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Vivid streets, empty streets: street space in transition.

A case study in Hongkou, Shanghai

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Abstract

Shanghai's traditional alleyway neighbourhoods are intriguing places of vivid street life that bustle with people and activities. Ever since the 1990s, the city has undergone a major process of restructuring to become a modern metropolis, a global centre. Consequently, lilongs that are symbolic of the *old* Shanghai and its deprivations have been replaced with gated communities on a vast scale and pace. As a side effect, this has led to an impoverishment of the street space, that has been reduced to transit, and the loss of the unique lilong lifestyle and culture.

Some studies have stressed the impact of the urban renewal on the street space in Shanghai, but little research has been conducted on the residents' relation to the street and their particular utilisation of it. Thus, an on-site analysis in the inner-city district Hongkou was conducted in June 2018, comparing the open spaces of the two residential typologies lilong and gated community. This case study is based on a theoretical comparison of the two typologies and on an analysis of the Chinese concept of public space. Since collective accessible spaces are not only an essential spatial category in Chinese culture but also effect the use of the adjacent public streets, the open space within the gated community was included in the study. The applied methods are 1) a pedestrian observation and 2) a questionnaire survey. The observation focused on the sojourn activities of pedestrians; the questionnaire gathered information about the use of and relation to open spaces of local residents. The observation comprised 650 minutes of observation time in total, the sample size of the questionnaire is n=168 (lilong n=52; gated community n=116).

The lilong streets are characterised by a greater diversity, intensity, and variety of street usage. Lilong residents reveal a greater place-attachment exemplified by a significantly higher sense of belonging. Gated community residents, on the other hand, increasingly retreat from public streets and prefer the exclusive open space within their compound. Nevertheless, they are significantly more satisfied with the sense of community in their living environment.

The case study illustrates that lilong residents utilise the street more intensively and have a stronger bond to their adjacent street spaces, which contributes to the perceived liveliness. At the same time, lilong residents are significantly less satisfied with aspects of their direct living environment. Overall, this indicates a high level of dissatisfaction with the inadequate housing standards of the lilong. The vast redevelopment of Shanghai might cause one of its most authentic residential typologies to vanish. However, lilongs possess the potential to be a distinctive asset of Shanghai. The challenge will be to modernise the lilong without eradicating the alleyway lifestyle and the accompanying use value and social value of the street. Simultaneously an integration of the open street in the gated community housing blocks is worth discussing.

Key Words: Shanghai, lilong, gated community, redevelopment, street usage, street life

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Abriss

Shanghais traditionelle Reihenhausviertel, die sogenannten Lilong, sind geprägt durch faszinierende Straßenräume voller Leben, Menschen und Geschäftigkeit. Seit den 1990er Jahren ist Shanghai im Umbruch und hat im Streben, eine moderne Metropole von globaler Bedeutung zu werden, einen gewaltigen Prozess der städtebaulichen Umstrukturierung eingeleitet. In diesem Zusammenhang werden die Spuren des alten Shanghais, versinnbildlicht durch die Lilong, in atemberaubendem Tempo und beispiellosem Maßstab entfernt. Das Nebenprodukt dieser städtebaulichen Neuerfindung ist ein verarmter Straßenraum, reduziert auf seine Transitfunktion. Das einzigartige Straßenleben und die reiche Straßenkultur der Lilong schwinden.

Die jüngsten städtebaulichen Erneuerungen Shanghais und ihre Auswirkungen auf den Straßenraum wurden bereits in einigen Studien aufgegriffen. Kaum thematisiert werden die betroffenen Bewohner*innen, ihr Bezug zum Straßenraum und ihre Nutzung dessen. Daher wurde im Juni 2018 die vorliegende Fallstudie im innerstädtischen Bezirk Hongkou, Shanghai, durchgeführt, welche die jeweiligen Freiräume zweier Wohntypologien, Lilong und Gated Community, vergleicht. Grundlage dieser Studie bilden eine theoretische Abhandlung der allgemeinen Charakteristika der zwei Wohntypologien sowie eine Analyse der chinesischen Konzeption von öffentlichem Raum. Da kollektiv zugängliche Räume nicht nur eine wesentliche Raumkategorie in der chinesischen Kultur darstellen, sondern auch direkte Auswirkungen auf die Nutzung von öffentlichem Raum haben, wurde der kollektiv zugängliche Freiraum innerhalb der Gated Community ebenfalls in die Studie miteinbezogen. Die angewandten Methoden sind 1) eine Beobachtung der Fußgänger*innen und 2) eine Befragung der Anwohner*innen mittels quantitativem Fragebogen. Der Fokus der Beobachtung lag auf den unterschiedlichen Arten des Aufenthalts im öffentlichen Raum; der Fragebogen adressierte die Nutzung und den Bezug der Anwohner*innen zum jeweiligen Freiraum. Der Beobachtungszeitraum beläuft sich auf gesamt 650 Minuten, die Stichprobengröße des Fragebogens beträgt n=168 (Lilong n=52. Gated Community n=116).

Die Straßen des Lilongs zeichnen sich durch eine größere Nutzer*innendiversität, -dichte und eine größere Varianz an Nutzungsarten aus. Die Bewohner*innen des Lilong verfügen über eine stärkere Ortsbindung an die Straße, die sich in einem signifikant stärkeren Zugehörigkeitsgefühl äußert. Bei den Bewohner*innen der Gated Community ist eine Abkehr vom öffentlichen Straßenraum bemerkbar; bevorzugt wird der exklusive, nur kollektiv zugängliche Freiraum innerhalb der Wohnanlage. Gleichzeitig weisen die Bewohner*innen der Gated Community eine signifikant höhere Zufriedenheit mit allen im Fragebogen thematisierten Aspekten ihres Wohnumfelds auf.

Die Fallstudie bestätigt einen je nach Wohnform unterschiedlichen Bezug zum Freiraum. Lilong-Bewohner*innen zeichnen sich durch eine intensivere Nutzung und stärkere Bindung an die unmittelbar zugänglichen Straßenräume aus – welche sich in der eingangs beschriebenen Lebendigkeit der Straßenräume spiegelt. Im Gegensatz zur Vergleichsgruppe sind Lilong-Bewohner*innen signifikant weniger zufrieden mit allen Aspekten ihres direkten Wohnumfelds, was auf eine grundsätzliche Unzufriedenheit mit der inadäquaten Wohnsituation schließen lässt. Die rasante Stadterneuerung Shanghais droht, eine ihrer imageprägendsten Wohntypologien – die Lilong-Häuser – zu verdrängen. Die Herausforderung besteht darin, die Erneuerung der Lilongs so zu vollziehen, dass der traditionelle, an die Straße geknüpfte Lebensstil erhalten bleibt und die Straße ihren Platz als sozialer Ort im Zentrum der Gemeinschaft beibehalten kann. Zudem ist eine Integration des öffentlichen Straßenraums in die Baublöcke der Gated Community diskussionsreif.

Stichworte: Shanghai, Lilong, Gated Community, Stadterneuerung, gelebter Straßenraum

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摘要

上海传统的街巷和邻里空间因其充满丰富的人群活动而生动迷人。自上世纪 90 年代以来，以建设成现代化的大都市、全球性的中心城市为目标，上海经历了一个重大的重建过程。因此，作为旧上海及其贫困象征的里弄，已经被大规模快速建设的封闭社区所取代，在另一方面这也导致了传统街巷空间的衰退，使其陷入转型的困境，并失去了其独特的生活方式和里弄文化。

一些研究强调城市更新对上海街道空间的影响，却很少涉及居民与街道的关系及其对街道空间的特别利用。因此，2018 年 6 月，基于对市中心虹口区的现场分析，调研人员对里弄和封闭社区两种居住类型的开放空间进行了比较。

本次研究基于对两种居住类型的理论比较，并分析了中国公共空间的概念。由于公共可达性空间不仅在中国文化中是必不可少的空间范畴，它也影响着相邻公共街道的使用，因此本次研究纳入了对封闭社区内开放空间的讨论。

应用方法包括 1）行人观察和 2）问卷调查。

观察研究的重点是行人的逗留活动;问卷调查收集了当地居民对开放空间的使用和二者关系的相关信息。总计 650 分钟的观察时间，问卷样本数量为 168（里弄 52，封闭社区 116）。

里弄街道以更加多元化、集约化和多样性的街道空间使用为特征。里弄居民更高的社区归属感也证明了其与街巷空间更强的联系性。

另一方面，封闭社区的居民越来越多地从公共街道撤离，并更愿选择使用他们封闭场地内的专属开放空间。然而，他们对居住环境中的社区意识却大为满意。

本次案例研究表明，里弄居民更加密集地利用街道，并与街道空间有更牢固的联系纽带，这将有助于感知街道活力。与此同时，里弄居民对其直接居住环境的满意程度在明显下降，总体上表明了里弄居民对其不适宜的住房标准有很大的不满。

上海大规模的重建活动可能会导致其最传统的居住类型之一的消失。

然而，里弄具有着成为上海特色资源的潜力，其所面临的挑战将是在不消除里弄生活方式及与其相伴的使用价值和社会价值的情况下，实现里弄的现代化。

关键词：上海、里弄、封闭社区、重建、街道使用、街道生活

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Content

Abstract ..... 一

Abriss ..... 三

摘要 ..... 五

1 *Introduction* 1

1.1 *Background & problem statement* 1

1.2 *Thesis statement, research question and underlying hypotheses* 5

1.3 *Aim of the research* 8

1.4 *Structure of the thesis* 9

1.5 *Methodology* 10

1.6 *State of research* 16

1.7 *Glossary* 17

2 *Theoretical basis* 21

2.1 *Place value* 22

2.2 *Environment Behaviour Studies (EBS)* 24

2.3 *Selected aspects of place attachment* 26

2.4 *Perception of space* 29

2.5 *Morphological dimension of human oriented street design* 31

2.6 *Social dimension of human-oriented street design* 36

3 *The urban open space: Levels of access and the concept of public space* 38

3.1 *Western theory on public space* 40

3.2 *Ancient Chinese relation to public space* 43

3.3 *Selected residential typologies in Shanghai and their relation to the open space* 46

3.4 *Concept of public space in today's Shanghai* 50

3.5 *Street space as a public space?* 54

4 *Selected aspects of the lilong and the gated community housing* 57

4.1 *Lilong – a legacy of the Colonial City* 59

4.2 *Gated community – a symbol of modernity* 68

4.3 *Housing development in Shanghai since the 1990s and the relationship between lilong and gated communities* 76

4.4 *Comparison between the lilong and the gated community* 82

5 *An on-site analysis on street usage in Hongkou* 87

5.1 *Site of research: Extended Hongkou creek area, Hongkou, Shanghai* 88

5.2 *On-site execution of the research* 108

5.3 *Result of the pedestrian observation: the usage of selected open spaces* 111

5.4 *Result of the questionnaire: the locals' position to open spaces* 129

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6 Discussion 145
6.1 Interpretation of the results 145
6.2 Comparison of the results with the research outline 152
6.3 Conclusion 159
6.4 Recommendations for the urban design derived from the results of the field study 161

7 Sources 164

8 List of illustrations 172
8.1 List of figures 172
8.2 List of graphs 173
8.3 List of tables 173

9 Appendix 174
9.1 Questionnaire Lilong 174
9.2 Questionnaire Gated Community 176
9.3 Urban parameters 178
9.4 Statistical evaluation 179

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1 Introduction

This opening chapter aims to outline the background of the present research which focuses on the changing street spaces in Shanghai. Hence, the urban development that has led to the present situation and the current problem linked to it is examined in more detail (chapter 1.1). This problem statement represents the basis for the formulation of the thesis statement, the research question, and the underlying hypothesis (chapter 1.2). Moreover, this chapter proposes the main aim of the research (1.3). Finally, it serves to outline the structure (1.4) and applied methodology (1.5) of the given research. To provide the reader with a better understanding, the current state of research and a number of basic definitions are presented (chapter 1.6-1.7).

1.1 Background & problem statement

After decades of stagnation in the urban development of Shanghai, the city has become the centre of attention of urban investments ever since the early 1990s. This reawakening is also referred to as Shanghai's turn into *the head of the dragon* and is best illustrated by the unprecedented rise of Lujiazui, a quarter in the district Pudong. The former low-rise, agrarian neighbourhood has been transformed into a futuristic high-rise cluster at an incredible pace. Today Lujiazui is considered one of the most astonishing and recognizable skylines in the world. It is a characteristic landmark, an epitome of modernism and a symbol of the reawakening of Shanghai. It is also due to the rise of Lujiazui, that today's Shanghai is considered a metropolis of the 21st century, a financial centre of global importance. Shanghai has turned into a city of neon lights, which embodies ultra-modernity, anonymity, and economic success.

Since the 1990s, the city has experienced a building boom that has caused a fundamental alteration of its urban pattern. This has had a significant impact on both the building typology and the city morphology. Shanghai has undergone a major process of urban redevelopment; it has grown in scale, population, and size at a remarkable pace. What is more, as a result of the economic reform in 1978, housing has turned into a commodity, which further fuelled the construction sector. Thus, inner-city areas have become an increasingly exclusive realm and centrality has become a high-priced product. Impoverished housing structure has been replaced with high-rise living in gated communities. The redevelopment of Shanghai has furthered the emergence of large building blocks, so-called superblocks, which has prompted a fragmentation of the urban pattern, since old and new building structures are now located next to each other. A demarcation of building blocks with physical barriers has become common practice, resulting in an increased fortification of the city.

The street network represents the counterpart to the building blocks. Hence, the urban restructuring of Shanghai has also affected its traffic system. After the economic reform, a previously unknown commuter culture emerged. Thus, large investments were made in the infrastructure which originally was not designed for commuter traffic. Despite heavy investments in the public transport system, the individual motorised traffic has been prioritised which has caused a car-oriented street development. However, due to the development of superblocks, there is a lower number of street kilometres in given areas. As a result, the few remaining streets need to accommodate the increasing traffic volume, which results in a new vehicular logic of the city: multi-lane, arterial roads, and elevated inner-city highways. This adversely affects the walkability of the city: pedestrians are forced to detour due to a low degree of street connectivity, plus they face multiple barriers along their paths. Hence, this leads to a decrease in the use value and the social potential of the streets. In the same way as the renewal of the built structure, the reconstruction of streets happens step by step. Accordingly, various street spaces

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are found in today's Shanghai. On the one extreme, there are overlying, multi-lane high-speed transit corridors; on the other end of the scale, there are narrow paths that access a single dwelling which are even too narrow for a car to pass through.

A remarkable public space: the street. Traffic planning primarily focuses on transit. At the same time there is a need for multifunctional spaces in China: *people come to a public place not only for consumption but also for socializing, recreation and learning from each other* (Miao 2011, 196). Public spaces constitute the heart of a city; it is particularly these spaces where unexpected interactions and spontaneous encounters can occur. Representational public spaces, such as plazas or squares, are often used to promote a certain image of the city. On the contrary, the everyday street spaces are the stage for the ordinary city life. Of all public spaces, streets are the most basic and accessible, and therefore, the most inclusive open space type. They can barely be avoided, since residents have to use them for most of their daily ways. As an everyday residential space and a fixed component of the daily routine of the residents, streets possess a high potential to contribute to safety, comfort, and social life in addition to enabling mobility.

There is agreement among urban designers and planners that *streets should function as place[s] of interaction, where people meet, interacting with one another as well as with the environment, and not only as conduits for people going from one destination to another within the city* (Mahdzar 2008, 10). Active street spaces contribute to the liveability and urbanity of a given city. They make the city an exciting, colourful, and social space. Streets built only for traffic impede the streets' function as a social space with detrimental effects on both the environment and public health. There are initiatives like *Project for Public Spaces* that call for streets to be understood as places. They strongly emphasise the multiple functions of streets: commerce, socialization, community celebration, and recreation (Project for Public Spaces 2016). Pedestrian-friendly city experiences have increasingly gained importance in China today: the *Wuhan Declaration* of 2018 aims to promote streets as places that support social and economic activities in addition to transportation in order to foster walking and biking, and to encourage social support, interaction, play, and active regeneration (Peinhardt 2018). The Shanghai Street Design Guideline supports the notion that pedestrians are as important as motorized traffic (Shanghai Street Design Guidelines 2016, 6).

Problem statement

In the course of the reconstruction of Shanghai, the traditional quarters of alleyway houses, called lilong, have dwindled; they do no longer fit in the self-conception of Shanghai as a global and financial centre, nor do they reflect the lifestyle of the 21st century. The lilong has played an irreplaceable role in shaping Shanghai's identity and that of its inhabitants (Zhao 2004, 73). Today though, lilongs are considered relics of former times, representing the old Shanghai and its deprivations (Zhang 2019. Iossifova 2012, 203. Bhatia 2008, 71). Ever since the 1990s, lilong neighbourhoods in Shanghai have been replaced with high-rise living towers in gated communities on a tremendous scale and pace (Arkaraprasertkul 2012b, 146). The decay of lilongs is best illustrated by statistical numbers: In the 1930s, more than 200,000 neighbourhoods in Shanghai were lilongs (Arkaraprasertkul 2016, 7). In its heyday, three quarters of the overall housing supply within Shanghai was lilong housing, in which approximately 80% of Shanghainese were living (Chow 2014, 19. Lu 1995, 94). As subsequent chapters illustrate, low investments were made in the existing building structure. Additionally, hardly any new constructions were completed in the decades prior the 1990s, the period in which the construction boom was fuelled. In the early 2000s, for the first time ever since, more people lived in a housing structure other than lilong, namely mid- and high-rise apartments in gated communities (Arkaraprasertkul & Williams 2015, 138). The actual number of lilongs today is questionable: Some claim there are fewer than 100 lilong neighbourhoods left (Yang 2014), while other sources state that 50,000 lilong houses are still distributed

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across Shanghai (Shanghai Municipal People's Government 2017). However, there is no doubt that the number of lilongs is still decreasing.

Each of the two types of residential units – the gated community and the lilong – and their respective street network are emblematic for specific epochs of urban planning. Gated communities as a new typology were first built in Shanghai in the 1990s. Also, the street space was adjusted to suit modern transport: As a result, superblocks and multi-lane streets were built, which strongly influenced the experience of the street space. Gated communities are inwards oriented and are characterised by an attitude of rejection towards the surrounding space. Hence, in gated communities it is of minor importance to create street spaces for any other utilization than transit. The perimeter public streets are lined with fences, walls or hedges; sometimes a belt of shops and services seals the gated community off from the street space. Lilong neighbourhoods, on the contrary, represent a different era: they derive its origin from the second half of the 19th century, therefore, representing a different understanding of urban patterns and mobility. Alleys and alleyways within the lilong are narrow, and often twisty. They are designed for slow traffic, such as pedestrians and two-wheelers. Lilong houses are a low-rise structure that strongly interacts with the adjacent open space.

Core observation. In today's Shanghai, one can find varying street spaces, for instance, narrow lanes within a lilong of less than two meters from the edge of one building to the other, or multi-lane roads with four lanes or more in each direction and a total width of more than 35 meters. More importantly, a highly different street life and utilization emerge around those streets. Lilong streets are full of life, conviviality, noises, bustle, and activities. People chat, laugh, and fight; they pursue economic and domestic activities. They share gossip and might even share a sense of common belonging. Lilong streets are characterised by a unique as well as intriguing atmosphere, and the street and its respective utilisation is shaped by temporality, diversity, and variety. Compared to lilong streets, streets around gated communities appear dull and monotonous. Miao bemoans the deserted street spaces around Shanghai's gated communities in an eponymous article and compares the effects of gated communities on urban life to cancer (Miao 2003, 51). He describes the atmosphere on those streets as the following: (Ibid, 45):

> *...they [mid- or high-rise apartment buildings] all rise out of walls more than 2 metres high, and are further rimmed by immaculate hedges and tile-paved sidewalks. But you see few souls on most of these sidewalks! The entire urban space looks like a giant stage set without actors. The walls keep going on and on, sometimes as long as 500 metres, and are only occasionally punctured by a gaudy gate decorated with copies of Greek statues and private guards dressed like police officers. Between the gates you find nearly empty sidewalks in a city of citadels. This may seem odd, because the visitor is in an area with nearly 10 000 residents per square kilometre. Such an experience is the result of a new trend rapidly altering the face of Chinese urban residential areas: the gated community.*

It is striking that such contrasting street types can be located in close physical proximity to one another. The utilisation of a given street seems to be place-specific and does not sprawl on the surrounding ones. Thus, this leads to the assumption that building typology and the street space relate with each other in some ways. Whereas some streets bustle with traffic, others do so with people. Some are pleasant for sojourning, while others do not tempt pedestrians to stay any longer than necessary.

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The replacement of lilongs poses a threat to the unique lilong street life. The lilong neighbourhood is closely linked to the street network; streets are directly adjacent to the housing and immediately accessible. Generally, the alleys and streets of a lilong are used intensively; local residents pursue manifold activities related to leisure, household, or economy on the streets. The street spaces of lilongs represent a domain of community life, interactions, and are a symbol of bustling street life. Therefore, lilong alleys are also referred to as an extended living room of the local residents. This attribution already indicates the major downside of the respective housing conditions: the intensive usage of the streets is linked to the mostly dense, overpopulated living conditions in lilong neighbourhoods where single buildings usually lack basic infrastructure and modern amenities, such as sanitation, gas, and heating, as well as an adequate degree of privacy. Due to the high population density, multiple families live in close proximity, causing private life to move into public spaces. Lilong housing is not to be romanticised. The respective street life inherits a field of conflict between the rich social capital of human interaction and mutual recognition, and the bare necessity to use street space due to a lack of private space. It is undetermined though as to which extent the intensive street usage has developed out of necessity and to which degree people enjoy appropriating the street.

Lilong living and its respective street culture and life represents a unique feature of Shanghai – a feature that might vanish within the next years, as lilongs are replaced with gated communities. At the same time, the lilong has been recognised as a valuable and profitable asset: a number of quarters of Shanghai, such as Xintiandi or Tianzifang, have been turned into commercialised shopping districts that are primarily frequented by tourists. There are also attempts to put lilong quarters under heritage protection or to upscale the living conditions for a wealthier clientele. It is questionable whether or not these approaches are capable of preserving the original culture of lilong neighbourhoods and its bustling street life.

Gated community living is usually socially segregated based on the socio-economic characteristics of the residents. Furthermore, the design of gated communities rejects public street space on the one hand, and includes spacious and differentiated open spaces within the gated community on the other hand – this might prompt residents to retreat from the physical public space. The replacement of lilongs with isolated cells of gated communities and its related street design and social fragmentation of living could result in a general decay of the street space in Shanghai. Consequently accessible street spaces might no longer possess a multitude of functions to maintain community life, liveability, and sociability of the neighbourhood. *"Cities are among 'societies' the most precious cultural artefacts. This can be seen (…) in the variety and diversity of street life evident in most cities. In most cities there are buildings, streets, layouts and neighbourhoods that form a central part of the history and culture of that society"* (UNCHS 1999, 58). At times, high significance is attached to specific street spaces and street life. To individuals, a certain place and community can be a reference point for identification. On broader scale, street spaces and street culture can be characteristic features of high importance for any given city. They might even be a symbol of the city.

Not only does the lilong house typology and its bustling street life disappear but also the related social capital: The physical proximity and place-boundedness unite the local inhabitants as they share common interests: for instance, on a very basic level, the residents aim to keep the neighbourhood clear of disturbance, clean, and safe. The high number of unplanned daily encounters might contribute to the development of a sense of community. Hence, the disappearance of lilongs does not only cause the loss of a distinct way of street life but also its intrinsic social capital which emerges within the space-bound setting. Arkaraprasertkul even predicts the death of streets and the sense of community if isolated, segregated cells of high-rise living are continued to be built (2012b, 147).

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1.2 Thesis statement, research question and underlying hypotheses

Thesis statement. The plot pattern and street network are two complementary entities. Block size, traffic planning, and building typology represent certain epochs and planning paradigms. Walkable grids, small permeable building blocks and a dense, low-rise dwelling structure represent the Shanghai of the early 20th century. All these features are characteristic of the lilong house typology, which is fascinating as *it presents a vivid public realm that is inherently attached to the typological form* (Bhatia 2008, 70). However, motorized traffic, superblocks, and high-rise housing in gated communities can be seen as the symbols of contemporary times. As this transition to modernity happens fragmented all over the city, highly different street spaces and different expressions of street life can be found in today's Shanghai in immediate proximity. Moreover, the street life does not spill but is strongly place-bond. Hence, it is assumed that this is related to the place-specific design conditions: the residential unit, its respective street design, and the delimitation of the building block. The building typology and morphology influences both the physical and social street space and its usage. Thus the use of open space is understood to be related to the type housing and the respective housing environment.

Research question. The core observation is concerned with the contrasting street spaces in Shanghai and focuses on their different street atmospheres as well as the wide range of their utilisation. According to the thesis statement, the street space is expected to be used differently dependent on the adjacent type of housing and respective lifestyle of the inhabitants. To analyse the street life and street culture, it is crucial to understand and examine as to how people actually use the street space – and which differences arise in this context. The use of the street is considered one of the most important variables that indicates the meaning of the street space to the local inhabitants and their relationship to the street.

> How does the street space around gated communities differ from street space around lilong neighbourhoods in terms of variety, diversity, and intensity of its usage?

Firstly, variety means the range of different types of activity present in a certain street section. Secondly, diversity refers to the different types of users and activities they engage with. Finally, the variable intensity indicates the density of users and usages. The research focuses on the *how* and is therefore descriptive. As a follow-up study, the reasons and possible motifs for street usage would be intriguing – however, this requires a more comprehensive cultural understanding as well as a better understanding of the target language. Therefore, the *why* is hardly covered in the given empirical methods, but background information is provided in the form of secondary sources, namely scientific articles and literature. Especially Chinese sources are used in this context, as the cultural proximity appears to be an important factor to avoid misinterpretations of human behaviour. Obviously, studies on street usage conducted in Shanghai are most valuable; since China does almost have the size of a continent, usage and behaviour are not assumed to be universal all over the country. Generally, the street usage is expected to differ between passersby and local residents. The usage of the passersby is mainly influenced by the street design, while the utilization of the local residents is assumed to be affected by the living space per person, the quality of housing, and the related lifestyle. Those aspects that have their origins from the built fabric are believed to shape an individuals' street activities and the degree of street usage.

