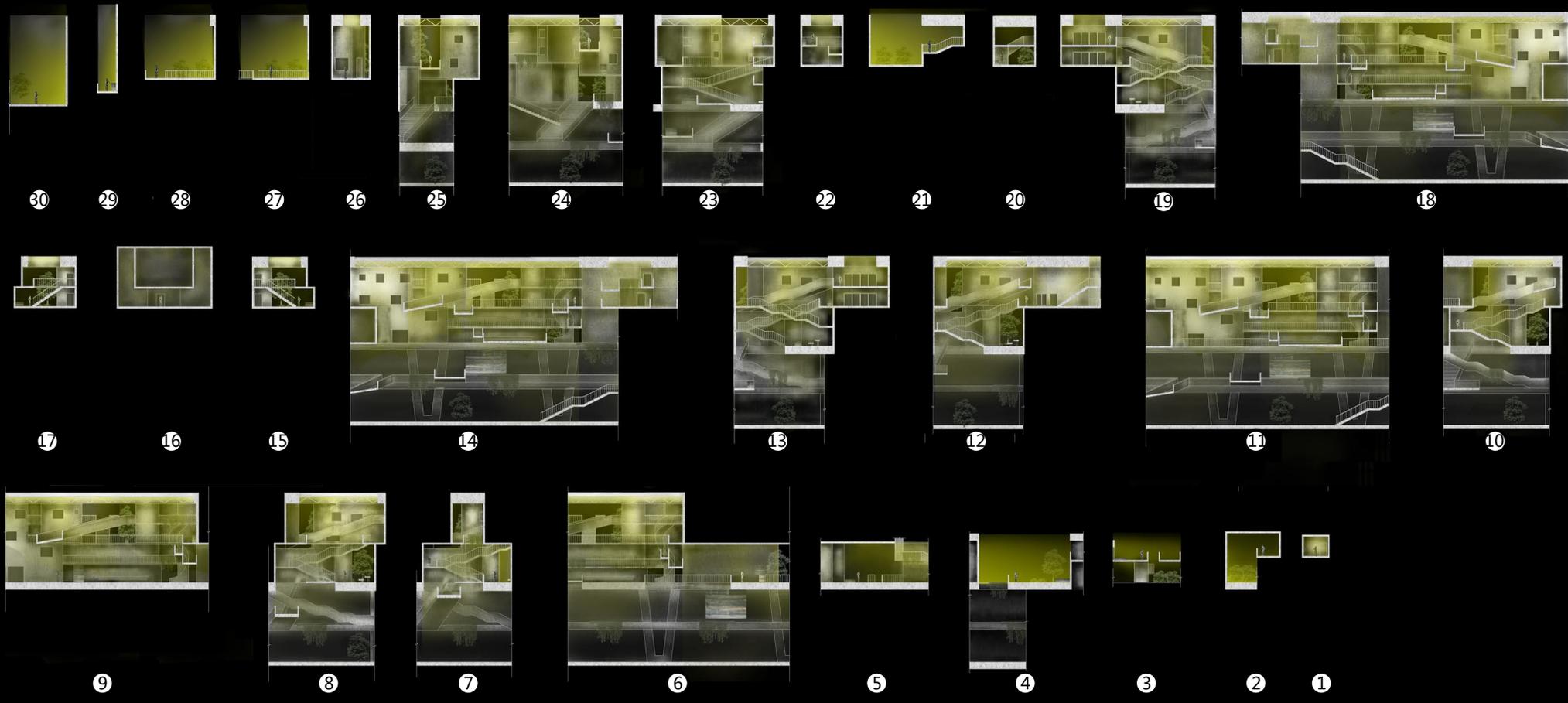




Fig 8.1.30: The development diagram



Fig 8.1.31: The final model

9.0 List of Figures

1.0

Fig. 1.0.1: The present situation of *hutong* drawn by Kuang Han

Reproduced from: http://blog.sina.com.cn/s/blog_6768a3cc0102v5ry.html

Fig. 1.0.2: The influence from the policy, economic, and industry

Fig. 1.0.3: The growth of urban population in China

Reproduced from: *The present and Future of Architectural Design in Contemporary China*

Fig. 1.0.4: The new buildings in Beijing designed by western architects

Reproduced from: *The present and Future of Architectural Design in Contemporary China*

Fig. 1.0.5: The decrease of *hutong* -- the pattern of it largely destroyed for “modern” architectures

Fig. 1.0.6: How the “historical” building to be created in modern times

Fig. 1.0.7: The diagram of general design logic 1

Fig. 1.0.8: The diagram of general design logic 2

2.0

Fig. 2.0.1: The present situation of *Dabaishun hutong* in Dashila area drawn by Luo Yafeng

Reproduced from: <http://news.artxun.com/luoyafeng-1629-8141515.shtml>

Fig. 2.0.2: The timeline of *hutong's* evolution

Fig. 2.1.1: Well-the ancient Chinese character

Reproduced from: http://news.xinhuanet.com/book/2004-04/20/content_1430145.htm

Fig. 2.1.2: The ideal layout for a royal capital as recorded in the *kaogongji*

Reproduced from: <http://amuseum.cdstm.cn/AMuseum/jianzhu/content/chunqiuozhanguo/text/kaogongji.html>

Fig. 2.1.3: The basic street structure in Yuan dynasty

Redrawn from Yuehong Li, *Study on Typology of Beijing Hutong Sibeyuan*

Fig. 2.1.4: The map of Beijing ancient city in Yuan dynasty

Reproduced from: http://en.wikipedia.org/wiki/Beijing#Ming_dynastyw

Fig. 2.1.5: The map of Beijing ancient city in the early 1990s

Reproduced from: http://en.wikipedia.org/wiki/Beijing#Ming_dynastyw

Fig. 2.1.6: The typical courtyard house in Beijing

Reproduced from: http://www.issuu.com/adavinmorley/docs/final_final_draft_pgs

Fig. 2.1.7: Examples of different numbers of the courtyards

Fig. 2.1.8: More layers of space in order to get the better orientation of the courtyard houses

Redrawn from Yuehong Li, *Study on Typology of Beijing Hutong Sibeyuan*

Fig. 2.1.9: Temporary and flexible stalls in ancient china

Fig. 2.1.10: The patterns of hutongs' combination

Redrawn from Yuehong Li, *Study on Typology of Beijing Hutong Sibeyuan*

Fig. 2.1.11: The present situation of 13 *zhengjuejiaodao* Beijing

Fig. 2.1.12: The transformation from the courtyard house into hutong community in 13 *zhengjuejiaodao* Beijing

Fig 2.1.13: The vibrant and flexible street activities

Fig 2.1.14: The *hutong* bike journey (*Hou bai*)

Reproduced from: <https://www.pinterest.com/pin/302656037431722350/>

Fig 2.1.15: The changing number of *hutong* in Beijing

Redrawn from Yuehong Li, *Study on Typology of Beijing Hutong Sibeyuan*

Fig 2.1.16: The number of different scale *hutong*

Redrawn from Yuehong Li, *Study on Typology of Beijing Hutong Sibeyuan*

Figs 2.1.17-2.1.20: Perspectives of the outdoor areas in-between the buildings in *Sanlitun* Village

Fig 2.1.21: The 3D development idea from *Hutong Manifesto*

Fig 2.2.1: Beijing *Dashila*

Reproduced from: <http://app.cnmo.com/iphone/153834/>

Fig 2.2.2: The location of the *Dashila* area

Fig 2.2.3: The *hutong* spaces in public layer;

Redrawn from Margherita Orsini, *Dashilar Hutong*

Fig 2.2.4: The *hutong* spaces in the semi-public and semi-private layer

Fig 2.2.5: The potential of the linear space (redrawn from *Form, Space, and Order*)

Fig 2.2.6: Multiple potential routes

Fig 2.2.7: Copies turning corners and intersections

Fig 2.2.8: Four social layers: private, semi-private, semi-public, and public.

Fig 2.2.9: The plan of four social layers: private, semi-private, semi-public, and public.