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Hypotheses.

H1: Residents have a different relation to and demands for the surrounding open street space according to their type of housing.

People differ and so do their demands and perceptions concerning a successful and pleasurable street space. Obviously, those demands differ according to the socio-economic status but also individual characteristics. Gated communities constitute the most common type of housing in today's Shanghai, hence, this typology is not reserved for the wealthy, but also houses large parts of the population. At the same time, housing is increasingly clustered based on socio-economic criteria of inhabitants; and thus the equipment, amenities and comforts of single gated communities can differ vastly. Ordinary lilongs and their deprived living conditions are rather related to the precarity. Thus, on a prototypical level, this type of housing still provides insights in the socio-economic status of its inhabitants. The usual amenities provided in a standard gated community and a regular lilong can differ to a vast extent as well. Apart from leisure activities, it is assumed that people seek to satisfy their additional needs in the open street space, which they cannot do in their homes. Therefore, the type and standard of housing is highly relevant for residential street usage. A frequent phenomenon in the streets – which is assumed to happen especially in the lilong – is that people might establish a relationship and a sense of place attachment to the streets through interactions with the built environment. Furthermore, a greater presence in the street space is likely to foster social interactions between neighbours, hence, contributes to a greater sense of community.

H2: Streets around gated communities are primarily used for transit, whereas streets around lilongs additionally possess a social value.

The design of housing towers and interior open spaces within gated communities are assumed to influence the perimeter streets and reduce their transit functions. High quality open spaces within the gated community make the perimeter public streets less used. Those streets are expected to be characterized by monotonous edges and a lack of sojourn qualities. Lilongs, on the other hand, are usually overpopulated low-rise structures; the street spaces are more accessible and occasionally too narrow for cars to pass through. Through the high appropriation of lilong streets, this space becomes a social space of interaction, encounter, and exchange – which is what Carmona refers to as *social value* (2019, 3). The hypothesis is based on the design of both housing types and their adjacent streets. Lilongs and gated communities might be two extremes on a scale: One is characterised by forced sociability due to the lack of places of retreat, whereas gated community is typical of spaciousness and anonymity of high-rise housing that allows a withdrawal from any neighbourly contacts at all.

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H3: There is a shift from the exterior[1] to the collective open space: Residents of gated communities prefer the open space within the gated community over any open space around the gated community.

The collectively accessible space within the gated community is assumed to partially replace a number of functions of the public street. Firstly, the open space within the gated community is usually characterized by a sophisticated landscape architecture that creates differentiated, use-specific open spaces such as playgrounds, squares, and scenic paths in gardens. At the same time, the perimeter streets are primarily designed for motorized traffic with little incentives for pedestrian usage. Activities that are performed elsewhere on public streets are assumed to either be carried out in the collective open realm within the gated community, or in the private sphere. As a result, residents are expected to retreat from the public street. In this way, the exterior open street becomes a place for movement, while the open space within the gates turns into an activity zone. Investigating the public streets is therefore not sufficient, and the open space within the gated community has to be considered as well for the research. There is no comparable withdrawal from the public street space expected in the lilong neighbourhood since no comparable compensation areas are available. This further supports the idea that residents do not use the street space voluntarily for all types of activities, but rather that in cases, they are forced to do so due to the lack of more attractive open spaces and insufficient private living space. Developing awareness for these circumstances helps to avoid romanticized misinterpretations of street vividness and a non-reflected nostalgia towards a city that was used to be more human-oriented, even though dwelling conditions were substandard and indecent.

[1] As explained in chapter 3.4, the term *exterior* is used for what would be called *public* in the western context. *Exterior* is a more suitable term for the Chinese context.

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1.3 Aim of the research

First, the research aims to provide a structured comparison between two characteristic and dominant residential forms in Shanghai: the lilong and the gated community. The depicting features associated with these residential forms concerning private housing, the building block, open space as well as street space, and the related lifestyle and community are listed. Furthermore, the research aims to examine the main differences between the two forms. This research is a preliminary attempt which serves only as a basis for the subsequent empirical analysis of contemporary street activities in the open spaces of the respective types of housing.

As lilong neighbourhoods are being demolished, the research attempts to capture the unique lifestyle linked to lilongs and raise awareness for it. It is meant to illustrate the diverse ways as to how residents uses the street space, which ultimately constitutes the specific, recognizable street life and culture. It is indisputable that lilong housing conditions are perceived as indecent and substandard. However, the design features of this form that make the street accessible and allow for different uses could be worth investigating in succession. As always, this is based on a set of values: If self-sufficient, vivid neighbourhood quarters for ordinary residents are considered important to be preserved, it is worth to investigate these design features in more detail. However, if cities are understood as places for the accumulation of capital, where the right to centrality is willingly replaced with financial wealth, bustling neighbourhood streets are not a priority in this context.

The empirical research can be understood as an inventory on street activities on a small scale, since it is a case study on a micro level. Knowing which activities prevail, also on dull and monotonous street spaces, can provide valuable information if one seeks to foster bustling street usage. This helps to examine which activities continue to take place without having to provide certain incentives; furthermore, it suggests that certain types of use that are wanted to be carried out and viewed as an enrichment to street life and street culture have to be supported.

A crucial aspect of the empirical analysis is the resident's perception on street spaces and their own street usage. An outsider's assessment of vivid public spaces is insufficient; public space needs to be beneficial to its residents. Hence, an account of the aspirations of local residents living both in lilongs and gated communities are included. Does the space fulfil their requirements? Do residents even have an interest to use the street? And what is more, is there a relation between housing conditions and the perception and utilization of the street space? If differences based on the housing types are observed, this will serve as baseline information for further target-group-oriented design and planning.

In addition, the research shows the need for a mix of features of lilong and gated community architecture and design: Lilongs do not offer decent living environments but are self-sufficient, walkable and intriguing neighbourhoods characterized by a bustling street life. Gated communities offer modern living but have severe effects on travel distances, traffic volume, congestion, noise and pollution due to the related traffic planning and habit of zoning. A new directive calls for the opening of gated communities to pedestrians, which indicates a first step in combining the two approaches.

Finally, the research aims to raise awareness about the importance of street space for ordinary daily lives. Urban planning is not disconnected from socio-political values. The organisation of society is reflected in spatial compositions, the relation to public space and its accessibility, and the facilitation or blockade of exchange. Bustling streets and the presence of people constitute urbanity. Street life does not only contribute to urban liveability but to a wider range of urban challenges. Pedestrian-friendly neighbourhoods rely less on motorized transport, they also minimize the distance for daily errands, and therefore, tackle aspects like noise and dust pollution, congestion, and heat islands.

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1.4 Structure of the thesis

The opening chapter (2) presents the theoretical basis of the thesis. The research is designed as an explorative case study and does not represent a theory-centred approach. Nevertheless, essential theoretical aspects serve as the foundation for the research approach. The concept of place value, which assesses open spaces not only in economic terms but also in terms of their usability or support of social activities and interactions, plays an integral role for the approach. As the built environment and human behaviour are expected to influence each other, the respective theory – Environment Behaviour Studies – is further presented; accordingly, selected aspects of place attachment and different perspectives and perceptions of space are outlined. As the focus of this research is on street spaces, the contemporary approach to *good* street design both considering the physical and social dimension is illustrated.

Given that the study focuses on urban open spaces, the Chinese understanding and definition of public and private space is essential (chapter 3). As is shown, the western approach to private and public space is not suitable and has its limitations in the Chinese context. The Chinese relationship to open space is deeply rooted in Chinese culture and their way of urbanization. Special attention is given to 1) the Ancient Chinese City, 2) the relationship between the selected housing types[2] with the open space, 3) the field of tension as to whether streets are considered a public space or a non-space, and 4) the contemporary Chinese relationship to public space. To describe Chinese open spaces more appropriately, a differentiation between public, collective, and private space is necessary, however, another terminology would be more suitable in the Chinese context. Especially the interstitial category of the *collective space* can be identified as crucial to the Chinese understanding of space. Interstitial spaces are much more widespread in Shanghai than comparative semi-private or semi-public spaces in European cities, since almost any residential block includes collective open spaces.

As behaviour and the built environment are assumed to affect each other, the two compared housing prototypes, the lilong and the gated community are examined in more detail: characteristics of 1) the private housing domain, 2) typology and morphology of the building block, 3) respective open spaces, and 4) the related concept of lifestyle and the role of the community are presented. In conclusion, the two types of housing are contrasted, and their differences and commonalities highlighted (chapter 4). Chapter 2-4 are based on secondary sources.

To construct a better understanding of the role of street space for the two different types of neighbourhoods, the most direct expression – the usage of street space – is studied. This empirical research is a quantitative micro-scale case study, aiming to examine both the street activity and the relationship of the residents with their local streets (chapter 5). The research field comprises two neighbourhoods, namely a gated community and a lilong neighbourhood in the district of Hongkou in Shanghai. The aim is to both examine the different types, degrees, and intensities of street usage, and the ways the given street spaces are used differently in the two neighbourhoods. Moreover, the research investigates whether the respective residents have divergent expectations of, demands for, and relationships to their street space.

The concluding chapter (6) discusses the results of the on-site research. This chapter aims to contextualise the results of both methods with the hypotheses and the research question. Finally the conclusions are presented, that can be drawn from the results.

[2] Since these types of housing (lilong, danwei, gated community) are representative of certain periods of urbanisation in Shanghai, they will be also called housing prototype.

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1.5 Methodology

When researching the street usage, collecting data first-hand is advisable (Mehta 2013, 97). In order to answer the research questions and test the underlying hypotheses a combination of various types of investigation is required. Firstly, an observation of street activities is conducted, which informs about the types of usage in the selected open spaces and allows for a comparison on their utilization and liveliness. However, an observation as such gives only a momentary account of the usage and does not consider all aspects of street activity – although carried out on different days and times of the day. Secondly, since the self-perception of local residents is of major importance, a questionnaire that was distributed among residents within the two housing prototypes, the lilong and the gated community, represents another important type of investigation. This questionnaire aims to support and add to the results of the observation. It contains questions as to how local residents relate to and use the street space for sojourn activities, and also whether or not the results differ on the basis of their type of dwelling? Additional methods, such as a comparison of satellite images and statistical data, set the scene for the given research. A series of photographs of the examined open spaces provides more information on the places in the researched area. In this chapter, the scientific guidelines for the application of the chosen methods are presented. The on-site execution is documented in chapter 5.2.

Morever, cultural aspects of human behaviour need to be considered as well. A research in a foreign culture challenges the researcher since gestures, behaviour, and symbols might have different meanings (Diekmann 2018, 550). An example for this is proxemics, which refers to the distance that is usually kept between human bodies. This distance varies not only according to the relationship between individuals (Mehta 2013, 62) but is also influenced by the cultural context. In China, the distance individuals keep to each other is comparatively small (Ke & Lian 2017, 3), whereas in Europe a greater personal space is demanded. In order to minimize culture-related misinterpretations, the inclusion of the local residents' perception, captured with the help of a questionnaire, is crucial.

Certain quality criteria apply to any given research method: objectivity, reliability, and validity. Objectivity means that the same results are generated, regardless of the person who administers the test. Objectivity is important for both the implementation and evaluation of the research. Generally, quantitative research is more likely to fulfil the requirement of objectivity. It refers to the reproducibility of the results. Reliability can only occur in a stable setting; in social sciences the revision of reliability might be challenging. Validity refers to how accurately a certain method can actually measure the selected aspect that it is supposed to measure. Moreover, the criteria are hierarchically related: objectivity is a precondition for reliability but does not automatically ensure it; reliability is a precondition for validity, and again, does not automatically ensure it. The validity of the research is paramount (Diekmann 2018, 249-261).

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Observation: Counting

For Gehl and Svarre research on public space, which they refer to as public life studies, is centred upon observations (2013, 3). As the hypothesis was formulated prior to the observation, a hypothesis-testing observation was conducted. In this way a bias might be created; deviations due to selective perception or misinterpretation might occur. Both awareness and systemic guidelines for the observation help to reduce potential distortion. Public life is full of complex interactions; a systematic approach further helps to stay focused and gain the desired knowledge. It needs to be noted that the observation only provides insight into a number of sections of everyday practice, however, cannot take into account all social activities present in the open space (Diekmann 2018, 550-567) – observations are short-time records only (Gehl & Svarre 2013, 11). The design of the conducted observation is as follows (Diekmann 2018, 564):

- *Passive participant observation:* meaning that the researcher is present in the natural social field but does not interact with the observed participants
- *Overt observation*: the researcher is clearly apparent as such, notes are taken on the spot
- *On-site*: the research is conducted on site, not in an artificial laboratory setting
- *Structured observation*: a guideline or systemic observation scheme is applied
- *Quantitative research*: the observation is based on counting and is therefore quantitative; nevertheless, any peculiarities are noted as well

The presence of an observer may cause changes in the behaviour of the participants, a phenomenon called reactive behaviour (Diekmann 2018, 565). This can be reduced by minimising the observer's presence in the observation setting; however, it cannot be excluded completely in this type of observation design. Methodologically, it is important to obtain comparable results; therefore, the single observations are conducted at the same time. Further external conditions need to be considered as they might impact on how people use spaces: weather, temperature, time of the day, as well as any other irregularities, such as holidays (Gehl & Svarre 2013, 13. 25).

Gehl and Svarre emphasise that the research outline should focus on general study questions such as *how many, who, where, what* and *how long*? By asking the right questions, a specific pattern of behaviour might become apparent. Nevertheless, the research outline is determined by the specific place of research. Furthermore, following a mere counting approach – *how many* – is seldom of interest, it needs to be put in context with other data to elicit information of interest (Ibid, 11-13).

Who. Analysing the users of a public space might be an indicator for broader issues. The gender distribution of users might relate to the perception of safety in a specific space. Also, if a certain group dominates, spaces might be unattractive for others (Ibid, 14). Some information can only be elicited by observing people (such as sex[3] or age). This is always an assumption though, and makes sense only for rough classifications.

Where. The exact location where people stay in public space provides further insights. Do they follow the guidelines set by the physical layout of the city? Do they stay on their assigned areas or do they use the entire street space? This might reveal interplays between the built environment and behaviour of pedestrians. People probably accumulate around physical elements such as gates, entrances, street furniture, etc. Another basic rule is that people attract more people (Ibid, 11. 15).

[3]As is known, people might identify other than their biological sex. Deriving information about people just by observation does include a possibility for misinterpretations.

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What. In order to gain more nuanced knowledge, it is crucial to make a meaningful differentiation between various activities. There is no encompassing list of activities in public space: they are almost endless and strongly dependent on the examined place. Usually, people play a vital role in public spaces. Potential interactions, unexpected encounters, the presence of strangers, and the possibility of spontaneous social exchange constitute public life. People socialize differently in public space, either actively by talking to others, or passively by watching or listening to others (Ibid, 17).

How long. The time spent on a specific place provides conclusions about the quality of the physical setting. Time is an important component when studying public spaces. Depending on the activity, people have different perceptions on how much time is acceptable to spend in a given place. Additionally, design can influence the amount of time which is spent in certain places (Ibid, 19). This aspect was not included in the given systemic observation scheme, yet was occasionally included via additional notes.

It is advisable to conduct a pre-test prior to the actual research, since a number of complexities about the real life context might become apparent: Different types of activities are often intertwined; hence, it can be difficult to assign an observable action to a certain activity (Ibid, 11). A comparable action can have multiple reasons and implications: one can walk for pleasure and stroll around the city just to enjoy oneself. On the other hand, one can take a walk out of the necessity to run daily errands, or to go to work (Ibid, 16). In either case, what is observed is a person walking. Observations are limited as they do not allow any interpretations and do not reveal underlying motivations. A combination of research methods might provide further insight.

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Questionnaire

Generally, conducting interviews represents a systematic approach to gain information from interviewees for scientific purposes (Scheuch 1973, 70f.). The questionnaire is utilized to gain insight into the perception of the residents on their immediate open spaces. In order to overcome language barriers, the structured questionnaire was translated to Mandarin and then filled in by the interviewees.

Questionnaires represent one type of interview. Interviews can be open or structured, whereas questionnaires are usually structured; hence, they are classified as a quantitative research method. Sometimes interviewees have the possibility to add remarks though. Questionnaires ensure objectivity as well as comparability, and are also fast and easy to administer. On the other hand, they are unable to reveal any information besides the precise questions (Diekmann 2018, 437-438).

The main aim of an interview is to collect genuine data. Hence, an unpressured environment should be ensured in order to not influence the interviewee. Also, the conversation style of the interviewer has to be neutral. There are several aspects that might distort the results: characteristics regarding the interviewee, the quality of the questions or interviewer, or interview situation. Social expectations, a lack of opinion, and situational effects can further distort the interview. Moreover, distortions increase with the sensitivity of the topic (Ibid, 439-447). The usage of open space though is not considered a sensitive subject. Additionally, sensitive matters can diverge culturally: in Austria, income-related questions are considered private matters, whereas in China one talks more openly about wages.

Since the interviewees were left alone while completing the questionnaire, great importance was attached to the questions, their clarity, and respective wording. There are some basic guidelines: short, unambiguous, and precise questions; no negations; neutral and conscious wording; no suggestive questions; no overload, and in case of pre-defined answers, there have to be explicit, non-overlapping classes. Moreover, one should be aware that once classes are given, the range of the classes might impact the answers (Ibid, 458-482).

The structure of the questionnaire is equally important: a questionnaire should follow a narrative development of tension. In the beginning, more general warming-up questions are advised; the core of the research should be placed in the second third of the questionnaire; socio-demographic questions are best located in the end. Also, the questions should be arranged in thematic blocks. Filter questions might be useful to identify those to whom certain criteria apply. A clear design further helps interviewees to orientate themselves. Thoughts should also be put in the specific order of the questions, as this can impact the results as well. Generally, it is again advised to run a pre-test (Ibid, 477-483).

The conducted questionnaire mainly addressed behaviour and attitude towards open spaces. These spaces are at least passed through by the residents on a daily basis, hence, every interviewee is assumed to be able to relate to the topic. Therefore, interview pitfalls, such as lack of opinion or unfamiliarity with the topic, did not apply. Ordinary everyday routines might not be clearly remembered by the interviewees (Ibid, 453-463). But since the usage of open space is an active behaviour, it is assumed to be consciously perceived.

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Statistical evaluation: Fisher's exact test

Most of the data elicited with the help of the questionnaire is categorical, that is, nominal or ordinal data. This reduces the evaluation possibilities. For this reason, *Fisher's exact test* was used for both the combination of only nominal variables, and nominal-ordinal variables. *Pearson Chi² test* would also be applicable for this combination of variables, yet might be inaccurate in small sample sizes. As a basic guideline, each cell must contain an expected frequency of higher than 5. Unlike *Chi² test*, *Fisher's exact test* is suitable for small samples as well. Furthermore, *Fisher's exact test* is usually used for 2x2 contingency tables but can also be applied for larger contingency tables (Field 2009, 690). As the expected frequency in each cell is mostly lower than 5 and most of the contingency tables are larger than 2x2, *Fisher's exact test* appears to be the best choice for the evaluation.

Fisher's exact test evaluates whether or not two variables are independent. If the significance value is less than 0.05, the hypothesis of independence is rejected. Hence, the two variables are in some way related to each other. Moreover, when *Fisher's exact test i*s applied, *Cramer's V* shows the strength of the association between the given two categorical variables. In the case of *Chi² test*, the strength of the association is usually shown by means of *Phi*. *Phi* and *Cramer's V* are identical if both variables have only two categories (Ibid, 695-698). Conventionally, the strength of the association between the two variables is divided as follows (Ibid, 57):
r < 0.1: small association
r < 0.3: medium association
r < 0.5 strong association.

The standardized residuals give further insights in the model. Generally, the residual describes the error between the expected frequency and actually observed frequency. This error is calculated for each cell of the contingency table, revealing which cells deviate most from the expected frequency. As a consequence, the individual standardized residuals indicate which combination of categories has an appreciable impact on the overall association between the two variables. The standardized residuals are referred to as *z-value*. Furthermore, the significance of the standardized residuals can be assessed (Ibid, 698-699):
if the z-value lies outside of ±1.96, then it is significant at p<0.05
if the z-value lies outside of ±2.58, then it is significant at p<0.01
and if it is outside of ±3.29, it is significant at p<0.001.

Fisher's exact test including *Cramer's V* and *z-value* is applied to evaluate the results of the questionnaire as well as study potential deviations between the two comparison groups, that is, the residents of the gated community and that of the lilong. Chapter 5.4 shows the results.

For multi-response questions the analytical method of *Pearson Chi²* was applied, which as well indicates the association between two variables. The strength of the association between two variables in this case is not described by means of *Cramer's V* but via *Phi* value. Utilizing *Pearson Chi²* for multi-response questions the same quality criteria apply: the expected frequency in each cell should not be lower than 5.

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Additional Methodologies

Literature

Obviously, literature research provides the basis for the formulation of the research question and allows to narrow down the scope of the research. Literature lays the theoretical foundation, and represents the basis for the overview on the perception of public space, and for the comparison of the residential units of the gated community and the lilong (chapter 2-4).

Satellite pictures

A comparison of satellite pictures is an accessible method to evaluate the change of the built environment within a certain period of time. This method is useful for studying big-scale developments on the scale of a building block. Smaller adjustments can usually not be tracked due to a limited resolution of most satellite pictures. In the present case, Google Earth was used to examine the change of the building blocks between 2000 and 2018 in the extended area around the research site.

Photography

Photography is a valuable tool to document places in the most comprehensive way (Gehl & Svarre 2013, 24), and enables to communicate observations to outsiders. Also, it effectively supports the given analysis, as it is not distorted by memories or unintentional interpretations. Photography might even reveal new patterns or unnoticed details that could not be captured just by sight (Ibid, 31). A picture is always a momentary snapshot though; its utilization for a more general statement depends on the given context. When using photography as a method, also ethical considerations become important. Data privacy is of high priority, and the personal privacy of people should not be violated. In the given research, photography was primarily used as a tool to record the physical features of the street. All pictures presented were taken by the author.

Mapping of street design features

Both people and their behaviour, as well as physical features can be mapped. This method is useful for identifying the location of stationary activities and enables setting the behaviour into context with the built environment. It is recommended to use a symbolic code in order to be able to record the multitude of activities. Whereas counting is mainly quantitative, mapping also includes qualitative aspects of location and activity: It includes aspects such as who is doing what and where. In this way, this method appears to be similar to photography; but due to a certain level of abstraction and filtering, mapping contains already processed information of higher density than photography (Ibid, 24. 26). Mapping has been applied twice in the research. During the pedestrian counting, different sojourn activities were located on a map. Moreover, certain features of the streets of the extended area around the examined open spaces as well as construction sites were mapped. This does not represent mapping according to Gehl and Svarre, since only static aspects of the built environment were noted. The focus was on elements that might function as barriers for pedestrians in order to give a broader overview of the design of the urban environment.

Statistical data

In order to gain an overview about the analysed sites, statistical data was applied: the last national census data provides information on the scale of one or more building blocks, which is generally very valuable for micro- scale studies (6th National Census, 2010). The data originates from 2010 and was hardly valid anymore though, at the time the thesis research was conducted (June 2018). It is only used as a general approximation towards the field. Furthermore, statistical data for the entire district of Hongkou – in which the empirical research was conducted – is available for the year 2018 (Shanghai Statistical Yearbook 2019). This data reveals the current state but only on the district-level.

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1.6 State of research

The entire literature research is based on English literature. Due to limited language skills, no statement can be given whether or not some of the issues raised below have already been studied and published in Mandarin. Hence, this overview of the state of the research regards the information available to the non-Mandarin speaking community.

In English literature, research papers on everyday lived streets in China or Shanghai are barely available – as for existing research, the focus is predominantly on the appropriation by peddlers and street vendors (Sun et al. 2019. Sun et al. 2016). There is only a limited amount of studies which concentrate on the street usage of residents. Istrate, for example, focuses on the design features that make streets in Shanghai liveable, selecting the examined streets according to their traffic volume (Istrate 2015). In other cases, street spaces are just analysed in the same way as other public spaces: such as in an empirical study on the usage of public spaces in Shanghai (Orum et al. 2009). There are also design-oriented approaches: for instance, street life is examined, and as a result, a design solution derives, which mirrors the crucial features that foster social interactions within multi-storey buildings, hence, verticalising the street space (Wu 2010b).

Comparisons between different residential units are applied when studying potential differences in mobility behaviour: for instance, inhabitants' choice of means of transport in four or respectively five different residential units in Shanghai were compared and contrasted by multiple scholars (Chen et al. 2017. Pan et al. 2009). Other studies focus on the points of contact between residents of two different, directly adjacent neighbourhoods - a lilong neighbourhood or an urban village, and a gated community. Of particular interest for the research are the social ties between the representatives of the two dwelling structures (Iossifova 2012. Iossifova 2009a).

The impact of the housing structure on the street space has occasionally been examined, although only in a descriptive way for a single type of dwelling. Miao concludes that gated communities effect street activity, more precisely, by turning street spaces into deserted spaces in Shanghai (Miao 2003). Generally, there are multiple scientific papers on gated communities in China and Shanghai available, however, these contain limited direct comparisons between different types of residence. For instance, one study examines the moral justification of gated communities concerning the resulting social fragmentation of the city and the shaping of exclusionary territories (Pow 2007b). Those exclusive fragments of the city have been recently challenged by a policy that reinforces gated communities to be opened to the public (Wang & Pojani 2019).

In the same way as for gated communities, research on lilongs usually does not focus on the related street life. Generally, street utilisation is mentioned on the side but is not the core concern (Citterio & Pasquale 2015. Arkaraprasertkul 2012a. Arkaraprasertkul 2012b. Arkaraprasertkul 2010. Bhatia 2008. Miao 2003). The focus is increasingly on possible ways of adaption and alteration to keep the lilong inhabitable: commercialization and heritage protection are some of the proposed measures for this purpose (Arkaraprasertkul 2016. Yan 2013). One book provides insight into the ordinary life within lilongs in Shanghai; however, this source was published in the 1970s (Li 2015).