Redrawn from Margherita Orsini, *Dashilar Hutong*

Fig 2.2.10: The different communities groups

Redrawn from Margherita Orsini, *Dashilar Hutong*

Fig 2.2.11: The small scales of buildings in *Dashila*

Redrawn from Margherita Orsini, *Dashilar Hutong*

Fig 2.2.12: The changing scales in the plan and the sections of Path A

Fig 2.2.13: Centralized public usage block lead to less meeting opportunities

Fig 2.2.14: Decentralized public usage spaces increase meeting and communication opportunities.

Fig 2.2.15: The scattered public spaces in the *Dashila* area

Redrawn from Margherita Orsini, *Dashilar Hutong*

Fig 2.2.16: The scattered potential performing and communication spaces in *hutongs*, created by the concave and convex

Fig 2.2.17: The early study models about *hutong* pieces

Fig 2.2.18: The photos of different flexible activities created by concave-convex spaces in *hutong*.

Fig 2.2.19: The concave-convex nature of *hutong* creates direct or indirect connections between the performer and pass-by people.

Figs 2.2.20: The concave-convex space in the plan & different furniture lead to different activities.

Fig 2.2.21: The study of concave-convex space in section

Fig 2.2.22: The visual links

Fig 2.2.23: The movement links

Fig 2.2.24: The green spaces analysis

Fig 2.2.25: The material collage analysis

Fig 2.2.26: The shadow analysis

Fig 2.2.27-38: The derived characteristics of hutong in architectural context

3.0

Fig 3.0.1: The sketch shows Peking opera player -- *dan*

Fig 3.0.2: The sketch shows male character in Peking Opera with a painted face

Fig 3.1.1: The typical stage for Peking opera playing - There is no complicated storage or ornament, the reason is that all the performing are meaningful and highly abstracted.

Fig 3.1.2: The different ways of furniture arrangement present different scenes.

Redrawn from Li xiaodong, Yang jiangshan ,*Chinese Space*

Fig 3.1.3: The different gestures and different locations of the performer present different meanings.

Redrawn from Li xiaodong, Yang jiangshan ,*Chinese Space*

Fig 3.1.4: The different roles playing Peking Opera painting by Naibin Chen

Reproduced from: http://www.gucn.com/Service_CurioAuction_Show.asp?Id=2428818

Fig 3.1.5: *Sheng*

Fig 3.1.6: *Dan*

Fig 3.1.7: *Jing*

Fig 3.1.8: *Chou*

Fig 3.1.9: *Long tao*

Fig 3.1.10: Make up

Fig 3.1.11: Design

Fig 3.1.12: Music instruments

Fig 3.1.13 12th century painting by Su Hanchen; a girl waves a peacock feather banner like the one used in Song Dynasty dramatical theater to signal an acting leader of troops

Figs 3.1.14-15: Performing of Peking Opera was largely influenced by traditional acrobatics, and urban life.

Fig 3.1.16: The accent of Peking opera was influenced by Beijing accent, while other Chinese opera was influenced by other local accent.

Fig 3.1.17: Different teaching method

Figs 3.1.18-20: The perspectives of the building and the perspectives of the indoor street of Laban dance center

Fig 3.1.21: The function and circulation analytical drawings of Laban dance center

Fig 3.1.22-24: The site plan and perspectives of the Reed collage performing arts buiding entrance

Fig 3.1.25: The function and circulation analytical drawings of the Reed Collage performing arts building

Fig 3.1.26-27: The perspectives of the building and the main atrium of Logan Center

Fig 3.1.28: The function and circulation analytical drawings of Logan Center

Fig 3.2.1: The different programmatic spaces belong to different social layers

Fig 3.2.2: Peking Opera Learning method: provide different learning environments and meet different people

Fig 3.2.3: David Kolb experiential learning theory

Fig 3.2.4: The new relationships between students and visitors.