There are limited findings on the relationship between the type of dwelling and other factors concerning the living environment. A study about housing conditions and their effects on the quality of life was conducted in Malaysia (Zainal et al. 2012), representing a rare source that set housing conditions in context with other factors. There is no publication available on the general usage of the street space in Shanghai, nor on possible differences of street usage according to the adjacent housing type. Also, there was no information accessible on how housing changes the residents' needs for and their priorities regarding street space.

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1.7 Glossary

Danwei
Work Unit

单位 *(dānwèi)*

Danwei | Arbeitseinheit

Danweis are self-sustained work-units that provided their inhabitants with residences, workplaces and all necessary daily functions, as well as social infrastructure. Danweis were characteristic for urban areas in the Maoist Period (1949-1978). There was little interaction between single danweis, in other words, the city rather consisted of isolated cells (Ren 2013, 44-46).

Gated Community

封閉式社區 *(fēngbì shì shèqū)*

Gated Community

Gated communities are a residential typology that emerged in the course of the reform policy and were started to be built in Shanghai in the 1990s. Housing is arranged in high-rise towers that are arranged within sealed compounds; the unit is exclusively accessible to the inhabitants. As a consequence, an urban pattern of walled blocks, mostly superblocks, emerges. Gated community housing represents modernity and comfort. This typology increasingly dominates the urban fabric of contemporary Shanghai.

Hukou
Household registration system

戶口 *(hùkǒu)*

Hukou-System

Hukou describes a system of household registration. It was originally designed to secure social and political order and monitor migration movements within China. It essentially represents a dual classification system for the population which depends on the place of birth: one can either have an urban or a rural hukou[4]. The urban hukou is superior, considering the accompanying rich opportunities for the residents and their privileged socio-economic status (Pow 2012, 53-54).

Lilong
Alleyway Housing

里弄 *(lǐlòng)*

Lilong

Lilong is a residential typology characterising for Shanghai. It originates from the 18th century and is still existent today. Lilong-houses are a low-rise row houses of medium population density that shaped the image of Shanghai for centuries. Today, however, the typology is rather related to the 'old' Shanghai and the poor standard of living. The term *lilong* describes the entire neighbourhood comprised of row houses, *lilong house* means the single house.

[4] Also referred to as agricultural and non-agricultural hukou (Pow 2012, 54).

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Periods of city development in Shanghai

上海城市發展的各个時期

(shànghǎi chéngshì fāzhǎn de gège shíqí)

Phasen der Stadtentwicklung in Shanghai

The following classification of the Chinese phases of urban development is valid in the case of Shanghai (see figure 1). This classification serves as a simplification to illustrate the main phases of city planning, the general development of the built sphere, and related public realm (Heng 2008, 80):

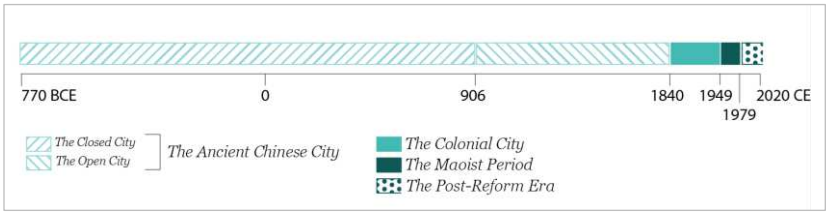

Figure 1. Periods of city development in Shanghai (Heng 2008, 80. Pow 2007a, 813)

The Ancient Chinese City. until 1840

中國古代城市

Die traditionelle chinesische Stadt

The Ancient Chinese City era encompasses the period of the Closed City (also called Walled City), 770 BCE – 906 CE, and the Open City, 618-1840 CE. The term Closed City is considered more appropriate, as Walled City leads to the assumption that after that period walls and gates had disappeared – which they did only partly. Gates have remained an essential component of the Chinese City until today.

The Colonial City. 1840-1949

殖民地半殖民地城市

Die koloniale Stadt

This period lasts from the beginning of the foreign concessions until the formation of the Peoples Republic of China. During this time, the urban development was also defined by the encounter of Eastern and Western elements. In this period, the characteristic lilong typology evolved.

The Maoist Period. 1949-1978

毛澤東时期

Die Maoistische Stadt

This phase is mainly defined by the development of self-sustained work-units, the so called danweis. Due to the self-sufficiency of most danweis, public accessible spaces were of minor importance in urban areas – other than in European cities. Walls once again were a basic feature of this period.

The Post-Reform Era[5]. 1978-present

后改革时期

Die Post-Reform-Stadt

The economic reform marked the transition from a planned economy to a *socialist market economy with Chinese characteristics*. From the 1990s onwards, a building boom has started in Shanghai. This is best illustrated by the rise of Lujiazui from a suburban, agricultural pattern to an emergent global financial centre. A verticalisation of the building structure has started; in terms of housing this era is represented by gated communities.

[5] Pow 2007a, 813)

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Public

公共的 *(gōnggòng de – public)*

官方的 *(guānfāng de – official)*

Öffentlichkeit | öffentlich

According to the respective discipline, the terms *public* and *private* have different meanings. In economic terms, for example, the two terms refer to the ownership of land and property. Politically speaking, *public* and *private* represent terms that are used to describe the development of democracies and are also relevant for governance. From a societal and cultural perspective, the two terms refer to the routines of daily life and the relation between self and other, that is, the individual and society (Madanipour 2003, 3). This research focuses on the spatial notion of the term public.

Public space

公共空间 *(gōnggòng kōngjiān)*

Öffentlicher Raum

This research is centred on the physical aspects of public space, and not on any political ones. In general, public space is understood as an exterior, open space that has no limitations in terms of accessibility. Public spaces are open for all parts of society. They bear a certain degree of surprise, in other words, a possibility for unexpected encounters and social interactions. The definition of public and private space is not irrevocable, it changes and evolves over time; new types of public place are formed, while others disappear (Carr 1992, 3-5). Public space is also influenced by technology, mobility patterns, building standards, and a certain way of life, etc. The definition of public space is not universal but culturally bound (chapter 3). The balance between public and private is unique to each culture (Ibid, 3).

Redevelop-ment

城市更新 *(chéngshì gēngxīn)*

Stadterneuerung

According to Cambridge Dictionary, redevelopment means *the act or process of changing an area of a town by replacing old buildings, roads, etc. with new ones.* Redevelopment takes place in already existing urban areas and occasionally involves a rezoning of the land or an infrastructure improvement. Generally a low-density urban structure is transformed to a higher-density one (The World Bank n.d.). Urban redevelopment is also confronted with questions of social justice and social exclusion. Generally there are different terms to describe the process of change in an urban area, such as *reconstruction, revitalisation, renewal, redevelopment* or *regeneration*– each representative for a certain era (Roberts 2000, 10. 14).

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Space and place

空间和场所 *(kōngjiān hé chǎngsuǒ)*

Raum und Ort

Space is an abstract category and can be defined according to a physical-material, a social as well as a subjective dimension (Drasdo 2018, 116). A place, on the other hand, is a precise geographical location, and moreover, has a certain meaning and its own identity (Ibid, 113). Social activity can help turn a *space* into a *place* (Hunziker et al. 2007, 47). Entities of different sizes are referred to as space: one's home, a neighbourhood, a hometown, but also regions, and even continents (Lewicka 2011, 211). Places can be stapled like the layers of a matryoshka: bigger places can contain smaller ones. Further studies reveal that the exact perception of place differs according to socio-demographic criteria of the observer. Drasdo concludes that especially humans play an integral role in the construction of place. The meaning of place is bound to culture and the people, therefore, places do not have single but multiple identities (Drasdo 2018, 114- 116). Certain scholars perceive places as clearly delimited, while others describe them as permeable, open, and accessible (Lewicka 2011, 210).

Super-block

超大街坊 *(chāojí jiēfāng)*

Superblock

The term superblock describes building blocks that are particularly large. A size of 500 m by 500 m is not uncommon. Further, the term also implies certain design features of the surrounding streets: they are primarily constructed for efficient vehicle circulation, and thus neglect non-motorized transport. Walkability is generally reduced around superblocks (Calthorpe Associates 2012, 3). More on this development in chapter 2.5 and 4.3.

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2 Theoretical basis

The present case study focuses on the link between the built material setting and people's actions, their behaviour in open spaces, and the relation towards their most directly accessible open spaces. Hence, the study is rooted in the tradition of public life studies. Renowned scholars in this field are Jane Jacobs, William H. Whyte, or Jan Gehl. In her famous quote, Jane Jacobs already stresses the importance of streets for the overall perception and image of a given city: *"Think of a city and what comes to mind? Its streets. If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull"* (Jacobs 1961, 29). Jacobs already advocated human-oriented urban spaces and emphasized the social and cultural role of the street (Mehta 2013, 50). In this context, she formulated most of the design principles that are still valid today, more than half a century later (chapter 2.5.) Public life studies represent a comparatively young discipline; it was not until the 1990s that the field became a strategic tool, and only from the 2000s onwards, the discipline has become recognized and widely renowned (Gehl & Svarre 2013, 41).

Accessible open spaces are the basis for the formation of bustling urban life – both of which are considered important aspects of liveable cities contributing positively to the quality of life of the residents. Lefebvre claims that accessible open spaces preserve the *right to the city*, which for him represents a right to *"urban life, to renewed centrality, to places of encounter and exchange, to life rhythms and time uses, enabling the full and complete usage of these moments and places"* (Lefebvre 1996, 179). Cities are meant to enable citizens to fully use city, and not to restrict or block them in any ways. To Lefebvre, people are the key aspect in this context because without them, the urban space would merely be an empty shell.

This chapter gives an overview of the applied theories: Place value is an introductory concept that does not only understand value in economic terms but includes social, environmental, and cultural values as well. For the present research, especially use value is of major importance, which refers to the utilization of a place by the people and their related activities (chapter 2.1). Environment Behaviour Studies constitute another relevant field, as it understands the built environment and human behaviour and actions to be related and mutually influencing entities (chapter 2.2). Emotional connections between people and physical spaces are not uncommon; selected aspects of this place attachment are presented in succession (chapter 2.3). The applied theories and concepts, namely place value, Environment Behaviour Studies, aspects of place attachment, and the design of the applied empirical research differ in their general understanding and perception of space. For clarification, the applied concepts are presented in subchapter 2.4. As the main concern of the research is street spaces, general physical design guidelines (chapter 2.5), as well as the potential of streets to support social relations (chapter 2.6) are presented.

Most of the theories on public life studies derive from Western contexts. Hence, it is not undisputed whether they can be applied to the Chinese context. Jayne locates the problem in the claim for universality *"Theorists (...) have rightly pointed to the failings of urban theory generated in Europe and North America and the problematic claims to universality despite specific geographical, historical and cultural origins"* (Jayne 2018, 8). Furthermore, Pow derives hardly any meaning from a nation-state approach in urbanisation, such as *Chinese exceptionalism*. He calls for a unique, place-specific approach as no place is alike (2012, 63-64).

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2.1 Place value

Place value, or place quality, is a concept that determines the quality of a certain place and the value of that place for society. Similar concepts exist that are partly related, overlap, and share the same ideas about the quality of the built environment, such as *liveability, sense of place, urban environment quality, urban design, sustainability*[6], etc. The focus of place value is on both the quality of the built environment and its value concerning public health, society, economy, and environment. Moreover, the values are always dependent on and related to the physical form of the place. In other words, the physical shape is the initial point from which values might be derived. The physical form can be transformed and altered, and at the same time, it can have enabling but also reducing and restricting effects. Hence, high quality space is one that returns the greatest value to its users (Carmona 2019, 1-4).

The value of a physical place is traditionally measured by means of the classical economic concept of *exchange value* and *use value*. The exchange value is determined by the market price and expresses the market value of a certain good. It is considered to be shaped by supply and demand. The use value, on the other hand, describes the benefits that derive from the good for the user. Use value and exchange value can vary vastly. This sole economic assessment has considerable shortcomings concerning the inclusion of social and cultural values (Ibid, 2) since well-designed buildings, spaces and places contribute to a wide range of values and benefits for society. Consequently, the *Commission for Architecture and the Built Environment (CABE)* developed a more general definition for the term value in 2006. CABE framed those value mainly regarding to buildings (CABE 2006, 4. 10). Carmona builds on the given definition but frames it more openly and extends the scope of application also to open spaces. He briefly describes the six values as follows (Carmona 2019, 2-3):

- Exchange value: parts of the built environment that can be traded
- Use value: the built environment impacts on the activities
- Image value[7]: the identity and meaning of built environment projects (positive or negative)
- Social value: the built environment supports or undermines social relations
- Environmental value: the built environment supports or undermines environmental resources
- Cultural value: the built environment has cultural significance

First and foremost, multiple equally important benefits can be derived from a place. The better the place quality, the more value can be derived. Nevertheless, a certain cycle is present in this context: value defines quality; and quality dictates value (Carmona 2019, 36). The value-based approach aspires to include both direct tangible benefits, such as financial returns, but also takes into account intangible long-term effects, such as an increased sense of community among neighbours (CABE 2006, 4). Obviously, such soft factors complicate an objective assessment and present a challenge for comparability. Nevertheless, social, cultural, and image-related aspects are relevant factors which considerably contribute to urban liveability. Additionally, place quality is not an exclusive concept that is limited to wealthy areas but is understood as a basic necessity of ordinary urban life which is important to the basic well-being of all citizens and heavily impacts on their lives (Carmona 2019, 36).

The concept of use value was applied in a Swedish case study focusing on the everyday life of people and on the value that places can add to everyday routines. In this context, use value was subdivided into the

[6] Some of those concepts focus on particular aspects*: place quality,* for example, is strongly connected to the design of the built environment. Terms such as *liveability* have a more holistic approach (Carmona 2019, 4).
[7] Others do not include *image value* as a category of place value, as it is viewed as an artificial top structure, which is related to marketing and the commercialization of a location rather than place values. (Schmid et al. 2011, 11).

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direct and indirect use value. Only spaces that could genuinely be used by passersby possess a direct use value, such as a public park. Green spaces that cannot be accessed, such as green strips along highways or ornamental greenery around residential buildings, have an indirect use value only. They can only be enjoyed from the distance, like out from a car or an apartment window. Urban changes, such as densification and an accompanying increase in possible users, led to a higher utilization pressure, which in turn could potentially increase the use value: more people use space more often which leads to a higher possibility for social interactions and a more diverse range of utilization. Public open space investment might increase as well as a consequence. In reality though, the opposite effect occurred more frequently: due to urban densification, open spaces decreased not only in size but also in diversity of their use value. In this case study, the following physical elements were associated with a high use value by the residents: places to sit in the sun, events, cafes, water, flowers, playgrounds, sport fields, and street markets (Stahle 2006, 63-68). The focus was strongly on pull-factors that attract people. However, there was no information on the actual usage of the places given.

In the subsequent study, the focus is mainly on the *use value* of public streets. As already outlined, the core assumption is that the adjacent residential typology and the respective living standards of the inhabitants influence their usage of surrounding open spaces. The usage of open space is probably the most direct expression of the utilization and relationship between the inhabitants and open space. In this respect, the *social* and *image value* are also briefly addressed, even though the design of the research methods (chapter 1.5 and 5.2) is not adequate to gain comprehensive knowledge about those two values. For instance, the use value can be indicated by the level of satisfaction of residents with their neighbourhood, as well as both their stated and their actual usage (CABE 2006, 10). According to CABE, social value is indicated by the sense of community or neighbourly behaviour; image value is exemplified by means of prestige (Ibid, 10), which bears relevance to the image and reputation of the compared housing units of lilong and gated community.

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2.2 Environment Behaviour Studies (EBS)

The EBS approach developed in the mid of the 20th century and represents a counterposition towards the prevalent visual aesthetic approach in urban design. EBS is a social-ecological approach that studies human behaviour in space in order to gain insights into human needs concerning the use of space (Mehta 2013, 58-59). The basic assumption of EBS is that social behaviour in the physical public space – such as public streets – is a result of the interaction between people and the physical setting. The social behaviour is influenced by both attributes of an individual or a given group of people and the characteristics of the setting.

A third factor is assumed to play an important role, yet its influence might be questionable: culture is believed to affect human behaviour in space as well. However, some believe that there are certain universal human needs, such as the desire to socialize. Hence, culture is not considered equally important to people and the physical settings (Ibid, 57). On the other hand, the field of proxemics – which refers to the physical distance kept between humans – does vary widely according to culture (Watson 1970, 16). Scholars who advocate the inclusion of cultural aspects further claim that the region, localities, and context of the specific place need to be considered (Syamwil 2012, 32). Some case studies by Gehl have shown that a change of the physical setting can result in a change of cultural practices. Thus, space can also serve as a catalyst for different behaviour (Mehta 2013, 57).

EBS developed from architecture, urban design, and urban planning on the one hand, and social as well as behavioural sciences, such as psychology, sociology, and anthropology on the other hand. The focus is on the interplay of two main aspects, the physical, built, planned, and designed environment for one thing and secondly behavioural, social, and cultural factors, individual perceptions and preferences, group norms and dynamics, cultural values and expectations, attitudes, social norms, semantic structures, and so forth. The interdependence of the physical environmental system and the socio-cultural system is the key issue of EBS, and hence, the focus is both on humans and environmental factors (Moore 2006, 2-3).

The built environment is the medium for and outcome of social process and change. *"Human behaviour is thus inherently situational, embedded in physical – but also 'social', 'cultural' and 'perceptual' – contexts and settings"* (Carmona et al. 2010, 133). The built environment and people mutually influence each other: People create and modify space while at the same time being influenced by space; also, design can manipulate the likelihood of certain actions and behaviours (Ibid, 134). The question about the impulses which cause certain actions is still debated. Some perceive the environment to be the decisive stimulus for behaviour, others believe that the environment is shaped by individuals and society. The third approach suggests a mutual influence between society and the physical-material environment (Joerges 1977, 113).

The theory of EBS is still developing. There is neither one single method, nor one single theory. Although some major theories exist, EBS is still an undefined concept which draws on multiple other theories. Moore mentions almost ten different theoretical approaches. The diversity of disciplines makes the development of theory more complex, as does the multitude of environmental and behavioural aspects. Research of environment-behaviour studies is mainly empirically based. Due to the theoretical vagueness, research designs are relatively open: research can either be inductive or deductive; both quantitative and qualitative methods are applicable – depending on the specific context (Moore 2006, 5-7). Mehta considers the following three theories as the most influential ones for Environment Behaviour Studies (2013, 59-60):

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Behavior settings, Barker 1968

The focus of the theory is everyday human behavior in relation to the physical setting. A behavior setting consists of three aspects, namely the *milieu*, which is the particular physical layout of the environment, a *standing pattern of behavior*, which describes a recurrent activity, and thirdly, the *congruent relationship* between these two elements. The greater the congruent relationship, the more suitable the behavior setting appears to be for human behavior and their needs (Mehta 2013, 59). Behavior settings are further understood as an environment that only embodies predetermined uses. Hence, these environments limit people's choices but suggest and enable specific actions: a library, for example, is meant for quiet reading, a sidewalk is made for walking. Behavior settings are intangible, but people unconsciously and automatically assess the context and understand to behave in certain ways: to illustrate, people lower their voices when entering a church (Golembiewski 2016, 3-4).

Environmental Affordances, Gibson 1979

Affordances are the activity choices and opportunities that an environment offers (Golembiewski 2016, 1). The term refers to the physical properties of an object or an environment that make certain activities and usages possible. Affordances are neither coercive, nor invitational – other than as for the concept of behavior settings. The user though can change the affordances by physically altering the setting or object. And even if the object remains unchanged, external influences might alter the setting, for instance the cultural or individual background, which again impacts on the affordances. Affordances can support or limit activities, plus they can enable or impede activities. Gibson, who further expanded on Barkers behavior setting theory, states that environments do not only support behavior but also aesthetic experiences (Mehta 2013, 59-60). Golembiewski, on the other hand, regards affordances as offerings to people. According to the author, besides affordances behaviour is mostly shaped by restrictions, such as rules or physical barriers (2016, 2).

Place Theory, Canter 1977

This theory defines an environment or a place by its physical characteristics, the activities present within and their meaning for the people. This concept does not include any requirements towards the quality of the setting. The physical structure is secondary; the perception of the environment depends on what one does and how one feels about the place (Mehta 2013, 60). Hence the perception of space is subjective (see also chapter 2.4, phenomenological space).

To conclude, there are two opposite perceptions towards the design of open space: *everything will be fine if we can just get the design right* (Ford 2000, 199). Design in this sense automatically results in desirable behaviour in public space. Jane Jacobs and William H. Whyte are supporters of this notion. The achievements through design alone are rather limited though. Designing inclusive public spaces does not automatically result in more social and neighbourly behaviour. Others believe that if more options to use public spaces are available, it will increasingly and inevitably attract undesirables. *Front porches will attract nosy neighbours; grid street patterns will invite strangers into the neighbourhood; benches in public spaces will encourage vagrants (...)* (Carmona et al. 2010, 135). Hence, one should create spaces that discourage any specific behaviour at all. This, however, results in anti-social environments that in turn seem to foster anti-social behaviour. The present study agrees with Carmona et al.: Urban design should provide choices, rather than deny them (Ibid.).

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2.3 Selected aspects of place attachment

The emotional relationship between humans and space is called place attachment. There are several terms for different forms and facets of this relationship: place attachment can be individual or collective; it can be related towards the physical or social functions of a place, and moreover, it can be formed through behaviour, feelings, or cognition such as memories and knowledge (Drasdo 2018, 155). Also, there are multiple aspects of place attachment, such as *sense of place, topophilia, appropriation* and *personalisation,* but also *displacement* and *disruption*. In the following paragraphs, the focus is on the given two aspects of place attachment that are included in the empirical research: *sense of belonging* and *sense of community*. Sense of belonging describes an individual's subjective feeling of belonging to a place, whereas sense of community is related to a collective of people, meaning the social dimension of space. Both types refer to a positive feeling (Ibid, 177). The concept of place-based community is further presented, as it is related to the evolvement of a sense of community.

Sense of belonging

An individual *feels that it belongs* to a certain place. This feeling relates to the physical location, not any social interaction. Sense of belonging can be developed when

1) the person knows the place well, is familiar with it and feels safe there;
2) the person likes the place and regularly spends time there; and
3) the person identifies with the given place, hence, the place turns into a symbol for the person.

Sense of belonging is a psychological process that expresses a positive connection between the individual and the place. It describes an emotional connection, and therefore, this term primarily relates to the psychological dimension of place attachment, whereas exterior social and physical factors are not explicitly addressed. Sense of belonging includes a familiarity with the place and a bond towards it. It can further co-exist with other forms of place attachment (Drasdo 2018, 159.167. Fullilove 1996, 1518). It is an individual, subjective feeling, not a collective one. In this case, space is defined by what is experienced by a single person. The perception of space is therefore phenomenological and consists of both physical objects and thoughts (Drasdo 2018, 200) – more on the different perceptions of space can be found in chapter 2.4.

Place-based community

Before sense of community is explained, the place-based community is briefly outlined. Social advantages of place-based communities are proximity, face-to-face-contact, as well as emotional and material aid; moreover, they support a sense of identity and prevent from feelings of isolation. In this sense, it is important to note that neighbourhood does not equal community though. Physical proximity does not automatically lead to the development of a community (Mahmoudi Farahani 2016, 12-13).

According to traditional sociologists, a community is based on place, interest and identity. Apart from a place bound community, there are also communities of interest, such as soccer fans. Today, place-less communities have become increasingly important, which has also been supported by the emergence of the internet. At the same time, a loss of community can be identified, which either implies a lack of social interaction, or an increase in non-local, not physically bound communities (Ibid, 2-4). Modern urban living does not necessarily involve being familiar with neighbours anymore, unlike in the past village life. Not all neighbourhoods necessarily include strong ties and close friendships among neighbours. Neighbours might intrude upon privacy, or cause discomfort, all of which might result in conflicting relationships (Kusenbach 2006, 301). Despite increasing non-place-based communities, space still remains a significant factor for the formation of local interactions and a sense of community (Mahmoudi Farahani 2016, 16).

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Community was important in ancient Chinese culture and crucial for people's daily life. A traditional proverb says *"close neighbours are better than distant relatives"* – 远亲不如近邻. Strong community relations and the formation of social networks were dependent on proximity (Rock 2018, 86. Zhou, 2012, 17. Xu et al. 2010, 261). Ever since the economic reform, Chinese society has become more individualistic, which has been accompanied by a more private way of living (chapter 4.3). Hence, daily neighbourly practices, such as caring for the elderly or the young, helping neighbours in need, or standing guard against any intruders and other potential dangers have become less frequent. The introductory saying was once suitable for describing social life, but it does no longer fit to modern life in the neoliberal urban present of the middle class (Rock 2018, 86. 106). As for the urban precarity, community relations still remain important.

Sense of community

Sense of community relates to society and social interactions, not to a physical environment (Drasdo 2018, 177), and is described as *the sense that one is part of a readily available mutually supportive network of relationships* (Sarason 1974, 1). A sense of community might evolve through same interests – community of interest – or physical proximity – community of place (McMillan & Chavis 1986, 16). In the context of community of place, the given place is both cause and reference point for positive emotions (Drasdo 2018, 169). This chapter focuses on the sense of community that originates from a community of place.

Proximity does not automatically lead to a sense of community. The quality, not quantity, of social interactions represents the decisive factor, such as a feeling of belonging and being important to one another (Skjaeveland et al. 1996, 415). Sense of community is a psychological concept about the beliefs and attitudes of neighbours concerning their neighbourhood; and not a behavioural concept (Farrell et al. 2004, 10). Space is viewed from a social perspective – see chapter 2.4. Sense of community can be characterized by four elements (McMillan & Chavis 1986. 9-14):

membership	the feeling of who belongs to the community and who does not
influence	mutual influence between the group and its members, including aspects like conformity, uniformity, consent, and power
integration and fulfilment of needs	members are awarded; needs are satisfied by being a member of the community; being part of the community is beneficial to the members
shared emotional connections	a shared, common history of the community members

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Neighbourhood interactions are more important for certain groups like children, elderly, or disabled people (Guest & Wierzbicki 1991, 105); however, they are generally believed to be beneficial to any resident. A sense of community can positively influence the quality of life in a neighbourhood as well as the perception of personal and emotional safety. It might cause neighbours to ensure order in their community, for instance, by watching out for a neighbour's home or strangers. The level of identification with the community impacts the overall satisfaction with the given living environment, the personal or community identity, and the physical and mental health of the residents. A study shows that residents of a neighbourhood which is characterized by a strong sense of community are generally happier, less worried and they perceive themselves to be more capable of handling their lives (Mahmoudi Farahani 2016, 11-17).