Figs 3.3.1-2: The interior perspectives of the performing studio of American School of ballet

Fig 3.3.3: The original function and circulation analysis of American School of ballet

Figs 3.3.4-5: The stairs of in the common space the Manchester School of Art studio provide vertical link

Fig 3.3.6: The original function and circulation analysis of Manchester School of Art studio

Fig 3.3.7: The main pass way of Taller De Musics

Fig 3.3.8: Sound insulation of Taller De Musics

Fig 3.3.9: The original function and circulation analysis of Taller De Musics

Fig 3.3.10-11: Typical Chinese student accommodation interior perspectives

Fig 3.3.12: The original function and circulation analysis of typical Chinese student accommodation

Fig 3.3.13: Building outdoor perspective of Logan Center for the Arts

Fig 3.3.14: The original function and circulation analysis of Logan Center for the Arts

Figs 3.2.15-16: The main atrium perspectives of Reed Collage Performing Arts building

Fig 3.3.17: The original function and circulation analysis of Reed Collage Performing Arts building

Figs 3.3.18-19: Building indoor perspective of Logan Center for the Arts

Fig 3.3.20: The original function and circulation analysis of Teatro officinal

Fig 3.3.21: Ideal function and circulation relationships of Teatro officinal

Figs 3.3.22-23: The indoor perspective of Shunt Bar

Fig 3.3.24: The original function and circulation analysis of Shunt Bar

Fig 3.3.25: Building indoor perspective of Huguang Assembly Hall

Fig 3.3.26: The original function and circulation analysis of Huguang Assembly Hall

Fig 3.4.1: The anchor points between the school complex and hutong

Fig 3.4.2: The shift parts between the school complex and hutong

4.0

Fig 4.0.1: The site location - the *Drum tower* area

Fig 4.0.2: The location of the Beijing ancient city

Fig 4.1.1: The different development centers of Beijing

Fig 4.1.2: The location of the site along the central axis of Beijing

Fig 4.2.1: The building height and building density control

Fig 4.2.2: The plan and the section of the site

Fig 4.2.3: The central axis

Fig 4.2.4: The subway system

Fig 4.2.5: The bus transport system

Fig 4.2.6: Historical buildings

Fig 4.2.7: The *hutong* journey (biking)

Fig 4.2.8: Overlapping

Fig 4.2.9: The ancient site map (300 years ago)

Fig 4.2.10: The present situation of the site

Figs 4.2.11-13: Street views along the site

Figs 4.2.14: The south area of the drum tower

Figs 4.2.15-18: The ancient photos around the site

5.0

Fig 5.0.1: The concept drawing - zigzagging through

Fig 5.0.2: *Jian Chang hutong* drawn by Yongchao Wang

Fig 5.0.3: The development methodology diagram

Fig 5.1.1: The site boundary

Fig 5.1.2: The proposed building block controlled by the height limit

Fig 5.1.3: The location of the *shichahai* subway station

Fig 5.1.4: The potential passing shortcuts

Fig 5.1.5: Reducing the building complex scale

Fig 5.1.6: Creating links with the subway station

Fig 5.1.7: The programme control

Fig 5.1.8: Optimizing the height of the complex

Fig 5.2.1: The partial development basing on the previous 8 derived characteristics of *hutong*

Fig 5.2.2: Five basic relationships between a line and a mass

Fig 5.2.3: The study models for partial design basing on the 8 physical characteristics of *hutong*

Fig 5.2.4: Nine development results

Fig 5.2.5: Performing studio stage 1 outcome

Fig 5.2.6: Design department stage 1 outcome

Fig 5.2.7: The music department stage 1 outcome

Fig 5.2.8: The student accommodation stage 1 outcome (horizontal)

Fig 5.2.9: The student accommodation stage 1 outcome (vertical)

Fig 5.2.10: The administration stage 1 outcome

Fig 5.2.11: The secondary atrium stage 1 outcome

Fig 5.2.12: The main atrium space stage 1 outcome

Fig 5.2.13: The rehearsal space stage 1 outcome

Fig 5.2.14: The research and exhibition space stage 1 outcome

Fig 5.2.15: The main theatre stage 1 outcome

Fig 5.2.16: Final results of different programmatic spaces

Fig 5.3.1: The functional development basing on the previous 8 derived characteristics of *hutong*

Fig 5.3.2: The development study for functional relationships of three-dimensional *hutong*

Fig 5.3.3: Programme layout of the main spaces elements

Fig 5.3.3: Programme layout of the main spaces elements - get the proper location for the ten main elements, and add public usage function in to the structure

Fig 5.3.4: Following the scale of the different programme to rearrange the plan

Fig 5.3.5: the final result of the programme layout

Fig 5.4.1: The space layer development basing on the previous 8 derived characteristics of *hutong*

Fig 5.4.2: The generation of the proper site shortcuts

Fig 5.4.3: The shortcuts development (from 2D to 3D)

Fig 5.4.4 The social layer 3D development - The strategies from function relationship of three-dimensional hutong perform a similar space relationship in the Peking Opera School in the public, semi-public, semi-private and private layer.