Rapid growth and urbanization shape today's urban China. Consequently, this results in an increasing number of disrupted families and weakening social ties. Temporary communities of migration workers have occurred in which residents hardly know each other and have little in common. Nevertheless, the residents engage with their neighbours; and especially in places where people connect with each other, a sense of community is developed. Generally, rural residents have a higher sense of community than urban residents. Urban residents regard it as important to know their neighbours, while rural residents emphasize a neighbouring behaviour (Xu et al. 2010, 259-268). A sense of community contributes to the well-being of all citizens of all age groups. The elderly attach highest importance to a sense of community: they are retired, less mobile, and therefore, spend most of their time within the neighbourhood. In a case study in Shanghai conducted in 2013, the sense of community[8] was highest in commodity housing (Yip et al. 2013, 682-683). A study among hutong[9] housing in Beijing has revealed that physical proximity does not automatically result in a sense of community. Spatial proximity facilitates interaction and care between neighbours, but dense living conditions might as well result in disharmony (Rock 2018, 86-94). *"This intimacy does not happen without tension"*; those neighbourhoods are not always harmonious places, but there is *"recognition, familiarity and curiosity"* (Ibid, 94).

[8] Sense of community was derived from a set of questions that addressed the respondent's sense of belonging, the emotional bound to the neighbourhood, an overall sense of cohesion, and the commitment to the community (Yip et al. 2013, 681).

[9] Hutong is the term for old alleyway neighbourhoods in Beijing that usually consist of four-sided courtyard houses (Rock 2018, 86-88). Hence, the spatial arrangement of the neighbourhoods is similar to that of lilongs in Shanghai, the architecture of single houses differs though.

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2.4 Perception of space

Space can be viewed from different perspectives and angles. To construct a better understanding, the occurring perceptions of space in the present thesis are briefly introduced (see figure 2). The classification follows a more pronounced study on different perceptions of space by Drasdo (2018).

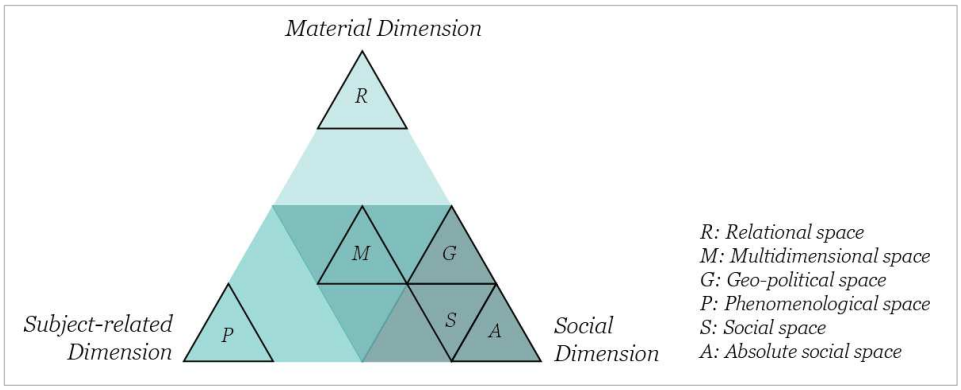

Figure 2. Classification of selected perceptions of space according to the material, social and subject-related dimension (redrawn from Drasdo 2018, 109)

Multidimensional space. Space is understood to be consist of multiple dimensions. Often, the two core dimensions are physical-material space and socio-cultural space. Multiple space perceptions can coexist though. In this way, multidimensional space represents a superordinate category (Drasdo 2018, 92). As different concepts of space are used in present research (relational, social and geo-political space; in parts also the absolute social space, and the phenomenological space), space is most of all understood as multidimensional.

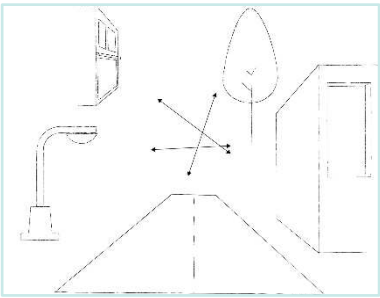

Figure 3. Illustration relational space, inspired by Drasdo 2018, 94

Relational space. Space is defined by material objects, their location and relation to another (see figure 3). The relation between the objects gives them additional meaning, which they do not possess on their own. Without objects, space is non-existent. This perception of space is used by Leibniz, Einstein, and Descartes and is based on the material arrangement of space (Drasdo 2018, 88. 94. 109). Also, it is applied for the physical-built dimension of the analysed sections of urban open space. Street sections are defined by strict borders, for instance the edge of a building, a certain pavement, and a separation of paths assigned to different road users. The relation of all those elements comprises a street section. The five sites of research were chosen by its material structure (see chapter 5.1); other than that, the focus is on human behaviour.

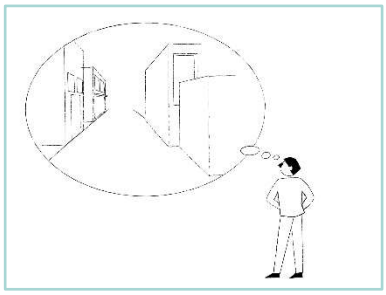

Figure 4. Illustration phenomenological space, inspired by Drasdo 2018, 97

Phenomenological space. This concept of space is rooted in an individual's perception of space, as is exemplified in figure 4. Space presents a subjective entity and is what is thought, felt, experienced, and viewed by a single person. Space is a product of thoughts and objects; material objects are embedded in a relational setting (Drasdo 2018, 103). This perception of space is applied in the concept of sense of belonging, which solely describes the subjective relation of an individual towards the physical space – irrespective of other people.

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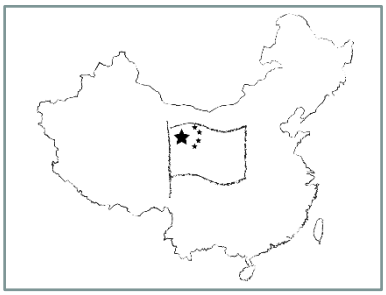

Figure 5.
Illustration geo-political space, inspired by Drasdo 2018, 95

Geo-political space. Space is modified and is negotiated in economic and political practices (figure 5). This perception of space is shaped by Arendt, for example (Drasdo 2018, 89. 95). The arrangement, classification, and division of space is a human-made fiction which helps to comprehend, control and rule space. Some understand space as an area that is inhabited and characterised by clear boundaries. Territories are created or dissolved; public and private realms demarcated (Dünne 2015, 371 ff.). Examples for geo-political spaces are administrative borders and nation-states. The actual natural landscape conditions are moved into the background. Hence, this perception of space is less material than societal (Drasdo 2018, 109-110). The geo-political space occurs at the margins of this research, when dealing with the research site in Hongkou. District borders are arbitrary determinations that are easily changeable and modifiable. Nevertheless, approaching the research site, statistical data seems to provide a first overview of the district and its inhabitants, which can be a valuable source of information.

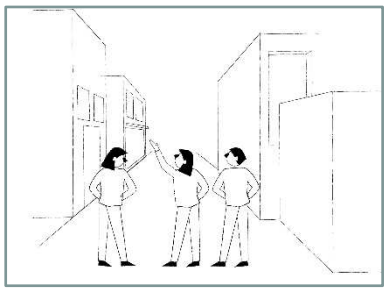

Figure 6.
Illustration social space, inspired by Drasdo 2018, 95

Social space. Space is not only the means of production but also the result of human social practices (as is illustrated in figure 6). Space is created by individual and collective actions; social structures become apparent in space. Aspects that shape a place are cultural meanings, institutions, and changes in society. The understanding of social space is influenced by Simmel, Lefebvre, and Foucault, among others. According to Simmel, for example, the physical-material world exists prior to any social process, but only the social process turns it into *space*. Space is the precondition but only becomes meaningful by social processes; the physical setting of the space is a mere coulisse for social processes. The perception of social space focuses on the production of space by society as a whole (Drasdo 2018, 54. 89-109). The social perception of space constitutes the basis for the on-site research on observable activities in the open space as well as for the questionnaire concerning the residents' usage and relation to the open spaces (chapter 5.3 and 5.4). Hence, the use value of the street for the neighbourhood is paramount. Both the usage and results of the questionnaire are indicators of the importance of the given open space for a neighbourhood. Moreover, social space is mainly the domain in which the claim for liveable public space is made. Human presence is essential, without people liveability cannot be achieved.

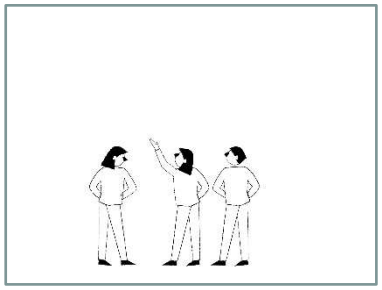

Figure 7.
Illustration absolute social space, inspired by Drasdo 2018, 102

There is also a more extreme standpoint on socially produced space: the absolute social space. This perception rejects or consciously ignores any material existence of space and perceives space as exclusively socially produced (figure 7). This point of view forms the basis for the place attachment of *sense of community,* for example. Space is the sole product of individual and collective social behaviour and social relations. Without any social interactions, no sense of community would ever evolve (Ibid, 99. 102).

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2.5 Morphological dimension of human oriented street design

It is stated that among greenery and modern transport, *"safe, walkable neighbourhoods that encourage physical activity and social interactions are key constituents of urban quality of life"* (European Environment Agency 2009, 13). According to the *Wuhan declaration,* which was issued at the conference *Project for Public Space,* China announced to enhance its public spaces (Peinhardt 2019). An aspect of which is to promote streets as places that equally support active transportation, social, and economic activity. A pedestrian-oriented approach to street design is also reflected in the *Shanghai street design guideline* (2016). The physical design guideline aims to lay the foundation for a potential utilization of the street for different activities, and not just merely for transit.

Generally, people use any type of streets for necessary trips. When it comes to leisure activities though, residents have certain demands towards a pleasant and comfortable street space (see chapter 2.6). Walkability is perceived as one of the preconditions in order to create an enjoyable street space, and therefore, represents a relevant factor for street usage. In sum, for a lively urban setting to emerge, there is the need for public pedestrian-oriented, small-scale areas (Poon 2016). Furthermore, human presence in the open space is one of the requirements to promote community.

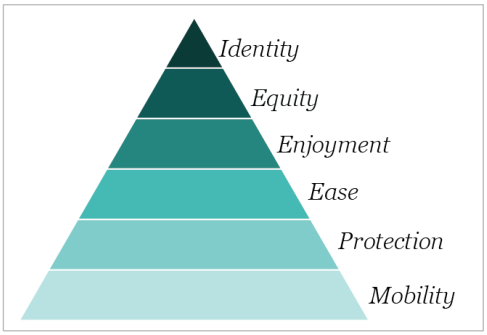

Figure 8.
Pedestrian-need hierarchy
(redrawn from Mateo-Babiano & Ieda 2007, 1921)

The pedestrian-need hierarchy is a simple indicator to measure whether or not a street space is pleasurable for pedestrians (figure 8). It is inspired by Maslows's *Hierarchy of Needs* and describes a structure of needs that is understood as a hierarchical and relational pyramid. It includes both aspects of movement and non-movement, both of which are considered relevant for pedestrian satisfaction. Six aspects that influence pedestrian activity can be identified: *Mobility* is the basic need and refers to a barrier-free movement from A to B. *Protection* means danger-free movement, that is, limited pedestrian-vehicle conflict. *Ease* relates to the emotional condition of feeling secure, comfortable, and stress-free while walking. *Enjoyment* describes the inclusion of transport-disadvantaged people and those who pursue other activities than walking (vendors, leisure walkers, eating, etc.), thus creates a venue for encounter. *Equity* persists when activities related to self-expression, interaction, enjoyment, and leisure can be pursued in the streets, and thus, a vibrant atmosphere is created. *Identity* is given when cultural activities and a feeling of belonging are supported by the street. Higher levels of *need* can only be achieved if the levels below are satisfied; therefore, lower levels embody individual needs, whereas upper levels are social ones (Mateo-Babiano & Ieda 2007, 1920).

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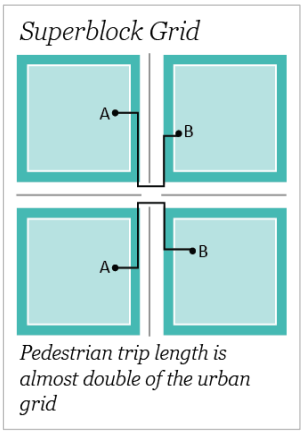

Figure 9.
Schematic illustration of superblock grid
(redrawn from Calthorpe Associates 2012, 50)

There are two opposing approaches towards street design that are outlined for matters of demonstration (see figure 9 and 10): the first street network is a coarse arterial system of large block sizes. Hence, the number of street kilometres appears to be rather low in the given areas, therefore, the remaining roads need to accommodate the accumulated traffic. This results in the formation of multi-lane roads designed for motorized traffic. This street network is called *superblock system*. Such road systems are prominent around large sites of production and warehouses but negatively affect the quality of life in residential areas. In terms of traffic fluidity and efficiency, a network of wide roads does not improve traffic flow – rather the opposite is true. Superblock structures lead to higher traffic concentrations on fewer roads, limited traffic dispersal, and a decline of alternative paths. Congestion is the usual result, which blocks individual and public transport. Additionally, a network of wide, *canyon*-like roads creates a hostile environment for pedestrians and cyclists (Calthorpe Associates 2012, 49-50). Moreover large blocks are criticized to compete with the public street and to internalise and privatise *public* life (Carmona et al. 2010, 99).

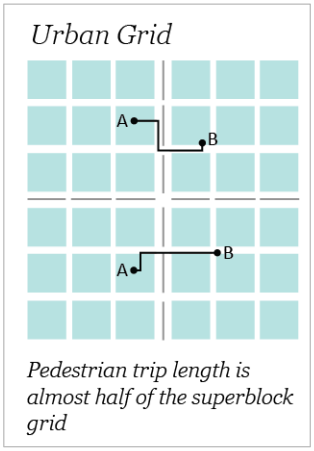

Figure 10.
Schematic illustration of urban grid
(redrawn from Calthorpe Associates 2012, 50)

The opposing design approach is more human-centred and defined by a fine-grained circulation system of small building block sizes, a high density of intersections, and a network of hierarchical streets. This system is called *urban network*, and favours residential, mixed-use areas (see figure 10). It is especially advantageous for pedestrians as it allows short, direct trips through more intersections and shorter crossing distances. Walkability increases as streets are more human-oriented and less crowded with cars, which again increases traffic safety. Urban networks need to be embedded in a broader structure of public transport and linkages to fast mobility, like expressways or the metro, have to be established. A hierarchical order of different types of streets is necessary: a number of streets has to be designed for fast mobility, while others should rather be pedestrian-oriented. The urban grid optimises the traffic flow: more direct routes are available, detours are avoided, and cars disperse to multiple roads, hence, vehicle travel distances decrease and greater shifts in the modal split become evident. Moreover, narrow streets are simply more appealing to pedestrians. (Calthorpe Associates 2012, 10. 49-50).

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Generally, specific criteria for street design have to be met in order to make the street space more appealing to pedestrians (Southworth 2005, 249). Most of the following six aspects are interwoven and mutually influence one another. Accessibility again is of major importance – if a street is to be inclusive and open to all, it needs to be accessible.

Connectivity

Direct routes, sidewalks, permeable blocks, and small block lengths[10] contribute to connectivity. Porosity and accessibility are key to walkability (Talamini 2018, 203. Southworth 2005, 249), as are high numbers of intersections, narrow streets, and paths which connect single blocks (Tosi 2018, 24). To increase the connectivity of already existing large-scale blocks, public paths could cut through the superblocks (Calthorpe Associates 2012, 8) – this approach is already discussed in China (Wang & Pojani 2019). Furthermore, compact patterns of development increase connectivity – in contrast, sprawling, fragmentation, and barriers have a negative impact on connectivity (Carmona 2019, 33).

Linkage to other modes of transport

According to a comparison of 271 independent studies conducted by Carmona, low levels of traffic, walkability, and bikeability – all of which often depend on the connectivity and quality of the public realm – as well as a convenient connection to an efficient public transport network have a highly positive impact on the perception of streets as pedestrian-friendly (Carmona 2019, 33. Tosi 2018, 24). Several scholars believe that linkages to public transport should be supported in particular (Southworth 2005, 250), while others simply emphasize the linkage to a superordinate high-speed system, regardless of whether it is individual or public transport (Calthorpe Associates 2012, 50).

Varied land use patterns

Varied land use and a mix of functions increase the liveability of streets. For instance, shops need to face the sidewalk; also, residential developments need multiple access points and are supposed to replace surrounding security walls with see-through fences, or fences should simply be removed at all. Overall, it is better to avoid monotonous residential blocks. A mix of shops and services, of residential and work-related functions, contributes to an efficient as well as compact neighbourhood, especially if points of attraction are located within walking distance from one's home. Moreover, a mix of uses provides a neighbourhood with charm and identity (Calthorpe Associates 2012, 8. 12). Also, the aforementioned comparative study of multiple individual studies by Carmona stresses that a diversity of land use within a neighbourhood leads to strongly positive associations between the place and its potential to satisfy different place values (2019, 33). Frankly, urban density certainly contributes to walkability (Southworth 2005, 250).

[10] The size of which differs according to scholar: lengths of 80-110 (Carmona et al. 2010, 102) or 150 (Calthorpe Associates 2012, 8) meters are mentioned. Generally, short lengths are more beneficial to pedestrians.

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Safety

Safety refers to the categories traffic safety and crime. Motorized-focused traffic planning might cause an inconvenient, unpleasant, and even dangerous walking environment. Safety takes factors into consideration, such as the needs of disabled people, traffic speeds and control signing, as well as sidewalk width and condition. Moreover, social aspects are considered. For instance, as residents move on the streets during the night, lighting can further contribute to a greater personal feeling of safety. Also, monofunctional quarters become deserted areas at certain times – such as business centres during the night – therefore, there is increasing inconvenience of using these space during certain times. People who feel safe from crime, and safe as pedestrians are more likely to walk (Southworth 2005, 250).

Quality of path

Limited road widths and sufficient sidewalk width, small block lengths and setbacks between buildings and sidewalks, ground level activities as well as landscape elements such as pavements, greenery, trees, grass, water, and open spaces certainly impact positively on the quality of a given path (Carmona 2019, 33. Calthorpe Associates 2012, 8). Streets ought to be designed for different types of pedestrians; for instance, they should be useable for young, disabled, and elderly persons – just to name a few groups. Moreover, signing and lighting further support pedestrian orientation, and therefore, increase the quality of the path (Southworth 2005, 251). Finally, streets are supposed to provide visual stimuli and sensory pleasure to pedestrians (Mehta 2013, 134).

Context of path

The distance between sidewalks and adjacent buildings should be limited in order to form a visual and physical edge. The design of setbacks can vary depending on the function of the building (Calthorpe Associates 2012, 8). Transparency of fronting structures, interesting visuals elements, and a high degree of explorability facilitate an exciting walking space and allow pedestrians to comprehend the context of the setting (Southworth 2005, 251). Additionally, regional factors, such as micro-climate and culturally different ways of using street space, shape the context of path.

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Case studies in China. The relation between the design of streets, the size of building blocks, and the use value of streets is illustrated in two Chinese case studies: In China, residential neighbourhoods are usually sealed (see chapter 3 and 4). Concerning the relation between sealed neighbourhoods and street spaces, a case study states that 1) smaller enclosure sizes cause a higher degree of accessibility of local streets; 2) the more diverse uses the boundaries can support, the more activities on immediately adjacent streets will happen; 3) the fewer internal facilities there are, the greater is the reliance on supply from neighbouring streets[11]. These three aspects already widely determine the relationship between enclaves and their neighbouring public spaces (Xu & Yang 2009, 116).

Not surprisingly, another case study shows that the neighbourhood design affects the residents' choices on the mode of transport: a comparison between a mixed-use traditional neighbourhood and a residential superblock in Jinan has revealed a fivefold increase in household vehicle kilometres in the superblock (Calthorpe Associates 2012, 3). A study conducted in Shanghai confirms the effect of the urban form on the residents' willingness to walk – which is a crucial aspect of liveable and vivid streets: notably, the lilong neighbourhood (see chapter 4.1) has the highest modal share of non-motorised transport (72%). However, the reason for this is not poverty, as the comparison was made within the same socio-economic groups (Pan et al. 2009, 286-288. 291).

The aim of human-oriented street design is to create comfortable, safe, and interesting streets to walk in a liveable, low-carbon city (Calthorpe Associates 2012, 8). Successful streets are spaces where mobility appears to be in balance with place-making, local commerce, and the active usage of people. Open spaces might pave the way for social interaction and temporary activities (Tosi 2018, 24). Liveable streets are not only determined by physical features, although they constitute the basis for liveability and urban life. It is social practices which possess the ability to transform a mere space into a lived space.

[11] The last aspect seems like a desired outcome. As a matter of fact, people need to leave their compounds to run errands. Whether they run those in their neighbourhood streets, or use their car for driving further to the next mall is the choice of to the residents.

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2.6 Social dimension of human-oriented street design

Cities play a central role in facilitating social encounters, and as streets are most accessible, they are assigned a decisive role in this respect. Public space is not only about physical-material design, it is all about people (Mehta 2013, 8. 12). Obviously though, this has to be viewed in the context of the general perception of space (chapter 2.4.), and the cultural role of open space (chapter 3). Representatives of the relational space approach would attach importance to the physical design of the street, while advocates of the social space approach would focus on facilitating human interactions to take place within the given space. Either way, the mere physical space is an important precondition. Public space can encourage people to communicate and enable collective activity. A sense of belonging and protection towards the street space can reinforce a social identity (Wu 2010b, 6). The social dimension of streets, including their usage and appropriation, are the focus of this chapter.

If active, vibrant urban communities are to be created, the design should be human-oriented. China is already known for its vivid street spaces: As stated, *"Chinese streets are some of the most liveable streets in the world, with high level[s] of community engagement at street level"* (Istrate 2015, 11). Streets are social places. They structure neighbourhoods and city life (Southworth & Ben-Joseph 2003, 1). Sidewalks do not only serve for transit but also communication; also, streets cannot only be regarded as a distribution network but a network for communication as well (Mateo-Babiano & Ieda 2007, 1922). In this context, the upper levels of the pedestrian-need hierarchy are mentioned again (chapter 2.5): enabling non-movement activities that foster community life is considered an equally important function of streets besides transit. Especially the spaces which are used on an everyday basis are often intriguing spaces, as those provide the groundwork for the occurrence of a wide range of social behaviours. Behaviour is also affected by the relationships between people, which can either be primary relationships referring to familiar persons, friends, and family, or secondary relationships referring to less familiar people or strangers (Mehta 2013, 98).

Why do people seek the public realm? The social dimension of street design is predominantly about the users. On the one hand, people might use public space deliberately and for specific reasons. On the other hand, their presence in a public space appears to be accidental and serendipitous (Carr et al. 1992, 230). But why do people generally use public spaces? In a related study, five driving forces for people's presence in public space can be identified: comfort, relaxation, passive engagement, active engagement, and discovery. These represent the primary needs of people in public space (Ibid, 231). It is noted that less affluent people clearly depend more on open spaces that are located close to their homes. Thus the design and accessibility of high-quality open spaces is also a matter of social justice.

Comfort relates to weather conditions, comfortable seating opportunities, as well as social and psychological comfort, like a personal feeling of safety and security. *Relaxation* is similar to comfort but describes a *more developed state with body and mind at ease*. Relaxation allows a brief pause from daily routines and is promoted by a separation from vehicular traffic and natural elements. *Passive engagement* involves an encounter between the users and the environment: public art, natural features, scenic views, and watching other people can serve for passive engagement. *Active engagement,* on the other hand, relates to a more direct experience with a specific place or group of people, either through direct contact with others, socialising with strangers or acquaintances, but also through ceremonies, celebrations or festivities that take place in the public space. The last aspect, namely *discovery*, refers to new and pleasurable experiences: observing changes, noticing changing views, and discovering new facets of a place and the diversity of the physical design. This need can also be satisfied through travelling (Ibid, 231-238).

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Activities. Gehl identifies three different categories of activities that are present in the public realm: *Necessary activities* are general everyday tasks, such as walking to work or running daily errands; as these are basic, necessary tasks, people pursue those activities under all conditions – irrespective of the weather or other external circumstances. *Optional activities* are voluntarily pursued. They happen because people want to pursue them, and time and place make them possible. Sitting on a park bench or strolling around are typical examples of this category. Optional activities are dependent on good weather conditions and a comfortable urban setting. *Social activities* depend on the presence of others in open spaces and include interaction as well as the act of socialising. Social activities can be planned, for instance when deliberately meeting friends, or spontaneous, such as in a conversation with a stranger, but also passive, while watching and hearing others. Social activities are frequently the result of the other two mentioned categories. For both optional and social activities, an enjoyable setting can be seen as a precondition (Gehl 2011, 9-12).

Pedestrians are both actors and the audience on the street stage. Their behaviour is related to the behaviour of other people (Bayer 2008, 160-161). Therefore, one could argue that any behaviour in the presence of other people is social behaviour. Behaviour might change through repeated visits, as one starts feeling more secure and developing a relationship to the built environment. Moreover, public areas might be used in different ways which are not necessarily in line with the original intentions of their design (Ibid.): appropriation and alteration are common habits. Generally, Mehta differentiates between the following three types of **social behaviour:**

> **Passive sociability:** People favour a place where other people are present, although interaction with others is not intended. The most frequent activity with regards to passive sociability is watching other people. Passive sociability is promoted by sensory stimulation such as stores, signs, decorations, street furniture, trees, etc. Furthermore, comfortable spaces for sitting or standing are beneficial in order to keep some distance to the stage of the street (Mehta 2013, 100-102).
>
> **Fleeting sociability:** This term refers to spontaneous short-term chitchats or interactions. Encounters with others might result in deeper conversations and strong engagement between people; in this way, trust can be established between total strangers (Jacobs 1961, 56). Design can support this type of behaviour: spacious sidewalks allow different activities, for instance, and encourage people to stop and chat with each other without blocking other passersby (Mehta 2013, 108).
>
> **Enduring sociability:** The street is seen as the place to actively connect with friends or the community, it is the space that fosters intimate relationships and affiliations. People get frequently and repeatedly in contact with each other, which makes them having higher demands for the place: respective physical conditions and a suitable ambience are required. The setting is supposed to support interaction, as well as a safe and pleasant atmosphere for gathering. Behaviours typical of enduring sociability are beneficial for both the individual and the community, as they reinforce a sense of community, and therefore, also facilitate society life itself (Mehta 2013, 110-112).

Sociable streets. Mehta defines streets that support different behaviours and activities as sociable streets. These streets are required to support socializing activities and public access. *"A sociable street is one where neighbourhood residents, visitors, workers and people who call the street their home use the streets for myriad purposes of socializing, everyday and special shopping, dining, lingering, promenading, celebration, protest and survival"* (Mehta 2013, 25). Sociable streets promote maximum usage, a large amount of users, and a wide range of different activities. Sociable streets are merely another synonym for Jane Jacobs's streets of Greenwich Village (Ibid, 24-25).

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3 The urban open space: Levels of access and the concept of public space

The primary focus of the research is the connection between the type of residential unit and the open space. The relationship between the inhabitants and the type of open space – and most importantly, the public space – is expected to differ according to the type of residence. Firstly, as the concept of public space originates from Europe, a western-rooted definition of the term is given, presenting the respective key aspects that constitute public space (chapter 3.1). Secondly, the Chinese conception and understanding of public space is examined in more detail as it serves as the basis for the given research. As a consequence, the historical conception of public space in China is presented (chapter 3.2). The following subchapters deal with more recent epochs of urban development in Shanghai. The historical development appears to be relevant, as the relation to open space is a long-established, cultural feature rooted in history. Examining the ancient approaches towards open urban space serves to construct a better understanding about today's conditions. The relationship between three dominant housing types – each of which represents a different era of urbanism in Shanghai – and their surrounding open space is examined in chapter 3.3. Following the historical outline, the contemporary attitude towards public space in Shanghai is presented. Moreover, important terminology is discussed in this context (chapter 3.4). The last chapter addresses the question, whether the spatial focus of the present study, namely the street, is considered a public space in contemporary Shanghai (chapter 3.5).

Generally, space is defined in different terms depending on the perspective and branch of studies. Spatial science tends to understand space by its physical-material dimension. In this sense space is formed by the multitude of objects (relational space). Social science, on the other hand, focuses on the individual and social dimension (social and absolute social space). Material space might be the setting for interaction, but actual space is only created through social interaction, human perception, thoughts, and actions (Drasdo 2018, 17). The perception of public space clearly differs according to the scientific angle.

Moreover, the term *public space* can relate to different spheres. These are the most common three understandings of public space: Firstly, Hannah Arendt's definition focuses on the political sphere of public space. In other words, people discuss and debate freely and equally, irrespective of the individual's background. Public space represents an arena of exchange in this context. Secondly, according to Jürgen Habermas, the defining element is communication: public space is seen as a domain that prompts open communication between strangers. This definition is less physically-oriented than Arendts's, since also the internet, for example, fulfils the requirements. Thirdly, Sennett's concept of public space is based on performativity, i.e. on people and their usage of space. In simple terms, the focus is put on how people express themselves in the presence of strangers (Sennett 2010, 261-262). Key components for this concept are strangers, accessibility, and performance meaning interaction and activity. The built environment serves as a vehicle for social expression. This approach to public space emphasises a sense of cultural awareness, since social interactions are always culturally defined (Sennett, n.d.). In this research the focus is on the spatial sphere of public space and its everyday usage by the residents, not on the political concept. Therefore, Sennett's approach towards public space appears to be most suitable.

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The definition and understanding of public space is not a universal value shared by all human beings (Carr 1992, 3). It is rather a cultural and social construct with regional differences all around the world. Therefore, it is important not to focus on the dominant western definition of public space but to take a closer look on the Chinese and the Shanghainese approach to open spaces (chapter 3.2 – 3.5). As will be illustrated in the subsequent chapters, collective space, for instance, is an essential spatial category in China. This collective space is generally found within residential units and presents an exclusive entity that is primarily meant for the usage of the local inhabitants. When applying concepts and master plans that origin from a western approach to space to the Chinese context, those collective spaces and their respective place values might be neglected – especially if Western architects and urbanites are not aware of the existence of this spatial category (Krusche n.d., 36). Understanding the local definition of open spaces and the nuances between private and public is a crucial precondition for studying open space and public activity in a specific local context. Nevertheless, Qian argues that there are several universal, cross-cultural features about public space: it is globally utilised to articulate collective claims; also, when public place is understood as a social product, it is always shaped by social relations, cultural meanings, and power (Qian 2014, 842).

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3.1 Western theory on public space

The term public space originates from a European context and is a key component of European urbanism. The symbol of public space is the ancient Greek agora, which – ironically – was only accessible for male landowners. Open spaces, as we know them today, are a product of the Enlightenment. They were no natural phenomena but can be seen as disputed and hard-won accomplishments (Hassenpflug 2004, 12-21).

Until the beginning of the 20th century, public space was mainly used for necessary activities. It was related to transit and the delivery and production of goods. By the mid of the century, however, the focus shifted: The public urban space was increasingly used for optional activities. It became a realm connected to urban recreation, enjoyment, and leisure. As a result, open spaces were confronted with a changing set of demands and requirements (Gehl & Svarre 2013, 147). The question arose as to how open urban spaces should be designed to please the people and meet their needs? The design of public spaces is value-based and dependent on the audience. As there is no universal perception of what constitutes *good* public space, there is no single guideline for designing successful public spaces; in other words, different concepts and understandings prevail.

As already stated, public space is viewed from the angle of Sennett's performativity approach, which strongly influenced the western concept of public space and public life (Bridge & Watson 2010, 256). Nevertheless, there is a multitude of approaches and understandings of public space in Western theories. Miller, for example, includes interior and privately owned spaces into her analysis on public spaces (2007); a viewpoint which would not be shared by every scholar. On the other hand, Shaftoe emphasises that public space is – and needs to be – a place for undesirable[12] groups as well (2008, 40). This understanding is based on a strong belief in social and spatial justice. According to Shaftoe, accessibility and inclusiveness are essential to the European understanding of public space; a perspective that is not necessarily shared in the US-American context (Gehl & Matan 2009, 108). In the following paragraphs, the key aspects of Sennett's understanding of public space are outlined in more detail. According to the author, public space is simply defined as *a place where strangers meet* (Sennett, n.d.).

Network. Open space is spatially defined by the surrounding buildings, and it is the counterpart of the built structure (Schäfer 2007, 34). Public space is further perceived as a coherent network of different types of space. Streets, for instance, are not only a part of this network but also represent the main connecting link. Other types of public space would be squares, plazas, parks – those are usually isolated, geographically fixed places though. Only streets present a linear element and link the entire city. Furthermore, historically, there is a strict edge between the public and private in European cities; in medieval cities, for example, the entrance of a private residential building immediately led to the open public street space. By stepping out of the door, one could enter the public realm (Ibid, 12). This adjacency to public space is still a characterizing element in European cities.

Another crucial aspect is accessibility. Public spaces need to be accessible to anyone, otherwise they would not encompass the entire society and are therefore not worthy of the term *public*. The free circulation of people is essential to public space. The importance of accessibility in the European context might be due to the fact that the first recorded reference of the term *public* was related to a *common good,* and not to certain rights like today (Sennett 1977, 16). Due to the very nature of common goods, nobody is excluded. Hence, nobody is excluded or banned from entering the public realm. Though, accessibility can be further divided into key components. For instance, Lynch divides accessibility into three types of access: physical, social (different socio-economic types), and visual access (Dakshayini &

[12] Undesirables refers to groups that are sometimes excluded from *public* spheres such as homeless, poor, teenagers, migrants etc. It is the undesirables that are marginalized in neoliberal societies and urban design projects.

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Mamatha 2012, 12). Moreover, accessibility represents tolerance and social justice (Hassenpflug 2004, 13). Public spaces are areas where people of different social backgrounds meet. This deliberate inclusion of the full spectrum of society is a measure that counters segregation and encapsulation of certain parts of society. It prevents the clusterisation and fragmentation of society. Also, the UNESCO highlights the importance of accessibility in their description of public space: A public space needs to be *open and accessible to all kind of people, no matter the gender, race, ethnicity, age or socio-economic level* (UNESCO n.d.).

Human presence and interaction are essential aspects of public spaces, which are clearly linked to accessibility. As Whyte's study on successful public places has shown, the presence of people is crucial for public spaces to be used and frequented by others. One of the most widespread activity in the public sphere is watching others and being watched by others. In other words, people attract other people. *"A space becomes 'a place' when people are accommodated in it, people give life to a space"* (Dakshayini & Mamatha 2012, 12). The human presence in public space is also referred to as a *site of visibility and intervisibility of subjects* (Brighenti 2010, 38).

Unexpected encounter. Accessibility and human presence are the preconditions for spontaneous interactions. There are no limitations to the potential users, hence, the whole spectrum of society could theoretically mingle in public space. The chance of unexpected interactions and encounters is a crucial aspect of the public realm (Sennett [1970] 2008, 98). The element of surprise and unpredicted experiences are just as important as the presence of strangers. Furthermore, public space allows people to be anonymous, and therefore, decreases the pressure of conformity (Sennett, n.d.). Moreover, the public realm enables people to step out of their individual territorial bubbles and enter a shared space of passive or active social behaviour. In this way, people feel that they are part of a larger community, which is of especial importance in these days of increasing individualism, where most needs can only be satisfied within private or exclusive realms (Mehta 2013, 164).

Openness. For both Arendt and Habermas, closed systems present the counterpart to public space – the same applies to Sennett's performativity approach. Closed systems do not include strangers, they are not universally accessible, and are likely to impede certain activities or encounters. Closed systems have strong boundaries; according to Sennett, this results in impermeability and a blockade of potential transgression. Boundaries can be viewed as limitations and should not be confused with borders, which – on the other contrary – are places of interaction and encounter. Borders are places where different spheres blend and intermingle, plus they constitute an area of high potential. This distinction is important, as highways represent a typical boundary that fragments the city pattern and turns it into insularity[13]. Boundaries are not beneficial to the public realm and impede public life. They establish closure through inactivity (Sennett, n.d.). An example of a border is a pedestrianised space. The spatial configuration of porous edges might establish an enriching zone of exchange. Border realms of encounters in today's cities enable public life, while insurmountable boundaries do not contribute to public life (Sennett 2010, 265-266).

Uncertainty. Over-determination is problematic to open spaces. In this case, the open sphere is defined and designed for specific purposes, and is meant for specific ways of utilisation. Any deviations are a seen as nuisances. Over-determination of form leaves no room for change or spontaneous action. It does not allow a high degree of adaptive capacity, nor environmental vitality for changing circumstances. In Shanghai for example, streets and buildings are demolished after a decade because their shape or function are no longer seen as meaningful in a constantly changing, expanding, and

[13] The perception on the impact of highways on the urban pattern is culturally influenced: The fragmentation of the city by multilane roads resembles the Chinese principles of a successful separation of space and society and is therefore not perceived negatively (Münch 2004, 44). More on this understanding in chapter 3.4.

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developing city (Sennett 2010, 263-264. Sennett, n.d.). In comparison to the less complex but flexible Viennese residential buildings of the 19th century, that are still inhabited today, this durability seems rather short[14]. Spaces need to be flexible and open to addition, change, and revision. Incomplete form, indetermination, and ambiguity might trigger unplanned activity and appropriation (Sennett 2010, 271-272. Sennett, n.d.). Furthermore, Sennett gives credit to the vernacular environment of the past that provided for spontaneous and unplanned activity – this is not always achieved by present-day professional urban planners (Sennett, n.d.).

Territorial complexity. Some public spaces might provide for a multitude of activities, yet due to the dominance of single groups, the open space is still indirectly restricted and limited in its accessibility. As Sennett suggests, providing a multi-faceted public space with boundaries can be beneficial. Thus, a higher number of territorial orders can co-exist, co-operate, and intertwine. Public space in this understanding is the result of all territorial productions of a given place. The presence of multiple groups, a non-hierarchical relationship between them, and a different temporal usage provide for territorial complexity. The more territorial complexity is existent, the more the space can be regarded as genuine public space (Kärrholm 2012, 18-19).

Besides these idealised aspects of public space, Sennett identifies a depletion of public life that started in western countries in the 19th century, driven by the developing industrial capitalism and an increasing privatisation. By the 20th century, this process was reinforced by monofunctional zoning and suburbanisation, which caused mid-income families to leave the urban centres. This housing segregation prompted a decay of inner-city public spaces, characterised by fewer people and opportunities for spontaneous encounter between strangers. Sennett describes the death of public space as a result of the *"privatisation of the psyche [that] creates a disconnection of the individual from the public realm"* (Bhatia 2008, 75). The necessities for the existence of real public spaces are no longer provided, which reinforced a further retreat into the private and intimate realm (Sennett, n.d.. Watson 2006, 15).

In summary, public spaces describe a type of open space that is accessible, inclusive, full of human presence, and facilitating unexpected interactions. Public space is open to adaptation and flexible. Also, it constitutes an interconnected network. Sennett describes an idealistic public space that does not necessarily exist in western countries, and simultaneously expresses concern about the condition of public space. Public space is also a zone that struggles between inclusion and exclusion. This is exemplified by the symbol of the European public space, the agora, which at the same time was neither accessible to women, nor slaves. On the other hand, in contemporary times an increasing surveillance and overregulation of public space is apparent, which is accompanied by the exclusion of undesirable groups, commercialization of public space, and the spread of hostile design. Especially after terror attacks, such as 9/11, this repressive approach towards open space was promoted and reinforced (Watson 2006, 15-16).

[14] According to Citterio and Pasquale, the life expectancy of high-rise residential towers in Shanghai is about 30 years (2015, 104).

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3.2 Ancient Chinese relation to public space

In order to define the Chinese approach towards public space, an overview about the relation of the Ancient Chinese City towards open space is given. Generally, there might not be a universal definition on public space that is applicable in all parts of China, as there are regional nuances and differences due to the local context, geography, climate, and the local history (Qian 2018, 17). Shanghai is probably the most western-oriented city in China because of its location and the corresponding history of the foreign concessions (Zhang 2004, 107). Public spaces might be used differently and have a different significance in Shanghai than in any other Chinese city (Orum et al. 2009, 388). A specific terminology suitable for Shanghai might not be applicable to Urumqi.

The Ancient Chinese City. 770 BCE – 1840 CE

The Ancient Chinese City includes both the period of the Closed City, 770 BCE – 906 CE, and the Open City, 618 – 1840 (Heng 2008, 80) – as is illustrated in figure 11.

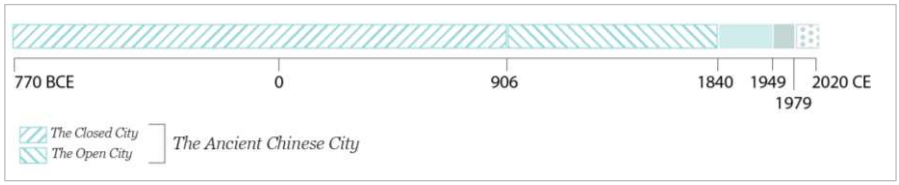

Figure 11. Period of urbanisation in China: the Ancient Chinese City (Heng 2008, 80. Pow 2007, 813)

Wall. Enclosed human settlements have a long history in China (Lee-Wong 2017, 2). One of the most characterizing and basic urban elements of the Chinese city is the wall which was omnipresent in these periods. It is worth noting that the Chinese character 城 (*cheng*) means both city and wall (Lee-Wong 2017, 3. Fleischer 2007, 302), and that an entire epoch (770 BCE - 906 CE) is called *Walled City* or *Closed City* (Heng 2008, 80). The importance of walls is illustrated in a decree of the song dynasty: *"A settlement without a wall (…) has no (metaphoric) roof function and is therefore not a city (…)"* (Hassenpflug 2010, 61). In the Closed City, all types of spaces were defined by high walls. They helped the citizens to orientate themselves within the city and constituted an instrument to physically and symbolically define the world within the walls and separate it from the untamed land beyond the walls (Tuan 2008, 108).

Residential living was usually organized in neighbourhood units, so-called wards. Every ward was surrounded by walls and could only be accessed through one single gate. Hence, there was hardly any interaction between a given ward and the outer street space, nor between individual wards (Schäfer 2007, 24). Basically, cities of that era resemble matryoshkas, consisting of multiple walls and layers. Generally, there were city walls that encompassed multiple walled residential wards, all of which again contained single-walled courtyard houses. Furthermore, walled elements represented districts, administrative areas, and market compounds (Gaubatz 2008, 74. Heng 2008, 81). For leaving the city, at least three gates had to be passed: the gate of the own house, the gate of the ward, and the town gate (Lee-Wong 2017, 4). It is noteworthy that there were regional differences within China: cities in southern China had fewer massive walls than northern cities (Gaubatz 2008, 74).

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Self-care of residents & kinship. In the Closed City period, there were no incentives, nor any funding for the city governments to perform civil services (road building, firefighting etc.). Instead, the local gentry felt responsible for providing those services, their efforts were never institutionalized though. Hence, urban residents had to take care of themselves (Miao 2003, 59). Normally, an entire kinship inhabited the traditional Chinese courtyard house. The kinship ensured the well-being of their members, and performed control and supply functions. In the same way as walls were the basic elements of the city, kinships were the basic units of society. Walling the courtyard house served to seal the members off the surroundings and protect their belongings. More importantly, the right to privacy and the accompanying degree of enclosedness is associated with status in Chinese culture (Bhatia 2008, 73. Pow 2007a, 817). Accordingly, traditional Chinese courtyard houses were inward-oriented, reflecting the inhabitants' indifferent attitude towards what was going on outside their own realm. Only the space within the walled courtyard house was perceived as a space; the realm outside the gates was not understood as space at all but associated with disorder and rather perceived as non-space (Münch 2004, 44).

Street. The street pattern of the Closed City was comprised of an orthogonal network of lanes. Streets were not seen as a place where society as a whole would mingle, as their access was socially segregated: Both the usage of city gates and streets was bound to the individuals' social class[15]. As inhabitants and their use of infrastructure was spatially divided, hardly any interaction between people of different classes took place (Schäfer 2007, 26. Hassenpflug 2004, 30). Therefore, streets did not represent true public space; they were mainly used for transit (Miao 2003, 59). Infrastructural nods which could not be avoided, such as bridges or junctions, were the open space that resembled the western definition of public space closest – however, these still lack some core criteria (Zhang 2004, 103). *"In China the tradition of the 'street' (in the sense of a space defined by a sequence of buildings and their facades) does not exist, causing a Chinese traveller to Europe midway through the last century to denounce the unbearability of these conditions, compared to 'shadowy and dark canyons'"* (Theoria 1989 cited in Novelli 1999, 152).

Public space. *"There was never a concept of public space in traditional Chinese cities"* (Zhang 2004, 102). The only real public realm where people of different social classes gathered was the temple (Ibid, 102-103). As already mentioned, the space outside the walled wards was perceived as non-space, urban life happened within the gated units (Münch 2004, 44). This is perfectly illustrated in Beijing's centre – the Forbidden City – which is an absolute exclusive realm. All open spaces, such as yards, squares, gardens, and even parks were introverted, privately owned, and therefore, only accessible for a selected group of aristocrats and officials (Hassenpflug 2004, 29-30). Furthermore, there was no city square – the classical public space in European countries. However, some streets were widened; hence, these streets were transformed into the most square-like structures one could find during this period (Cai & Bo 2004, 57). In summary, walled structures essentially prevented the formation of open public spaces.

Control. A limited number of city gates and a rigid, orthogonal urban pattern facilitated the control and supervision of the inhabitants and ensured security within the city. Additionally, a strict curfew system limited the residents' movements and activities both spatially and temporally. The walled structures of single neighbourhoods, between which wide avenues were located (Heng 2008, 81-82), and a social segregation concerning accessibility of streets are spatial manifestations of control. At the same time, the cities inhabitants were protected (Lee-Wong 2017, 2-3).

[15] People were divided in four groups (gentry scholars; peasant farmers; artisans and craftsmen; merchants and traders); their housing was spatially divided (Lee-Wong 2017, 3).

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Concept of space. One of the principles of Confucianism is the maintenance of social order and harmony. This is mirrored in ancient city planning structures, such as grids, walled components, and the strict access control. At the same time, the accepting attitude of the masses towards the widespread control of space is also assumed to have its roots in Confucianism (Lee-Wong 2017, 11). *"Space was historically conceptualized to be hierarchical, spatial segregation and differentiation has always been a part of their (note: Chinese) world order, their cultural heritage, steeped in Confucianism in many ways"* (Ibid.). Space was further understood to be related either to religion, the cosmos, or society; in a symbolic sense, this also reflected the relation between power and social order (Ibid, 10).

The Open City period? The relationship between the street and its usage is not a static concept. During the era of the Open City[16], the city became gradually more accessible to its residents. In Kaifeng, the Northern Song capital[17], streets became commercially used and transformed into a public place which was universally accessible. The social segregation in the streets ceased to exist (Friedmann 2007: 262), shops were relocated from market enclosures to the avenues, partly taking the place of the prior walls around the wards and thus forming a commercial belt. The curfew system collapsed, hence, streets were accessible at any time of the day, which caused street activities to increase (Heng 2008, 84-85). This also had a positive impact on the overall atmosphere of the street space, supporting the emergence of a vibrant street life. Streets as well as communal and commercial spaces turned into venues for recreation, entertainment, and served as the foundation for communal organisations dealing with collective concerns and welfare. *"This Street culture had enduring imprints on civil life in Chinese cities"* (Qian 2018, 19-20). Different types and shapes of street spaces evolved in Kaifeng which varied in size, form, and purpose. This resulted in a diversification of street spaces (Heng 2008, 85). Despite this gradual opening, city walls and walls around wards still prevailed.

To sum up. Gating and an inwards-oriented lifestyle were dominant features of urban living in ancient China. Other than streets – the access to which was separated according to class – there were no open urban spaces at all. As there was no concept of public space, also the only available open urban space, the street, was not perceived as a pleasurable realm. It was considered a functional space, predominantly used for transit; moreover, streets were generally seen as a non-space. This perception shifted during the Open City period, in which streets were also defined by their use value and social values. Although some of the restrictions of the Closed City period were loosened, gates and walls were still the defining features of the Open City (Friedmann 2007, 262-263). Overall, scholars tend to agree that public space did not exist in ancient China and during most of China's history (Hassenpflug 2010, 81. Zhang 2004, 101). According to Orum et al., the debate as to whether public spaces existed throughout China's history is still not clarified (2009, 388).

[16] 618 – 1840 (Heng 2008, 80)
[17] Song Dynasty, 960 – 1126 (Scheen 2015, 178)

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3.3 Selected residential typologies in Shanghai and their relation to the open space

Within the last 200 years, different residential typologies were developed in Shanghai (see figure 12). The three selected types – the lilong, the danwei, and the gated community – are not only distinctive and characterising for Shanghai today, but each of the types also represents a certain epoch of urban development. In this section, the spatial composition of each of the mentioned housing prototypes and their relation towards public, collective, and private space is presented. The research primarily focuses on lilongs and gated communities, but the exceptional spatial composition of danweis is still considered to have a certain influence on the perception of open space in today's China (chapter 3.4). Generally, none of these housing prototypes includes private open spaces. Nevertheless, the features of the private flat are noteworthy and are assumed to have an influence on how the physical urban outdoor space is used. From the perspective of Environment Behaviour Studies, the built structure, as well as the behaviour and activities in the open space are understood to influence each other.

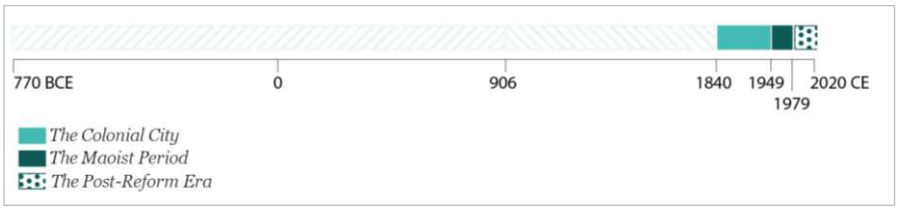

Figure 12. Periods of urbanisation in Shanghai since 1840 (Heng 2008, 80. Pow 2007, 813)

This chapter is primarily descriptive and illustrates the relation of the three housing prototypes towards open spaces. Certain aspects, such as the determining functions of open space, the demarcation of different types of open space in terms of their accessibility, and the fluidity concerning the attribution of certain functions is discussed in chapter 3.4. The two main typologies lilong and the gated community are presented in more detail in chapter 4.1 and 4.2. The differences and peculiarities in terms of their relation towards the open space that are mentioned in this chapter are further discussed in chapter 4.4.

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The Colonial City: the open spaces of a lilong.

From the 1840s onwards Shanghai has been divided into Foreign Concessions. This has also affected the urban pattern and housing structures. A specific type of raw houses has been developed, which represents a hybrid form of eastern and western architecture. The alleyway houses are aligned along narrow streets, the entire settlement is called lilong (see chapter 4.1). The lilong house typology is fascinating as *it presents a vivid public realm that is inherently attached to the typological form* (Bhatia 2008, 70). People gather on the streets and use them as their extended living rooms. Thus, open spaces around lilongs exemplify the fluidity and temporality of urban spaces. Lilongs still exist in Shanghai today and their structure mainly resembles the original layout. A number of scholars argue that the typology lilong is considered the most characteristic public realm of Shanghai ever since the last 150 years (Zhang 2004, 111).