Fig 5.5.1: The strategies of how to define two spaces within different social layer

Fig 5.5.2: Ways of connecting two spaces in different social layer - There are mainly three aspects as the controlling guidance: movement, visual, and sound.

Fig 5.6.1: The concept of the structure design

Fig 5.6.2: The structure development

Fig 5.7.1: Grey bricks

Fig 5.7.2: The material collage pattern

Fig 5.8.1: Final architectural language

Fig 5.8.2: The study drawings of architectural language

Fig 5.9.1: The bird's eye perspective of the site

Fig 5.9.2: Section A-A

Fig 5.9.3: The B2 plan

Fig 5.9.4: The B1 plan

Fig 5.9.5: The ground floor plan of the chosen area

Fig 5.9.6: The perspective from the ground floor

Fig 5.9.7: Level +4m Plan of the chosen part

Fig 5.9.8: The perspective on level +6m

6.0

Fig 6.0.1: The importance statue of *hutong* in Beijingers' daily life

Two people are playing cheese in the ruined *hutong* area with some nature of *hutong*

Reproduced from: <http://paulwong.tuchong.com/albums04393808>

7.0

8.0

Fig 8.0.1: The map of Beijing Subway system; the chosen site is above the *shichabai* station

Figs 8.0.2-4: The study models

Figs 8.0.5-8: The study models showing how the DNA of *hutongism* could be inherited by modern building prototype

Fig 8.0.9: The early proposal for the project

Fig 8.0.10: 370 of the 1500 patterns of the urban fabric of Beijing's *hutong* from Instant *Hutong's* Community Catalogue 2007. Part of Instant *Hutong's* Community Catalogue 2007, a catalog of *hutong* block patterns laid out as a "series of 1500 communities of courtyard houses cut out and isolated from the map of downtown Beijing".

Reproduced from: <http://www.bricoleurbanism.org/>

Fig 8.0.11: The early study models about *butong* pieces

Fig 8.1.1: The project title

Fig 8.1.2: Level -2 plan

Fig 8.1.3: Level -1 plan

Fig 8.1.4: The ground floor plan

Fig 8.1.5: The level 2 floor plan

Fig 8.1.6: The location of the project and the site plan

Fig 8.1.7: The bird's eye perspective of the project

Fig 8.1.8: The diagram of research and exhibition space

Fig 8.1.9: The perspective of research and exhibition space

Fig 8.1.10: the diagram of the atrium space

Fig 8.1.11: The perspective of the atrium space

Fig 8.1.12: The diagram of rehearsal space

Fig 8.1.13: The perspective of rehearsal space

Fig 8.1.14: The diagram of the music department

Fig 8.1.15: The perspective of the music department

Fig 8.1.16: The diagram of the performing department

Fig 8.1.17: The perspective of the performing department

Fig 8.1.18: The diagram of the main theatre and accessory buildings

Fig 8.1.19: The perspective between the main theatre and accessory buildings

Fig 8.1.20: The diagram of the design department

Fig 8.1.21: The perspective of the design department

Fig 8.1.22: The diagram of the student accommodation

Fig 8.1.23: The indoor perspective of the student accommodation

Fig 8.1.24: The diagram of the offices

Fig 8.1.25: The perspective of the offices

Fig 8.1.26: The cross section A-A

Fig 8.1.27: The cross section B-B

Fig 8.1.28: The cross section C-C

Fig 8.1.29: The PATH B cross sections analysis

Fig 8.1.30: The development diagram

Fig 8.1.31: Final Model