Public. The streets around the lilong neighbourhood are clearly public spaces and represent a part of the city's overall network of streets. Hence, there is no restriction in terms of accessibility, anyone can use the street space whenever he or she wants. Moreover, as these streets are often lined with shops and services, a constant influx of people is apparent. A single gate – which always remains open – leads to the inner residential area of the lilong and functions as a soft border between the public and the residential realm. When walking from the public street that surrounds the lilong to one single dwelling within the unit, one has to pass different street spaces with different levels of privacy, different perceptions of belonging, and different levels of activity and street usage. Lilongs are defined by a hierarchical distribution of open space: whereas the most open areas surround the lilong, more intimate and private realms can be found in any given alleyway (Citterio & Pasquale 2015, 44. 52).

Collective. The interior consists of several rows of houses accessible by alleys or alleyways. By entering a lilong, visitors easily sense the exclusiveness of the space. Outsiders are usually accepted but watched closely. Although the border is porous, control is ensured by social means. Therefore, the space within the lilong is often referred to as collective space; primarily meant for the usage of inhabitants. The dwellers know each other and mutually guard each other's property. The built structure of the lilong is characterised by a permeability which makes the neighbourhood seem accessible and usable for pedestrian shortcuts. Usually, the surrounding public space offers a wide gaze into the interior to passersby (Arkaraprasertkul 2009, 20-22). Simultaneously, the enclosing structure ensures a certain level of closeness for the inhabitants of the lilong. The porosity of a lilong also prevents it from being seen as a type of gated community (Citterio & Pasquale 2015, 44).

Private. By walking through the lilong, the spaces become smaller and the level of privacy increases. Generally, lilongs – apart from garden lilongs maybe – do not include private open spaces. One can further question whether the maximum level of closeness offered by a lilong does fulfil the expectations regarding privacy: being inside a room in a lilong house, one cannot properly seal oneself off the surrounding neighbourhood. Walls are often thin and easily pervaded by noise, voices, and odours (Arkaraprasertkul 2012a, 172). Moreover, the Shanghainese summer climate enforces a lifestyle of open doors and windows, especially if one lacks air condition. This makes privacy a scare commodity.

Fluid borders. There is a graduation from the most open to the most closed spheres; but the borders are flexible (Li 2015, 7). The demarcation between public and private is fluid and easily transgressed: interiorising the exterior lanes and exteriorising the own house is a common habit (Arkaraprasertkul 2009, 21). Attributions to space, such as public, private, or collective, constantly blur (Citterio & Pasquale 2015, 44). This shift of borderlines can be temporary, exceptional, or a usual procedure following a regular pattern. Alleyways are used for domestic tasks, such as brushing teeth or preparing food (interiorising the lanes); private houses are converted into neighbourhood meeting places (turning a private into a collective space) or into shops and restaurants (turning the own house into a publicly accessible place).

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Maoist Period, the danwei and its relation to open space

Until the mid of the 20th century, lilong was the dominating housing type in Shanghai. Additionally, the majority of Shanghai's residents were living in lilongs. The accompanying lifestyle and the fluid spaces influenced the daily life of the residents. After the communist revolution in 1949, another housing type was developed and built on a large scale, namely the danwei, 单位, which can be translated with *work units*. Urban life was organised within danweis, which provided their members with all the necessities of life: working places, housing, daily amenities, and basic necessities such as education, goods, services, health-care, recreation, etc. (Ren 2013, 44-46). In general, danweis are self-sustained entities; there is no need for inhabitants to actually leave their walled unit (Münch 2004, 44). Danweis are usually walled; the open spaces within the danwei are linear (streets) and areal (squares). Generally, the Maoist time lasts from 1949 until the economic reform in 1978.

Public Street. Some argue that the vividness of public streets declined during this period (Heng 2008, 94). In general, the streets around a danwei are seen as neglected spaces of little value and are hardly used by ordinary residents in their daily routines. Residents both lived and worked in the same unit (Ren 2013, 46), and also their daily trips were done within the danwei. There were only a few commuters during the Maoist Period, and as a result, there was little traffic in the cities (Yang, Zheng 2011, 9). The supply of goods and the everyday urban life happened within the danwei; cities of this period were an accumulation of self-sufficient, and independent walled entities (Heng 2008, 95).The public street space had little function and was rather a non-space (Schäfer 2007, 63).

Collective. As mentioned, danweis were walled, introverted cells turning their back on the surrounding street (Hassenpflug 2010, 52). The space within danwei was mainly accessible for those who live or work there (Wang & Pojani 2019, 5), and access was controlled by guards (Lee-Wong 2017, 7). The number of inhabitants was modest; hence, they knew each other – at least briefly – and interacted on a daily basis. There was little unexpected encounter with strangers, and hardly any elements of surprise, which are crucial for public spaces. And also, there was no anonymity. At the same time, the danwei was an important source for collective identity and attachment (Low & Huang 2008, 193).

Fluid borders. The demarcation between public and private blurred within the danwei: On a nation-wide scale, the public, represented by the state, entered the private sphere (Friedmann 2005, 78). Most aspects of an individual's life were controlled and managed by the given danwei unit (Heng 2008, 94). This was supported by official policies that aimed to foster the process of communalisation. One of which was the policy of the *five transformations (wuhua)*, formulated in 1960, which included the socialisation of housework, the collectivisation of the daily life, the universalisation of education, the normalisation of hygiene, and the greening of communes (Bray 2005, 153). In addition to the ongoing extension of the collective realm, the private sphere was simultaneously reduced. Due to physical proximity and social control through neighbours and government policies, *privacy turn[ed] into fiction* and became almost inexistent (Kaltenbrunner 1993, 240). Former privately used amenities were relocated to the collective sphere, therefore, individual living space was drastically reduced, which again had an effect on the individual private sphere (Lu 2006, 62).

As for the danwei, the ascription of space is fluid and can change its meaning and usage during the course of the day. *"Relatively few activities can claim exclusive use of any particular space in a unit: part of work space may temporarily become social space, while sometimes domestic space may overflow into social space when household activities require it"* (Lu 2006, 58). The collective and private space and their respective everyday practices become increasingly interwoven (Rock 2018, 91-92), while the societal border between public and private is completely dissolved and a strict spatial boundary between the interior collective and the surrounding public space established (Schäfer 2007, 61-63).

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Entering modernity. Post reform era and gated communities

Even though the Maiost period had severe implications on the notion of public and private space, the period of danwei did not last long. By the end of the 1970s, the opening and reform policy was developed. As a result, housing was privatised (chapter 4.3), which gave way to a new typology: the gated community (chapter 4.2). This privatisation led to an increased demarcation of private property: the gated community is usually defined by a physical barrier that surrounds the building block and separates it from the public street. Within the gated community, residential towers stand amidst a sophisticated landscape architecture of different types of open spaces: greenery, parking, streets, and squares. The residential towers are arranged around the compounds' centre, strictly directed southwards and thus neglecting the surrounding urban grid. It is striking that open space is defined by a strict demarcation of boundaries and a fixed attribution of functions – contrasting the fluid open spaces of lilongs (Pow 2007a, 821).

Public. The streets surrounding gated communities are part of the general urban street network and publicly accessible. However, these streets are usually ignored by the gated community, since there is little interaction between the interior of the gated community and the public street. This is reinforced by the physical barriers and the unwelcoming, fortress-like-design of gated communities. Regarding gating, the image of a *city of citadels* or *a city of many small cities* is used to describe the urban pattern formed by gated communities in today's Shanghai (Miao 2011, 192. Miao 2003, 45). A limited number of gates ensures security and saves guarding costs (Miao 2003, 52) but also minimises the contact points between the street space and the inner space of the gated community; hence, an interplay between these two domains is limited. Activities related to trade or mobility predominantly happen on the public street space. The following saying underlines this division: *"dwelling is exclusive – trade is inclusive"* (Hassenpflug 2010, 49).

Collective. According to a number of studies, the space and the amenities within the gated community are referred to as *public* (Talamini 2018, 194). Residents of a gated community usually share a similar socio-economic status; the gated community is accessible only to the residents and their guests (Hassenpflug 2010, 58). The diversity of people within the gated community is not sufficient to support public life; therefore, the space is not genuinely public (Miao 2011, 192). Since the open space within the gated community does not provide for unexpected urban discoveries, residents seek urbanity in other places, often commercial centres, which are quite similar in terms of their accessibility (Ibid.). The space within the gated community is a collective one; some scholars draw on European definitions and refer to it as a semi-public space (Hassenpflug 2010, 58. Miao 2003, 47).

Private. Flats in gated communities are usually spacious and offer a significantly bigger living space per person than lilong residences. Hence, residents in gated communities have more private space to retreat (Bhatia 2008, 73). Households do not share amenities, and each flat is a self-sustained unit as well as equipped with all necessities for modern living. Communal areas for domestic tasks – where much interaction among lilong-neighbours takes place – do not exist. The residents are not forced into neighbourly interactions but have the freedom to choose how they want to socialise. The privacy of the gated community is not only beneficial for individuals; it is seen as a new lifestyle concept for those who can afford it. Enclosedness is connected to freedom and autonomy (Pow 2007a, 821). An increased retreat into the private sphere might be the result of this attitude (Schäfer 2007, 100-101).

Boundaries. Gated communities are shaped by a determined form. Open spaces are characterised by specific functions and uses (Pow 2007b, 1551). Furthermore, physical borders exist between the public and the collective, as well as between the private and the collective. The verticalisation of housing further disconnects residents from the ground level. Hence, little blurring of functions is observable, there is no fluid transgression between the public, collective, or private space. Neither open space within the gated community, nor the public street are needed for performing domestic tasks. Increasing flat sizes and modern amenities enable residents to stay within the private realm (Citterio & Pasquale 2015, 104-106).

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3.4 Concept of public space in today's Shanghai

As society has changed and evolved, so has urban open space; in other words, it is not a static entity. Therefore, the notion of public and private space has also changed over time. For example, in Maoist China, to a certain extent public space was even more restrictive than during the era of Imperial China. The public life shifted therefore to the *confines of the home compound* (Gaubatz 2008, 75). Further, the perception of space is linked to general developments, such as technology. To illustrate, in today's China there are discussions on whether the public shifts towards the online sphere (Lu 2008, 189f.). Nevertheless, this chapter focuses on the physical public space and its perception in Shanghai today.

In general, there is a traditional disregard for public spaces in China, which is most likely due to the fact that accessible public spaces were non-existent during most of China's history. The society was non-individualistic, and the worldview was based on family or community. Open space was viewed as solely functional (Hassenpflug 2010, 26. 53). Ever since the economic reform in 1978 (see chapter 4.3), social, political, cultural, and economic relations have altered within a rapidly changing urban setting (Gaubatz 2008, 83). Thus, the question remains as to how public space is perceived in this setting?

In the course of transitioning towards a socialist market economy with Chinese characteristics, the boundaries between the public and private spaces were renegotiated in favour of privacy (Rock 2018, 86). Prior to that in the Maoist era, a reversed set of values was more significant, which caused a blur between the public and the private, turning everything into a collective space (see chapter 3.3). In the course of the transition, housing became a commodity (see chapter 4.3), which led to the development of the private sphere and the possibility to a more private family life. Today, the collective use and practise is perceived as less desirable (Ibid, 92). Some scholars even fear a retreat of the upper-middle-class citizens from the meaningful public sphere (Pow 2007b, 1541). At the same time, open spaces in present China seem increasingly over-determined: Less space is available for self-organized community activities, and there is a lack of concern about their need: the remaining open spaces are scare and in bad condition (Wang 2017, 45). However, Hassenpflug identifies a need for public space, which becomes evident when watching people gather under highway bridges, on parking lots, or traffic islands, for instance (Hassenpflug 2010, 25).

In 2001, Zhu, the head of the Beijing research institute of construction projects, defines the following core criteria related to public space: 1) not inside buildings; 2) open-air; 3) non-commercial usage; 4) maintenance through users (Zhu 2001, 118). This appears to be a generic, physical-material definition of public space with little consideration for the social production of space and the everyday usage of the residents. Others advocate a human-centred approach to space and perceive space through the social dimension (see chapter 2.4). In their view, the publicness is produced via situated discourses, practices, and social relations (Qian 2018, 17. Qian 2014, 842. Ren 2013, 103). Everyday life, routines, and practices in China are dynamic as well as fluid, and so should public spaces be.

Public space in today's China is mainly understood as space for leisure and consumption (Qian 2018, 27-29). After the economic reform, the public urban space was utilised for economic purposes; people's income was suddenly increasing, and consumer goods were available. This prompted the urban pattern to shift towards commercialisation and consumption – the result was a rebirth of shopping areas, such as already present in the Song dynasty (Heng 2008, 96). *The open spaces of Chinese cities today are different – they embody China's opening towards market economy* (Hassenpflug 2010, 74). Some argue that the public experience has been commercialised. In this context, traditional ways of sealing off a quarter, such as via walls, have been partly replaced with closed walls of storefronts that surround the residential unit. The gating function, however, has remained, although without the *visual barrier effect*. This resembles an urban atmosphere, but is merely more than a just a facade (Ibid, 76).

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The most defining elements of the contemporary Chinese approach to open space are fluidity, temporality, and negotiation, which are further outlined at this point:

Fluidity. In China, the demarcation between public and private is blurred, moveable line. *"The Asian city also presents us with a number of hybrid spaces that are 'public' in ways not necessarily recognizable in western cities."* (Jacobs 2014, 189). In certain cases, the public sphere is appropriated for the performance of domestic tasks, like brushing teeth for example. On the other hand, private spaces might be commercialised, for instance, if people turn their living room into a small garage store (Hassenpflug 2010, 23). Open space can even be moved into the indoor realm: for instance, neighbours do not always perceive their doorsteps as borders which separate the private and public sphere, but rather, as an extended space for having a chat (Rock 2018, 97). It might come as a surprise, but Walter Benjamin observed a similar phenomenon in Naples at the beginning of the 20th century: *"Just as the living room reappears on the street (...), the street migrates into the living room"* (Benjamin et al. 1996, 420).

Temporality. In European countries, spaces are generally clearly defined and determined; they are either public, semi-public, or private. In China though, the usage of the same open space is temporarily flexible. This phenomenon is referred to as *temporal segregation:* The given space possesses the flexibility *to accommodate various activities which are conducted at different times of the day* (Mateo-Babiano & Ieda 2007, 1923). In this context, space is appropriated for different activities and characterised by a flexibility regarding functions and utilisation. Both aspects of fluidity and temporality are reflected in the construction of lilong houses: the early lilong houses are – similar to courtyard houses – spatially organised based on a dualistic relationship of sets: the solid and the void, the front and the back, as well as the major and the subordinate. Rooms are associated with a metaphoric rather than a functional meaning. More modern, new-style lilong houses adopted a sense of Western rationality; traditional cosmological implications of the spatial organisation vanished, and instead, rooms were assigned specific functions. Thus, space was considered a fixed element, rather than a fluid one (Zhao 2004, 65-66).

Negotiation. The open space in China is negotiable, in other words, different users can appropriate it, and in this way, others are excluded from using the same space. Generally, nobody has a general right to use a given space. *"Open space, belongs to whoever claims them; for example cars, plants, trees, pedestrians, individuals or groups who use the vacancy for temporary activities such as dancing, tai chi, free markets etc."* The use of public space is *"always negotiable, and the public – single individuals – have no universal right to it. This configuration is very different from the concepts of public space prevalent in Europe"* (Max Gerthel Studio n.d.).

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The three aspects fluidity, temporality, and negotiation are reflected in the widespread habit of temporarily appropriating open spaces for evening dances. There are different perceptions on public dancing: it is seen as a means of constructing collective belonging that also enables unconstrained encounter, and serves as a response to regulation, order, and rationalisation of urban space. On the contrary, others perceive dancing as a public nuisance misusing the collective good of the public space, a disturbance and an erosion of public space by selfish interests. The balance between private and public sphere is negotiated; and due to a change in meaning of spaces conflicts might emerge (Qian 2018, 27-28). The habit of temporary appropriation suggests that there is not one urban public space but multiple small, fragmented, and transient urban public spaces (Qian 2018, 18-19).

The collective realm. Almost every residential unit includes an open realm within its boundaries, which is primarily predestined for the usage of the inhabitants – and is occasionally exclusively accessible to them. This intermediate entity between public and private is an essential open space in China. This space is called community space, collective space, or interstitial space[18] (Rock 2018, 86-106). Traditional Chinese housing units are usually inwards-oriented, focusing on the interior open space. The access to this intermediate space is limited, and the chances of unexpected interaction with strangers are slim – especially since housing is increasingly socio-economically segregated (chapter 4.3). Given the frequency of this collective space and its value for the Chinese society, it seems noteworthy to examine the trichotomy of urban open spaces in the Chinese context.

Ren argues that the collective realm within the residential units, its distinct social life, and the surrounding gates *create a public space 'from within'*. The term *public* according to this definition does not refer to accessibility but is defined by utilisation. The spaces within the residential units are fully utilised by its residents. Furthermore, spaces which are accessible to anyone – according to the reduced Western definition of public space – are often dominated by certain groups, which might discourage others to use the space (Ren 2013, 103). Due to the degree and intensity of their usage, Ren argues that spaces of limited access can still be called public. According to this definition, usage is prioritised over accessibility.

[18] In Vienna during the 1920s, so-called *Hof* typologies were built. Those are large residential blocks centred among an open inner space that was primarily meant for the residents, and hence, is referred to as semi-private. In China though, the scale is highly different: almost any neighbourhood includes collective open spaces, whereas in Vienna those spaces are rather typical for residential blocks.

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Terminology for open space. Instead of using the differentiation *public - private*, the opposing pair of *open and closed*, *exterior and interior*, *outer and inner spaces* or *outside and inside* are considered to be more appropriate for the Chinese context (Hassenpflug 2010, 28. 48. Krusche n.d., 33). Those terms refer to the omnipresent habit of gating, which still transforms the contemporary urban pattern of Shanghai's residential units into closed *islands of living spaces* (Krusche n.d., 33), that is, single cells which are detached from the publicly accessible spaces. Since the terms *public and private* are not suitable for describing Chinese open spaces, henceforth, a different terminology will be used. The classification is based on accessibility, not on ownership. Human presence and usage are equally important to accessibility; an open accessible space used for transit only does not contribute to active street life. Open space is divided in exterior and collective/interior space, as this terminology refers to a certain demarcation, which can – according to Sennett – function either as a limiting border or an enabling boundary. As the on-site research focuses on the usage of street spaces in the urban neighbourhood of Hongkou, Shanghai (see chapter 5), private open spaces cannot be found. For the sake of completeness, a definition is given as well though.

Exterior: the urban open space is accessible to anyone; there are no access barriers. Exterior space is further characterised by a vivid usage and the presence of people. Accessibility is a precondition but does not automatically result in a vivid street life.

Collective | Interior: the open urban space is accessible to a limited number of people. Access barriers, such as gates, can be physical or intangible, for instance in the form of social control exerted by a specific group. In terms of residential units, the specific group usually lives within the given unit. The collective space is exclusive.

Private: the open urban space is privately owned and used. Others can be banned from accessing or using the space; they do not possess the right to use the space.

The definitions given above apply to open spaces. When referring to aspects, such as lifestyle or dwelling, the terms *private* or *public* seem highly suitable. The differentiation is applied in the analysis of the selected housing prototypes (chapter 4) and for the on-site research in Hongkou (chapter 5). Quotes follow their original wording; therefore, the term *public* might appear occasionally.

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3.5 Street space as a public space?

Streets were perceived as non-space during the Closed City period. Following this tradition, the design of residential units, such as danweis or gated communities, usually neglects the publicly accessible streets. This chapter presents different positions on streets as public spaces and discusses whether or not streets are regarded as a type of public space in contemporary China and Shanghai.

Streets are a public space. The general value of streets and the question as to whether they are considered public spaces are controversial. Some scholars describe streets as an important form of public space in China and assign the following attributes to streets:

Streets are…	
the main form of civic space in Chinese cities	(Miao 2003, 52)
the quintessential public space in Chinese cities	(Heng 2008, 79)
the traditional public space in China	(Bhatia 2008, 73)
the quintessential social space for the commoners – together with teahouses – and a source for a sense of collective belonging; a place for leisure, commerce, socialisation, but also conflict solving	(Qian 2018, 23)

Moreover, Heng states that the street has only gained importance as a public space with the transition from enclosed market areas to a commercial street during the Open City[19] period (2008, 80). This is supported by the famous panoramic painting *Along the River During the Qingming Festival,* which depicts a vivid street scene during festivities in the capital Kaifeng during the Open City period. Also, Villadsen views streets in China as the traditional cornerstone of urban life: streets are functional transit routes, commuting spaces, as well as access paths to key necessities and to run daily errands (2018). After the Closed City[20] period and its prevalent social segregation of street usage, streets became the most accessible open space. Additionally, Bhatia considers Shanghai's infrastructures as historical public places for interaction and exchange; however, these functions cannot always be fulfilled today (2008, 67).

Streets – not a public place. Other scholars describe the street as a non-space, at least in ancient China (Münch 2004, 44); this viewpoint represents streets as a neglected space nobody feels responsible for, and therefore, people separate themselves with walls and gates from the open space. As a result, streets are reduced to their only necessary function of transit. Even in the wake of the 20th century, the elites perceived streets and teahouses as domains of indolence, gossip, incivility, and disorder (Qian 2018, 23). In this sense, one urbanist called for urban restructuring so that *children are no longer obliged to play in the streets* (Guomin Gongbao, April 2-10, 1924 cited in Heng 2008, 94).

[19] 618 CE – 1804 CE (Heng 2008, 80)
[20] 770 BCE – 906 CE (Heng 2008, 80)

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Contemporary perceptions. At the turn of the millennium, public space was mostly related to recreation and social institutions (Liu 2004, 137). Parks, squares, and plazas were seen as public space – not streets though. If at all, only selected types of streets might be considered as public spaces, like walkways or pedestrianised streets. In 2001, the head of the Beijing research institute of construction projects, defined the following spaces as public spaces: 1) public squares, yards, walkways 2) greenery and water 3) traffic calmed zones 4) parking lots (Zhu 2001, 118). As can be seen, streets are not included in this definition, which means that public space is not perceived as a single, interconnected network. Accordingly, open space is understood to consist of two conceptually different, independent systems: On the one hand, there is a high-quality system of parks, greenery, and squares that is subsumed under the term public space. On the other hand, there is the functional transit-focused network of roads and paths (Ibid, 117-118).

This conception is supported by Gaubatz's analysis of several studies on urban public space in contemporary China, none of which includes street spaces per se into the definition of urban public space[21]: A few scholars do not mention street spaces at all in their definitions of public space (Long et al. 2008 cited in Gaubatz 2008, 73). Others only mention selected types of streets, such as shopping streets or pedestrian streets (Xu & Gu 2008. Liu & Zhi 2005. Both cited in Gaubatz 2008, 73). Moreover, other definitions are rather vague and simply understand public space as *open space* (Lu 2006 cited in Gaubatz 2008, 73), while one study refers only to those *streets, where local residents can meet their daily needs* when defining urban public space (Wu n.d. cited in Gaubatz 2008, 73). The inclusion of street space is never unconditional. Furthermore, Gaubatz determines a general devaluation of public streets because of their increasing commercialisation[22] (2008, 83). In a different study, Wu speaks of *public space along the street*, which also indicates that the street itself is not public (Wu 2010b, 6).

According to a more recent publication, streets are seen as public space: Chinese public space is said to be generally divided into parks, formal squares, and streets. Within the last decades, the traditional work-life routines have changed: parks are no longer places where one spends his or her free time – this applies at least for young people. In addition to the devaluation of parks, a perception of "*the street as an all-encompassing public space and interface between work and leisure, functionality and recreation, economic catalyst and social hub has emerged"* (Villadsen 2018). Consequently, there is a claim for mixed-use public street space. However, the creation of this space appears to be difficult when applying an urban planning approach that primarily focuses on large-scale urban development. As a result, *streets are planned as road*s and primarily designed for mobility, transport, and transit (Ibid.).

[21] None of the sources is available in English; therefore, the original source could not be used.

[22] Streets are being renovated by private investors, which usually means that they were being demolished and rebuilt to gain profits. The respective streets were transformed into artificial commercial areas for tourism and place promotion; the target group is high-end customers (Ren 2013, 97-98. Schoon 2007, 44). Some would call this process a preservation a commercial exploitation that ignores social and cultural aspects: *"the social and economic homogeneity of the cliental eliminates any possibility to stimulate contact between different social groups of the urban community, as a traditional public place would do"* (Miao 2011, 198).

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The *Shanghai street design guideline* (2016) represents a shift in the design of streets and stresses the potential use value of streets. This is not in line with the traditional understanding of streets in China: Open street space was rather a necessity than an actively designed and voluntarily used space. In the Shanghai street design guideline though, pedestrians are recognised as main users of the streets. Hence, street design is based on a more human-centred perspective (Shanghai Street Design Guidelines 2016, 6). Due to historical housing structures and the popularity of gated communities, collective spaces are probably still more popular and extensively used than real public spaces. Also, the street design guideline represents a top-down approach; relevant factors for successful open spaces are the acceptance of the users, their usage, and relation to the space.

All about the users. Also, Krusche addresses the dimension of the users. By referring to street space as a type of public space in China, he does not fail to include the cultural perception of streets: according to common viewpoints, streets are a transit space, not a space for sojourning. The cultural perception of street spaces, however, might be transformed through

1) **Activities** that take place on the street, also work-related activities, and

2) **Temporality,** a variety, and diversity of street usage according to different times of the day.

Evenings, for example, are more popular for people to stroll, shop, smoke, chat, or simply to wander in pyjamas. The appropriation of sidewalks is not uncommon in today's Shanghai; they are utilised for drying clothes, outside cooking, and enjoyment purposes, such as playing mah-jongg or card games. Almost all functions related to housing can be *extended into the urban streetscape* (Hassenpflug 2010, 23). Hence, it can be concluded that publicity based on accessibility is a precondition for active urban spaces; what matters though is the users and their usage. Users can transform spaces and alter the meaning of spaces; users have the potential to turn exterior streets into lively spaces (Krusche n.d., 31-33). This understanding is rooted in the perception of space as social space (see chapter 2.4).

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4 Selected aspects of the lilong and the gated community housing

As already mentioned, the empirical research examines the usage of the street space in a neighbourhood in Hongkou, Shanghai, in relation to the adjacent housing type and the neighbourhood structure. The respective two main types of housing are examined in this chapter: the lilong and the gated community. Those housing prototypes are characteristic for specific phases of urban development in Shanghai (Bhatia 2008, 69): Lilongs were the standard residential units of the *Colonial City*, 1840-1949 (Heng 2008, 80). Gated communities, on the other hand, are characteristic for the P*ost-Reform Era,* which is ongoing since 1978 (Pow 2007, 813). Both types can be found in today's Shanghai but still need to be understood by considering their historical context. Lilongs developed in the late 19th century, hence, the main mode of transport in Shanghai during that time was walking by foot, which in turn affected the ordinary radius of the people. Daily errands were run within a short distance from one's home. Gated communities have mainly developed since the 1990s; therefore, they are a product of a vehicle-centred phase of urbanisation, which is reflected in the car-oriented street design, large block sizes, and the division of functions.

From the mid-19th century onwards, Shanghai was divided into foreign concessions. Thus, the city was basically divided into three parts (Chinese city, French Concession, International Settlement), each of which was characterised by a different urban pattern, as well as a distinctive street network and grid structure (Citterio & Pasquale 2015, 42. Schoon 2007, 19). The close encounter between the East and the West resulted in the construction of a unique building type that combined elements of both cultures: the lilong houses or alleyway houses. The first lilong houses were built by the British to provide basic accommodation for Chinese workforce (Arkaraprasertkul 2012b, 142). Apart from streets, open space could mainly be found in interior, maze-like structures, and hence, constituted an exclusive, not publicly accessible realm (Gaubatz 2008, 74).

During the Maoist Period, Shanghai was judged by its reputation of the 1920s and discredited as a symbol of capitalism and bourgeoisie, also a centre of vice. Thus hardly any investments were made in Shanghai during the era of Mao; more than 80% of Shanghai's local revenues were redistributed within the rest of China (Holbig 2001, 1220). The construction of lilongs though was stopped abruptly, as lilongs were considered inefficient constructions that are unable to compete with modern structures. The type of housing was tolerated but hardly maintained. Consequently, housing was then organised in danweis. Generally, only low investments were made in housing during that time, as the focus was on the industrialisation of the country. As a result, housing demands were met by a downsizing of housing units, which resulted in an increasing population density (Wu 2005, 239).

In the era of Mao, exterior open space changed drastically: unprecedented, wide roads and large squares were built. This recognition of exterior spaces did not fundamentally alter traditional Chinese urban design principles; for example, parks were still often walled, and access was limited as the gates were locked in the evenings (Gaubatz 2008, 74-75). Exterior open space was primarily meant to serve a representative purpose, it was defined by monumental structures and represented the stage for mass mobilisation and parades. Streets designed for this purpose were not built to satisfy the daily needs of the residents. Exterior spaces were not oriented towards a humane scale, nor conducive to prompt spontaneous public life. The design principles rather referred to grand scale, symbolism, and prestige (Qian 2018, 20).

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The *Economic and social reform* was initiated under Deng Xiaoping in 1978 (Powb 2007, 1542). Previous years were characterised by a neglect of the housing sector. Low investments were made and Shanghai suffered from overpopulation and dense housing conditions. In the wake of this reform, housing was no longer publicly provided but became a commodity (see chapter 4.3). This shift is reflected in a new type of housing: the gated community – which is omnipresent today. The reform period in China can be divided into the rural-centred transformation of the 1980s, and the city-centred urbanisation of the 1990s (Ren 2013, 31), meaning that large-scale urban modifications in Shanghai started in the 1990s only (Arkraprasertkul 2012b, 145). As housing was transformed into a commodity, gated communities differed widely from prior housing provisions as they were commercially developed, built by real-estate developers and managed by property management companies (Pow 2007b, 1542). As with any privately provided goods, the driving force for developers was profit. Due to this restructuring, the responsibilities of the housing sector were shifted from state-lead to private developers.

This chapter examines the two housing prototypes lilong and the gated community in general, and focuses on different spatial, but also social aspects: the generic features of housing, the layout of the building blocks as well as the design, and common activities happening in the open spaces and streets are outlined. Streets are regarded as a potentially lived urban space, full of interaction and human activity. Therefore, they are analysed from the angle of pedestrians. Furthermore, the lifestyle associated with the housing types and the role of the community in the given residential units are examined. The diverging relation of the gated community and lilong towards exterior and interior open spaces is already outlined in chapter 3.3, and will be included in the conclusion concerning the two housing prototypes (chapter 4.4).

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4.1 Lilong – a legacy of the Colonial City

The lilong typology is presented in this chapter – obviously, this is a prototypical description, hence, the layout of single lilongs can deviate. Lilongs were mainly constructed from the 1870s onwards until the 1940s and represented the main housing type in Shanghai at that time. The lilong is connected to the *Colonial City,* as it developed during the period of the foreign concessions and constituted an architectural mix of Western and Eastern building techniques. The description of the lilong is divided into four sections: housing features, building block, open space, and lifestyle as well as community.

Housing features

Figure 13 is a schematic illustration of a lilong and shows the orthogonal grid structure, the spatial arrangement of the single row houses, and the perimeter belt that seals the block off from the exterior street. All those aspects are described in greater detail in the following paragraphs.

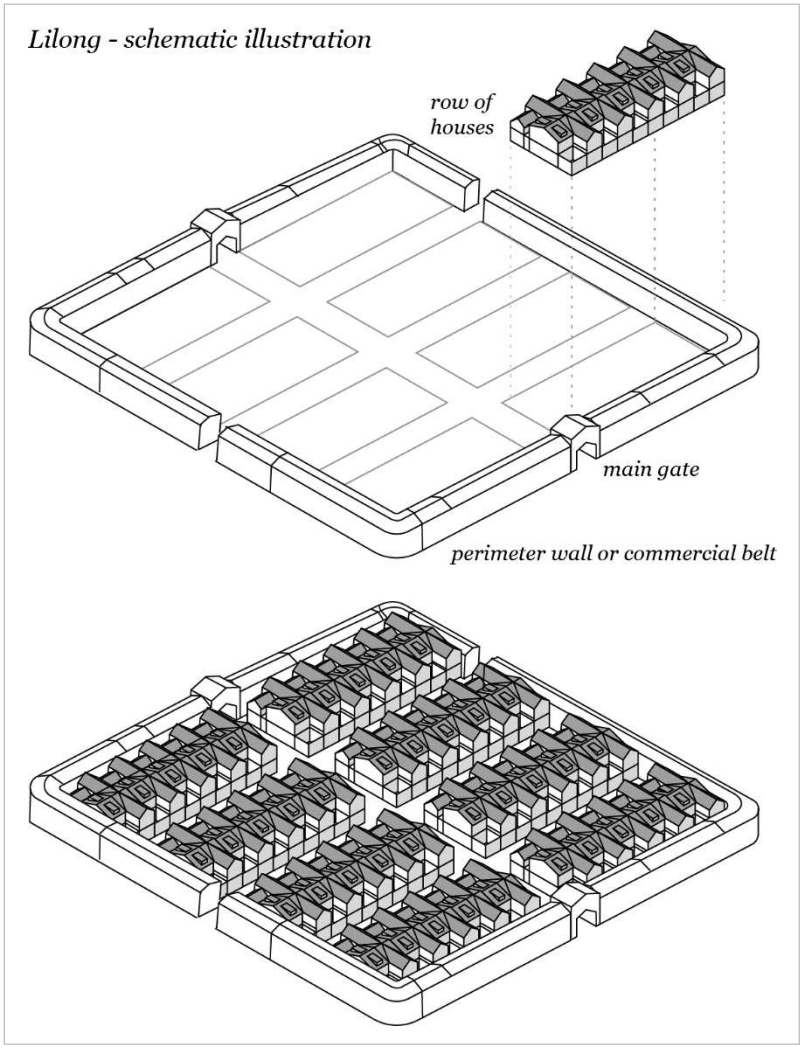

Figure 13.
Schematic illustration of a lilong (redrawn from Arkaraprasertkul 2010, 28. Citterio & Pasquale 2015, 45. Claramunt 2017)

General. The term *lilong* refers to a residentially used building block comprised of alleyway houses. In Mandarin, this neighbourhood is called *linong*, in the Shanghai dialect it is pronounced *lilong* (Arkaraprasertkul 2009, 28). Lilong 里弄 (or *longtang* 弄堂) is literally translated with *alleyway housing*. *Li* has several meanings, such as 1) a place where people live, 2) a home town, 3) a dwelling in a neighbourhood, 4) a basic organisation unit in the residential management in ancient China, and 5) a measurement unit in ancient China that was around 500 meters long (Zhao 2004, 50). *Long* simply refers to *alley* or *lanes* (Li 2015, 7. Bhatia 2008, 70).

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History. Lilong houses were first built during the period in which Shanghai was divided into foreign concessions, starting in the mid-19th century. In the beginning of that period, a strict segregation policy was followed; hence, Chinese residents were only allowed to settle in the part of Shanghai that was called the Chinese City. After a series of rebellions in China – the uprising of the Small Daggers Society in 1853 and the Taiping Rebellion in the 1860s – Chinese residents increasingly sought refuge in the international settlements. Consequently, the segregation policy was soon officially abandoned. Due to the population growth, the real estate sector became one of the most profitable business sectors in Shanghai. In response to the increasingly growing population, the construction of lilong houses was reinforced: a lilong was constructed in quick and simple ways at low costs; its spatial organisation resembles that of an army camp (see figure 13). Lilongs were especially popular among inner-Chinese migrants who primarily sought a safe place for living (Zhao 2004, 53-57). The structure of a lilong is due to the historical context of its development: British investors had little knowledge about housing construction, and therefore, only predefined the spatial arrangement of the houses which resembled the cost-efficient, row-house layout that was widespread in the United Kingdom. The key design principle of lilongs was to accommodate people in the most efficient way (Arkaraprasertkul 2012b, 142). Local builders were free to construct the houses based on their knowledge and experience (Zhao 2004, 59).

Lilong architecture. The spatial layout of the neighbourhood is influenced by western construction designs, whereas the design of the single houses reflects the Chinese architecture. The lilong structure allows its inhabitants to enjoy the bustle of the city, and the tranquillity and safety of an enclosed neighbourhood unit (Zhao 2004, 59). The lilong house is an architectural hybrid reflecting both eastern and western architectural styles: it combines the western-extroverted public street with the eastern-introverted quarter (Hassenpflug 2010, 64), plus it is a western town-house equipped with a Chinese courtyard compound. Like the traditional Chinese courtyard house, the original lilong house was first accessed through a courtyard patio (Chow 2014, 19) [23] and was further equipped with a narrow back courtyard. Along with the development of lilongs, the way of living shifted from a clan or family-based courtyard-centred living towards a community-based alley-centred living. The lilong altered and was modified over time. The original wooden structures were soon replaced with stone structures[24], due to issues of fire prevention (Zhao 2004, 49. 57-58).

The lilong typology has continuously further developed. However, all types of lilong have a common ground: their internal structure of lined houses, the hierarchy of streets expressed through their width, and the related notion of exterior and interior open spaces (Zhao 2004, 62).

The different architectural phases of lilong are (Scheen 2015, 176):
- old-style shikumen (no date given)
- shikumen (1870-1910)
- late shikumen (1910-1920)
- new-style lilong (1910-1940)
- garden lilong (1920-1940) and
- apartment lilong (1930-1940).

For means of simplification, mainly the term lilong is used in the continuous text.

Evolvement of lilong architecture. Lilong architecture and living has evolved over time. Shikumen lilong are characterised by a mixed land-use pattern which allowed the residents to fulfil their daily needs in close proximity to their home. New-style lilong are usually monofunctional, mainly residentially used (Zhao 2004, 49). Simultaneously to the development of late shikumen, the new-style lilong type emerged: stone portals vanished, new materials, like steel for instance, were used, and the multifunctional front courtyard was replaced with a front garden, primarily intended for gardening. The

[23] The sequence of different spaces in terms of accessibility and its meaning for the Chinese understanding of public space is evaluated in chapter 3.2 and 3.3.

[24] Those stone structures are called shikumen 石库门, which literally means stone portal gate and refers to a decorative motif marking the front entrance of each alleyway and the front door of each house (Li 2015, 7).

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dwellings were equipped with modern facilities, such as gas, electricity, heating and sanitary systems; roads were widened to foster vehicle access, and the perimeter commercial belt was reduced or completely vanished (Ibid, 60-61). In general, the architectural types differ in terms of their living space per capita and the availability of contemporary amenities: Shikumen houses were comparatively less spacious; garden and apartment lilong were luxurious versions of lilong with modern facilities. The lower-middle class lived in shikumen, the middle class in new-style lilongs, the upper-middle class in apartment lilongs, and the rich in garden lilongs (Scheen 2015, 176-177).

Housing scarcity. Lilong houses were originally designed to be spacious with 50-60 m² of living space per person (Citterio & Pasquale 2015, 40). Lilong neighbourhoods were the first collective mass housing forms in Shanghai (Zhao 2004, 73), their heyday was between the 1920s and the 1930s (Lu 2008, 192). As already mentioned, at the beginning of the 20th century, housing became increasingly scarce in Shanghai as the city experienced a major growth in population – which is shown in figure 14. Although housing was developed on an unprecedented scale, the high demand could not be met. Furthermore, the urban demography changed dramatically as family sizes became smaller. At the same time land prices increased due to the high demand for housing. Thus, large-size housing became unaffordable for ordinary households (Zhao 2004, 59-60). As opportunities for housing were limited and rents were high, lilong dwellings were increasingly densely populated: By the 1920s, the density of a regular lilong was comparable to the most densely populated area of the most urbanised metropolis at that time: Eleventh Ward of New York city – which only sustained that density because of an urban pattern of skyscrapers (Denison & Ren 2006, 159-161). In 1937, 86% of the families of the international settlements shared their house with at least one other family. On average, four families (ca. 24 persons) shared one house, which meant that the average living area was 2.8 m² per person[25] (Zhao 2004, 67). In this context, the open spaces within the lilongs vanished, as people modified their dwellings and added further housing space (Hassenpflug 2010, 64). Patios were transformed into kitchens or toilets; terraces were modified into further rooms, kitchens or laundry tables were built on the alleys, rooms were subdivided, and intermediate floors were erected (Zhang 2019. Zhao 2004, 68). These modifications allowed an increase of the floor area by almost 50% (Zhao 2004, 68). These bottom-up transformations were usually spontaneous, not due to any policies, and hence, occasionally did not correspond to safety standards (Zhang 2019). At the beginning of the 20th century, up to 80% of the inhabitants in Shanghai lived in lilongs (Lu 1995, 94). 72% of the urban area of Shanghai was covered with lilongs in the 1940s (Chow 2014, 19), which made the lilong the most common and most characterising urban typology of Shanghai at that time. Nevertheless, due to a lack of investments, lilong neighbourhoods were gradually dilapidated in the course of the 20th century (Zhao 2004, 50).

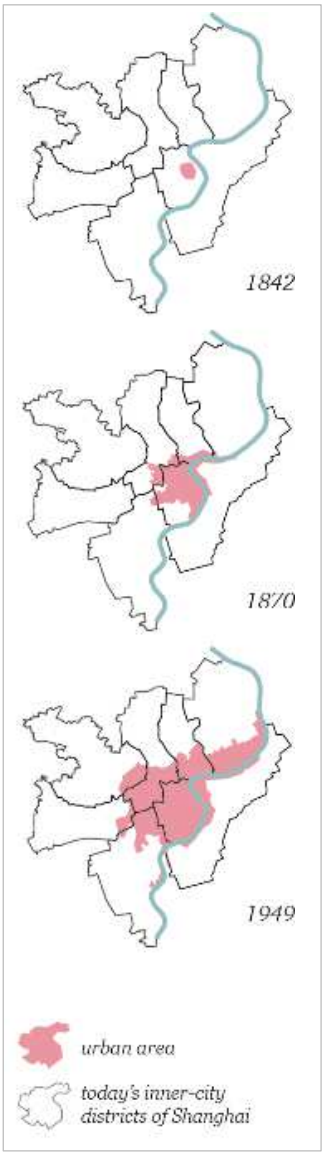

Figure 14. City development of Shanghai (redrawn from Citterio & Pasquale 2015, 37)

[25] Others claim that the personal living space reached its lowest point in 1957 with 3 m²/person (Citterio & Pasquale 2015, 40). What can certainly be argued is that the living conditions were incredibly overcrowded.

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Living conditions today. The housing conditions in ordinary lilongs have hardly changed over the years (Citterio & Pasquale 2015, 51). *"What was once intended to be a well-lit, well-ventilated house became an overcrowded dwelling with the addition of floors, partitions, roofs, and ladders and was made substandard with inner rooms that had neither daylight nor natural ventilation"* – these conditions still persist in lilongs today, as they lack important amenities and comforts of modern housing (Chow 2014, 16-19): In general, the way of housing is narrow and bleak, plus there are often problems with ventilation, lightning, and noise; privacy, basic infrastructure, and private sanitation are missing. As there are normally only shared sanitation facilities available in lilongs, the utilisation of chamber pots is still prevalent (Citterio & Pasquale 2015, 40-42. Schoon 2007, 43). A study conducted by researchers of the Tongji University in 2016 revealed that almost 45% of the interviewed lilong residents share cooking and sanitary facilities (Zhang 2019). The poor housing conditions are assumed to have a negative effect on the quality of life and the health of the inhabitants (Arkraprasertkul 2012b, 144. 157). In addition, the building materials are often not able to meet modern standards and needs (Zhang 2019).

In 2016, the Shikumen Cultural Research Centre states that the living area per capita in one type of lilong, namely the shikumen, is 5.8 m² (Shanghai Observer News 2018), while Zhang quotes a general average of 10.8 m²/person in today's lilong houses (Zhang 2019). A single household in a lilong usually comprises four to five persons. In the lilong neighbourhood of Chunyang Li, 46 households live in a total of 12 units, with a minimum living space of 5.4 m² per household, and a maximum living space of 42 m² (Shanghai Observer News 2017). Generally, there is a lack of knowledge about the demographic features of lilong residents. In many cases more affluent families leave the lilongs for more convenient housing. Normally, the people that inhabit the lilongs today are the precariat, that is, the deprived and the poor (Ren 2013, 158. Yan 2013, 119). Certain on-site researches state that the remaining lilong residents are mostly the elderly (Arkraprasertkul 2016, 8): staying in a familiar neighbourhood is especially important for this age group, as they have resided there for most of their life – as did their ancestors (Arkraprasertukul 2012b, 150). Even until the beginning of the 1990s, almost half of Shanghai's residents lived in a lilong (Zhang 2019). However, Yang claims that only approximately 100 lilong neighbourhoods have remained in Shanghai until today (Yang 2014. Lu 2008, 192). Official government data confirms that today about 2 million residents still live in shikumen; 50,000 lilong houses are still distributed across Shanghai (Shanghai Municipal People's Government 2017). Despite the different numbers, it is apparent that lilong neighbourhoods are rapidly disappearing in Shanghai (more on the disappearance of lilongs in chapter 4.3).

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Building block

Parameters. The layout of lilongs is oriented on a human-scale. It is characterised by low-rise structures, which are usually two to three storeys high, and a medium population density (Arkaraprasertkul 2012b, 146). The single raw houses are attached side by side, having one side lane in the front and another lane at the back (Zhou 2012, 8) – again see figure 13. The narrow roads and the low-rise buildings seem to please and favour pedestrians. Walking distances are short and short-cuts are available due to the permeable structure of the neighbourhood (Zhang 2019). The size of the lilong building blocks can vary from 0.1 up to 2 hectares (Citterio & Pasquale 2015, 42). The *Building Coverage Percentage* – which indicates the share of the ground floor that is occupied by buildings – is up to 60-70% in lilong neighbourhoods, while new housing typologies, such as gated communities, reach only 20-30%. As buildings occupy a large area of the territory, open spaces are limited within a lilong (Zhang 2019). In general, a lilong neighbourhood is comprised of streets and houses.

Mix of functions. During the early development of lilong housing, the main mode of movement was on foot; hence, the daily radius of people was remarkably smaller than today; shops, workshops, and services that satisfied the residents' daily needs had to be located close to one's home. As a result, lilongs provided their residents with the basic functions of daily life. The neighbourhoods were almost self-sufficient entities. Thus, Shanghai was associated with the notion of being a mere juxtaposition of cells that hardly interacted: *"as far as daily life was concerned, Shanghai can be seen as a honeycomb consisting of numerous small cells — the compact, even crowded, and multifunctional neighborhoods — where people conducted most of their daily activities. For most people these were carried out in an area that at most stretched just a few blocks from their home. (...) The city therefore was fragmented into numerous small communities wherein a life of moderate comfort could be obtained and maintained without venturing into the outside world — just a few blocks away. To many residents the few blocks around their homes were what the 'city' meant to them, and most of the city's much publicized modern amenities were quite irrelevant to their daily lives"* (Lu 1999, 14-15). This quote illustrates that lilong neighbourhoods are certainly not monofunctional residential blocks: the inner core of the building block is usually residentially used, while the outer fringe is commercially used. The separation of functions can be subsumed under the quote *"Exterior shops, interior housing"* (Sun 2006, 13).

Border. The element of gating is present in lilong structures – and as already mentioned – it is one of the most basic urban elements in Chinese cities (see chapter 3.2-3.3). Lilong neighbourhoods are either walled or surrounded by a commercial strip (Chow 2014, 19. Bhatia 2008, 70). Generally, the commercial belt consists of shop houses, meaning that the ground floor is used for business, while families live on the upper floors (Zhao 2004, 64). The commercial strip has two functions: firstly, it serves to provide for the inhabitants, and secondly, it aims to constitute a border between the interior residential area and the surrounding open street, shielding the daily life inside the lilong alleys from the public view (Arkaraprasertkul 2010, 28). The line of shops and services faces the public street; this design reflects the disguised function of a wall. A reason for this attitude towards walling might be that lilong inhabitants were often migrants from elsewhere in China. Finding a residence within a walled unit and next to people of similar socio-economic backgrounds conveyed a sense of safety and belonging (Luo 2000, 214). Furthermore, the strong desire for security can probably be linked to the unsteady times during the early constructions of lilongs (Schäfer 2007, 39). Besides, and as already stated, walls are a basic element in Chinese cities and residences.

Access & gates. The passageway leading inside the building block to the residential area is marked with gates. Those gates though always remain open. Instead of creating physical barriers, informal social surveillance and social control is applied by the collective of the neighbourhood: either the owners of small stores next to entrance, or the residents themselves keep an eye on strangers (Citterio & Pasquale 2015, 44. Sun 2006, 13. Miao 2003, 56). The residents live in close proximity to one another, spend time

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in the lanes of the lilong, and might even share certain facilities. Thus, it is not surprising that they know each other and know who lives in their neighbourhood. Hence, it is easy for residents to estimate who belongs to the neighbourhood and who does not. It is almost impossible for a stranger not to be recognised as such (Arkaraprasertkul 2009, 21).The overall aim is to ensure a sense of privacy in the residential block, and to protect the property of every individual. Both design and social control represent non-verbal means of communication.

Open Space

The second syllable of the name *lilong* refers to the adjacent streets, which indicates the significance of streets for this typology: Lilong is referred to as an *urban typology that combines the street, and all its associated activities, within its form* (Bhatia 2008, 70). The accessibility of the relevant streets is illustrated in figure 15.

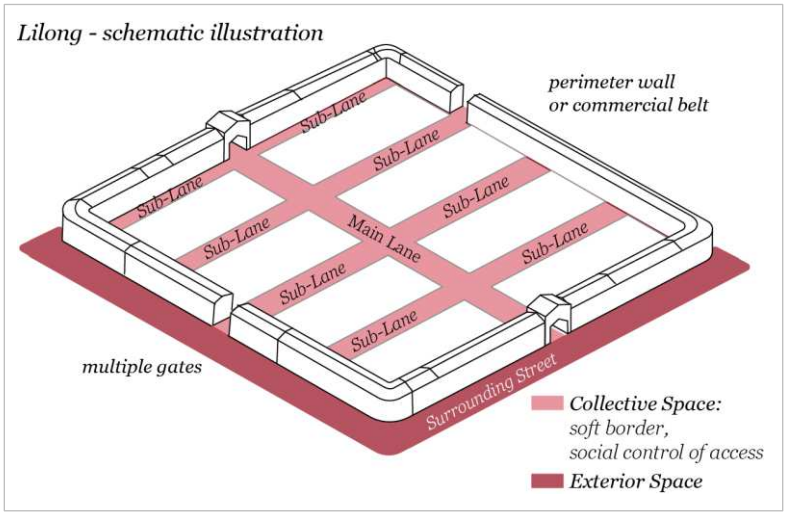

Figure 15.
Open space in lilong
(redrawn from Arkaraprasertkul 2010, 28. Citterio & Pasquale 2015, 45)

Exterior street. There are two layers of streets in a lilong: the interior, collective sphere of lanes, and the exterior realm of the perimeter street. The residential part of the neighbourhood is sealed off from the surrounding street. The first layer, the perimeter street, is accessible to everyone and represents therefore an exterior space; if a commercial belt exists, it is usually lined with shops, services, and also craftsmanship or productive businesses. This is the place for noisy commercial activities, the circulation of people and goods, and for transit and transport. The atmosphere appears to be open and dynamic, and differs from the more collective-oriented atmosphere within the lilong (Citterio & Pasquale 2015, 42. Arkaraprasertkul 2010, 28). The appropriation of the exterior open space is often temporary, that means, it changes during the course of a day and also its users vary: residents, vendors, food and vegetable sellers, etc. (Pow 2007a, 820).

Collective street. Gates separate the exterior street from the collective sphere of alleyways and lanes; they represent the border between the two layers. When entering a lilong, one passes different street spaces, including the surrounding street while entering the alley, as well as single branch alleyways. Generally, there is a main lane and several perpendicular branch lanes (Arkaraprasertkul 2010, 28). The lane pattern of the inner residential neighbourhood is characterised by a rational, orthogonal grid structure, which conveys a sense of order, security, and tranquillity. This pattern further facilitates the exertion of control by the citizens (Citterio & Pasquale 2015, 42). The lane network is hierarchically organised. The side lanes that lead to the housing units are often dead ends, which expresses a certain degree of closeness (Hassenpflug 2010, 64). The hierarchy of the streets is mirrored in their width: the main alley is usually four to six meters wide, while the sub alleys are 2.5 to 3.5, and the back alleys – which are accessible from the back doors – are only up to 1.5 meters wide (Zhang 2019).

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Open space availability. As mentioned before, the first lilong houses were equipped with a courtyard. Due to almost a century of housing shortage and population growth, open spaces had to give way to further residential space. This has led to an intensive use of the alley space, which is considered a unique while integral part of lilong living today (Zhou 2012, 55. Zhao 2004, 68). The primary purpose of the back alleys was to give access, but soon they were transformed into collective spaces within an introverted neighbourhood (Hassenpflug 2010, 64). Those lanes provide for a sense of *open space,* since it is argued that small spaces with shading are the preferred spaces for outdoor activities in China (Arkaraprasertkul 2009, 15). This is further supported by the fact that from the Chinese perspective, a broad road stands for a public realm, whereas a narrow alley represents a private realm – the width of the street is the decisive element (Zhang 2004, 103). This coincides with Krusche's observation that activities occur in greater intensity and diversity in small open spaces, like side streets for instance, than in spaces deliberately designed for social interaction, such as squares (n.d., 31). However, today's lilong neighbourhoods substantially lack green spaces (Yang & Chen 2020, 81). In a case study conducted in the Hongkou district, Zhou notes that – beside streets – there are no open spaces, nor green spaces available to the lilong community (Zhou 2012). The difference with regards to open and green space becomes even more striking when a lilong and a gated community are located next to each other.

Alley-living. The central patio of courtyard houses was used to be the most important collective, multifunctional space for a kinship, while alleys were reduced to fulfil transit functions (Zhao 2004, 68). In the lilong neighbourhoods though, the alleys were transformed into shared activity zones for the entire community – although, these zones are probably dominated by the inhabitants whose home is located on the very same alley (Arkaraprasertkul 2012b, 143. Zhao 2004, 68). The open space design of lilongs is flexible and open for adaption. *"The design model of lilong responds to multiple functions at the same time and allows each physical element to serve several purposes simultaneously, creating a very convenient and walkable environment for daily domestic activities, and a spatial composition that uses land and other resources efficiently"* (Miao 2003, 56). This openness for the adaption of space is crucial for lilongs, since they generally lack open spaces. Not surprisingly, the private sphere was expanded to the street space; both exterior and collective streets are used for personal, domestic, or commercial activities today. Zhao, for example, regards this *life in the alley (long tang ren sheng*) as essential for the lilong (Zhao 2004, 68-70). The lilong is characterised by a high use value and social value since it allows domestic tasks to be fulfilled while socialising. The lanes turn into *community corridors*, they form an extended living space used for a multitude of activities: hanging out, chatting, selling, gambling, eating, sleeping, playing, gathering, debating , observing others, washing and hanging the laundry, cooking, basic hygiene like brushing teeth or washing hair, exchanging news, creating neighbourhood organisations and holding community meetings … (Citterio & Pasquale 2015, 44. Li 2015, 141. Arkaraprasertkul 2010, 28. Arkaraprasertkul 2009, 21. Bhatia 2008, 70). Residents sometimes seem to personalise or decorate the open space, for example by putting potted plants or furniture on the lanes. Not all of these activities are predetermined by the design but have gradually emerged in the everyday practices of the community. Consequently, lilong neighbourhoods stand out with an intriguing and vivid street life. Alley-living reflects the Chinese approach towards space illustrated in chapter 3.4, although in this case the space is not publicly but collectively used. Open space of the lilong is multifunctional, shared, and flexible, plus it is used for private, collective, or public tasks; the usage is temporary and subject to negotiation, users and uses fluctuate (Zhao 2004, 70). Nobody has a universal right to open space in lilongs as it is an ambiguous and fluid space.

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Community & Lifestyle

Sense of community. The term *lilong* does not only refer to the materiality and the morphology of the dwellings but also to the vivid social life of the neighbourhood, its community, and the particular dwelling culture. As mentioned earlier, lilong lanes burst with street life. It seems that the less private interior space is available, the more street space is appropriated. In this way, social relationships between inhabitants are shaped, and a unique sense of collective neighbourhood life is established. People interact on the street space on a daily basis, plus they learn to know each other and identify with their community. Collective symbols, such as uniform front gates in shikumen housing, serve as collective images and reference points for the inhabitants of a given neighbourhood (Zhao 2004, 50-51. 59). Traditionally, neighbourly connections and interactions are important in the Chinese culture and crucial for people's daily lives. This is illustrated in the already mentioned traditional proverb *"a near neighbour is better than a distant cousin"* (Zhou, 2012 17). As a side effect, community relations can reinforce the personal feeling of safety (Arkaraprasertkul 2009, 20-22). In lilong neighbourhoods, a particular sense of community can be observed (Citterio & Pasquale 2015, 106). The *"sharing of resources (note: street space, collective facilities) as a side effect create a sense of understanding and trust between neighbours"* (Bhatia 2008, 71). A rich social life is both a characteristic as well as a consequence of living in close proximity.

Social pressure and conformity. Life in a dense and overpopulated neighbourhood has certainly its downsides; hence, lilong living is not to be romanticised. Lilongs are equipped with poor living facilities; there is a lack of privacy and distance to other members of a family, as well as to the other inhabitants. The physical proximity of inhabitants leads to a high level of social control and reinforces one major activity: gossip. *"If the longtang (note: alleyways) of Shanghai could speak, they would undoubtedly speak in rumors. (...). If the longtang of Shanghai could dream, that dream would be gossip"* (Wang 2010, para 2). The lack of infrastructure and privacy, as well as the necessity to share certain facilities with the rest of the community can be seen as major disadvantages of the lilong housing. Inhabitants are forced to perform private tasks on the exterior or collective street. At the same time, however, for certain groups like children and the elderly, lilong living is certainly attractive due to its intimate and flexible living pattern (Zhao 2004, 70).

A symbol of the city... Shanghai's relation towards lilongs is ambiguous: On the one hand, the presence of lilongs in today's urban pattern establishes a reference to Shanghai's past (Arkaraprasertkul 2012b, 144). Lilong neighbourhoods represent an important legacy of the city (Zhao 2004, 73) and are symbolic for Shanghai. The citizens of Shanghai have lived in lilongs for more than 100 years, and lilongs have served as the basic scene for the daily, ordinary life (Zhang 2019). They are further associated with a nostalgic feeling towards the *old* Shanghai and the good old days when *everybody knew each other and cared for each other* (Arkaraprasertkul 2012b, 151). The neighbourhoods are perceived as *carrier[s] of community spirit* and simply represent *home*. Lilongs further exemplify the city's considerable leap in development in recent decades. However, the relation to lilong housing is more ambiguous today: people no longer want to live in lilongs, yet they want the traditional image of lilong to persist (Zhang 2019).

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Renewal of lilongs. The Shanghai Municipal Government has announced to protect 7.3 million square meters of lilong housing in order to preserve Shanghai's distinct urban pattern. As building materials have a limited life span, they have to be renewed; the spatial structure though needs to be preserved (Zhang 2019). A number of lilong neighbourhoods has already been renovated, and their historic potential has been utilised and commercialised. Those lilong neighbourhoods now satisfy the *globally circulated romanticist preconceptions of traditional Chinese neighborhood life* (Arkaraprasertkul 2016, 10). One example of this conversion is the neighbourhood Xintiandi. Advertised as the *real Shanghai*, it has been rebuilt to look old and now constitutes a setting for commerce and high-end consumption. Ordinary citizens and the distinctive sense of community and neighbourhood have gone since the redevelopment (Arkaraprasertkul 2016, 10. He 2009, 357).

… and a symbol of decay. Lilongs are also associated with poverty and the related downsides (Bhatia 2008, 71). Lilong living is inconvenient and outdated, the rundown and dilapidated housing conditions are even considered dangerous to the health of the inhabitants. Due to overpopulation and the financial limitations[26] of most inhabitants, some lilongs simply do not appear as livable as modern high-rise housing structures. Certain widespread habits like spitting, wearing pyjamas in public, or drying clothes outdoors are negatively connoted and associated with poor living conditions and a rural, backward lifestyle. Derelict living conditions are increasingly viewed as chaotic (Iossifova 2012, 203), they also do not fit to the modern image of Shanghai as a global centre and the image of the new China. Some local governments in Shanghai refer to lilong neighbourhoods as squatters. They are considered dangerous, therefore, *cleaning* them seems a necessity[27] (Arkraprasertkul 2012b, 144-157).

Inferiority. Shanghai experiences a steady influx of so-called *floating people* (*liudongrenyuan*): that is, rural migrants who seek for a better life in prospering centres. Shanghai relies on these migrants as a source of cheap workforce. Simultaneously, these migrant workers are confronted with prejudices: they are perceived as backward, dangerous, and culturally inferior (Pow 2007b, 1544-1546). They usually lack an urban housing registration[28], and due to their financial constraints, they mainly settle down in marginal areas where more affluent citizens do not want to live, for example in lilongs (Arkaraprasertkul 2012b, 155). As these migrants do not possess official documents, lilongs are often assumed to house informal communities. Also, the population fluctuates, which makes it complicated to keep records on the residents' demographics (Zhou 2012, 9). As a result, today's lilongs are diverse: they are comprised of old and new residents who live there either permanently or temporarily, and have fixed or unstable income (Arkaraprasertkul 2012b, 154). Nevertheless, Zhang notes that the social backgrounds of lilong residents vary widely: also, it is not uncommon for a house inhabited by seven families to adjoin another lilong house with a patio and garden that is only inhabited by a single family (Zhang 2019).

[26] Some residents cannot afford a better place to live, nor do they possess the financial means to renovate their place. To earn an extra income, parts of the house are often rent which leads to dense, overcrowded housing conditions (Arkaraprasertkul 2012b, 147).
[27] More on the redevelopment of Shanghai and the replacement of lilongs with gated communities in chapter 4.3
[28] More on the household registration system– called hukou – in chapter 1.7.

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4.2 Gated community – a symbol of modernity

In this section the second housing prototype is presented: the gated community. Ever since the 1990s, gated communities have widely been constructed all over Shanghai, symbolising modernity. The description of gated communities is based on the same four sections as in the previous subchapter on lilong housing: housing features, building block, open space, and lifestyle as well as community. Again, the description is prototypical; individual gated communities might be slightly different in certain regards.

Housing features

Figure 16 schematically illustrates the design of a gated community: the high-rise residential towers, different open spaces within the community including a central point towards which the buildings are oriented, and a strong physical barrier towards the exterior street with a limited number of entrances.

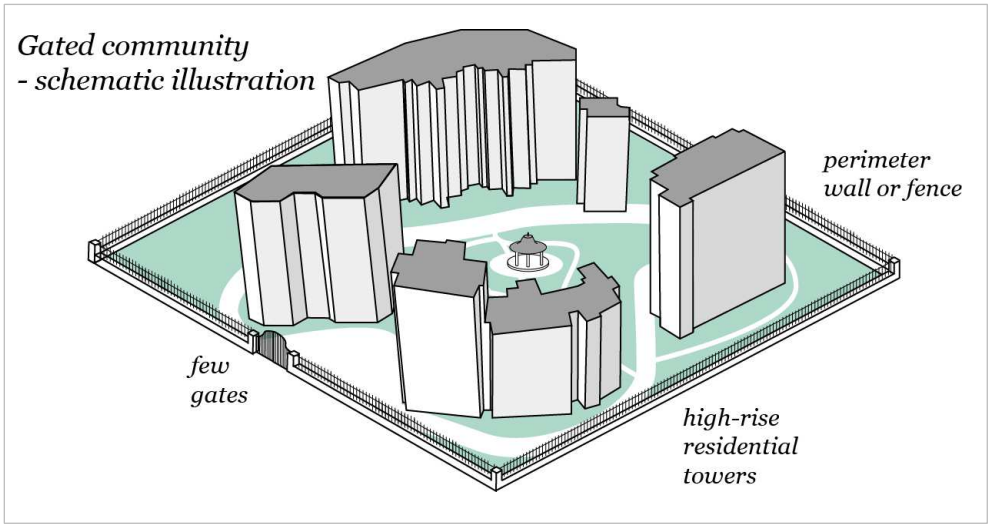

Figure 16. Gated Community. Schematic illustration

History. In the wake of the economic reform, a construction boom was initiated in Shanghai in the 1990s. Ever since gated communities have been constructed on a large scale. The shift of responsibilities in housing from public institutions to private developers gave rise to this development. Furthermore, low investments were made in the housing sector in previous decades, hence, there was a general need for a major overhaul. Accordingly, the housing sector was developed at an immense pace: between 1997 and 2007, 600 million square meters of new living space were generated in Shanghai (Schoon 2007, 32). A peculiarity of the gated community is the verticalisation of housing – high-rise living was priorly unknown in Shanghai. The development of gated communities can be considered unprecedented due to the heterogeneous composition of the compounds, the pace of development, the disconnection from the actual place, and the accompanying erasure of the existing old building fabric (Talamini 2018, 205) – more about this outlined in chapter 4.3. This wave of redevelopment has primarily addressed pragmatic concerns, such as the lack of decent housing and an overall need for renovation (Bhatia 2007, 75).

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Facts. Gated communities in China are densely populated and spatially compact (Pow 2007b, 1543). Unlike western models of gated communities, which consist of low-rise, suburban single-family homes, Chinese gated communities are urban, mid- to high-rise structures of ten or more stories, and are characterised by a comparatively high population density of 120-180 families per hectare. It is not uncommon for a gated community to house a total population of 2000 to 3000 families. The total area varies from 12 to 20, or even more hectares; the layout of the building towers is usually standardised (Miao 2003, 47-48). Gated communities are spread all over the urban area in Shanghai; they are centrally located but can also be found in the suburban fringe. Today, 80% of housing units are maintained by professional real-estate management companies (Lu 2008, 187). These are average numbers which serve to emphasise the large scope of gated communities in China. Nevertheless, individual gated communities might differ in terms of these figures. In Shanghai, for example, the design of gated communities also depends on the location: inner-city gated communities tend to be small, yet elegant and exclusive, while those located in the suburbs are rather basic. The largest gated community in Shanghai is *Shanghai Cannes*, with around 60,000 residents (Wang & Pojani 2019, 7. 12).

Parameters. No precise data on the average living area per capita in gated communities could be found. Nevertheless, in general, the living area per capita increased in Shanghai from 11.8 m² in 2000 to 37 m² in 2018 (Shanghai Statistical Yearbook 2019). However, this data is general and not aggregated according to different housing types. Considering the replacement of small units and the significant development of high-rise apartments in gated communities, this indicates a much higher average living space per capita in gated communities than in lilongs. Today, most of Shanghai's residents live in gated communities. This housing typology is not reserved for the wealthy, but it is inhabited and appreciated by all social classes (Münch 2004, 47. Miao 2003, 49). At the same time, a socio-economic segregation becomes apparent on the level of individual communities, which is based on class and income (Pow 2007a, 814). From a Chinese perspective though, segregation is perceived as an important criterion for a successful compound; it helps to maintain a harmonious society, and keep it in order and free of conflict (Münch 2004, 47). The spectrum of different gated communities is wide in today's Shanghai: it ranges from ordinary compounds to very exclusive, luxurious gated communities.

Amenities. Gated community housing is equipped with all amenities that constitute a modern lifestyle, like private bathrooms, self-contained kitchens, a heating system, laundry facilities, air-condition, ventilation, natural light, and a proper plumbing and wiring (Frazier 2019, 250. Arkaraprasertkul 2010, 28. Bhatia 2007, 73). Hence, gated communities allow a more comfortable standard of living than lilongs. The flats are equipped for the performance of any domestic task within the flat, therefore, shared amenities are no longer necessary for this housing typology – unlike for lilongs. One study shows that the majority of residents would prefer a less central but modern flat with proper amenities over crowded, run-down lilong housing (Frazier 2019, 251).

Privacy. Strong purchase power, self-contained flats, and an increased floor space per capita cater to an individualistic lifestyle and an increased level of privacy. Interaction with neighbours and the use of collective spaces appear to be optional (Arkaraprasertkul 2012b, 163. Bhatia 2007, 73). Privacy is a rare commodity in lilong houses, and during the Maoist time, privacy was drastically reduced. Ever since the 1990s though, privacy can be re-enjoyed by those who can afford it. After all, it is a prized commodity (Pow 2007a, 821-822): accordingly, developers are expected to ensure and meet the inhabitants' desire for privacy (Pow 2007b, 1543). In today's gated communities, unwanted interactions can be avoided, and the right to be left alone can be exercised. In this sense, privacy is equated with freedom (Pow 2007a, 816. 822).

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Building block

Functions. The main function of gated communities is residential. However, certain compounds offer additional amenities, ranging from education, leisure, to commerce and other services (Münch 2004, 45). The scope of facilities is determined by the gated community itself, and also depends on the socio-economic status of the inhabitants (Wang & Pojani 2019, 12). Occasionally, these additional facilities are also an important selling point, as they highlight the exclusiveness of the compound (Pow & Kong 2007, 136). In recent times though, it is not the collective space within the gated community, but the exterior street space that is gradually becoming the place which serves to fulfil these additional functions. Hence, additional facilities and amenities are no longer exclusively accessible to the residents. The reason for this relocation is mostly due to a low utilisation of these facilities within the gated community; the opening of which to the public aims to increase profit (Münch 2004, 47). As a result, the gated communities become increasingly monofunctional. Fewer internal facilities within the sealed compounds force the residents to leave their units to run their errands – which potentially increases the relationship between the enclaves and the neighbouring exterior spaces (Xu & Yang 2009, 116).

Ways of gating. As the name gated communities already indicates, walls are a dominating feature of this typology. Since the land of a gated community is publicly leased, commodity housing can be physically separated from the surroundings (Wu 2005, 243). There are multiple ways – or *defensive tactics*, as Pow refers to them (2007b, 1540) – to secure the gated community. The collective means of control applied in lilong structures is outsourced towards other entities: walls, fences, or hedges that surround the compound and seal it off from the exterior. Generally, the number of gates is limited, which makes it easier to keep record of who enters the compound; in some cases, there are also guards and patrols, and support is given by additional technical surveillance (Hassenpflug 2015, 51. Pow 2007b, 1540. Miao 2003, 47). Occasionally, even high-tech security gadgets are used, such as biometric scanners, centrally controlled intelligent building programs, or infrared surveillance systems (Pow & Kong 2007, 144). The importance of gating has been underlined by a policy formulated in 2003, which made gating mandatory for all future residential developments in Shanghai in order to strengthen the social order in the city (Pow 2007a, 819). There is even an award that is given to successful compounds called *Civilized and Safe Residential Quarter,* for which gating is a major criterion (Miao 2003, 49).

As a matter of fact, gated communities have different policies towards exclusivity and access limitations. Some are surprisingly permeable, for instance, outsiders are allowed to access commercial activities located within the gated community (Hassenpflug 2010, 52). Moreover, guards do not always question strangers who enter the complex (Yip 2012, 225), which raises concerns among residents over safety issues (Miao 2003, 50). As for other gated communities, however, their developers are keen to keep the gated community an exclusive realm for its residents and their guests only. Hence, security guards note down the reasons for entering, and keep track of outsiders, who deliver goods for instance, and also the apartment building they enter. They might even inform their fellow security guards to pay close attention (Pow 2007b, 1550).

Security. Strong fortifications and walls are prominent in gated communities because of security issues. During the transition from the planned economic system towards a social market economy with Chinese characteristics, the maintenance of the social stability was of major priority. A rapid increase in income inequality reinforced the erection of walls to ensure order (Miao 2011, 192); walls were fast-built and feasible structures which both contributed to stability and crime control. Miao addresses the request for gates by referring to general tendencies in Chinese society: Chinese urbanites feel increasingly insecure as far as their professional life and crime is concerned, and they mistrust inner-Chinese migrants. Gating is appreciated, as it reinforces a feeling of safety (Miao 2003, 49. 58). During the reform years, many old walls were demolished; yet, more and more walls are being built around people's homes again today. *"The average residents' sense of self-protection easily outweighs the value of social interaction"*

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(Ibid, 60). People demand security without considering the implications that the urban cell structure might have on society. With limited opportunities for interaction, reality turns into alienation, trust becomes fear (Bhatia 2008, 75).

Inadequacy to ensure security. Despite the fact that Shanghai is one of the safest metropolises in the world, there is an emerging discourse of fear against outsiders and strangers, as well as a growing demand for safety. Gated communities are perceived as safe havens, although some studies show that they do not ensure higher levels of security. Firstly, the physical design of the housing typology barely includes apartment dwellings with doors facing the streets, which complicates neighbourhood surveillance. Secondly, due to a high level of privacy and fewer relationships between residents, they do no longer know who belongs to their neighbourhood and who appears to be an outsider. The gate represents a breakdown of trust, not an increase of security (Bhatia 2008, 73). As walls block the view, intruders are actually protected from gazes of anyone on the adjacent street or neighbouring buildings. Hence, only effective surveillance measures and patrols can help to decrease crime. Gated communities with security issues usually do not have such human surveillance systems. As a result, most of the priorly applied types of control happen to be less effective in gated communities, the most efficient security measure, namely *natural surveillance* by the residents themselves, is impeded by the design and size of the compounds (Miao 2003, 54).

New directive to stop gating: 80% of the residential communities in Shanghai are gated. In 2016, however, a new directive was issued which advocates 1) the halt of the construction of new gated communities, and 2) the opening of existing gated communities to the public. Roads are meant to be opened to traffic for tackling congestion (Li 2016. Poon 2016). This directive can be interpreted as an effort to enhance the liveability in Chinese cities (Talamini 2018, 209), others view this directive as an approach that no longer prioritises economic growth over social and planning issues but treats them as equally important (Zhou 2016. cited in Wang & Pojani 2019, 6). The directive is accompanied by new major challenges, as millions of people already live in gated communities and are used to walls which make them feel safe. The main objective is the redesign of the open space to make it more accessible, but at the same time, a notion of enclosure, privacy, and security should be maintained (Wang & Pojani 2019, 2. 9). Ever since the announcement, hardly any actions have been taken by the authorities. Most residential blocks are still gated in Shanghai.

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Open Space

There were certain changes in the urban morphology because of the commodification of housing: Single building blocks were transformed into so-called superblocks with lengths of 400 to 800 meters without any intersections (Tosi 2018, 23. Miao 2003, 53). *"Like fortified enclaves elsewhere, huge gates and walls enclose the entire housing estate, leaving the surrounding streets and sidewalks barren of urban activities and social life"* (Pow 2007b, 1543). Obviously, the driving force for private developers is profit. As practiced by economies of scale states, profits can be increased by maximising the volume of a single product; in other words, this can be achieved by constructing more of the same generic housing towers on larger building blocks.

Consequently, block sizes affect the street network in certain ways. *"Design principles of gated communities are often antithetical to the basic elements that constitute modern urban life, such as the openness and transparency of urban structures, primacy of streets and the free circulation of people and vehicles"* (Pow 2007b, 1543). By gating the blocks, the street network becomes less pedestrian-friendly and less permeable. Pedestrians are forced to detour and might lose their orientation (Miao 2011, 188). In this way, residents are discouraged from walking, and as a result, they shift to other modes of transport (Tosi 2018, 23). Moreover, due to the vast size of superblocks, the given area is characterised by a lower number of road kilometres. Hence, the remaining roads are primarily designed for motorised traffic, as they need to accommodate an increasing number of vehicles. This is also the reason why most of these roads are multilane. This further causes excessive traffic and congestions (Wang & Pojani 2019, 14), all of which negatively affects the walkability in the given area. Figure 17 illustrates the open space of a gated community.

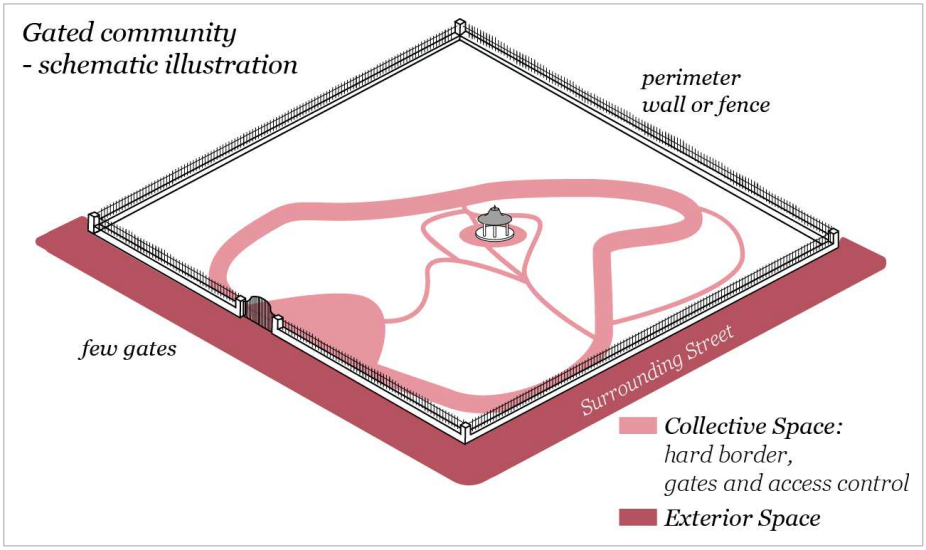

Figure 17. Open space of a gated community. Schematic illustration

Exterior street. Gated communities in China are also referred to as sealed residential quarters. The integration of the gated community into the urban structure seems to be of minor interest. They are physically seal off from their surroundings, hence, the exterior street space is ignored and neglected. As for most cases, gated community compounds offer only a limited number of entrances for pedestrians – mainly due to security reasons and cost-efficiency (Miao 2003, 52). This further reinforces the disintegration of gated communities in the urban setting. In general, the number of commercial activities located on the exterior street is limited[29]. The focus of the perimeter street is on motorised traffic, hence, this space does not appear to be attractive for any sojourn activities. The inhabitants' relation towards the exterior street space is not only shaped by physical but also psychological barriers: for example, gates can create and reinforce a sense of fear towards the *outside*. This sense of fear might discourage residents

[29] Although this might change since amenities are more and more often relocated to the publicly accessible realm in order to increase profits (Münch 2004, 47).

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to use the exterior street space; hence, fewer people use the sidewalks and complete social activities, and as a consequence, street spaces become less attractive to others. This is emphasised by Miao who states that all this results in deserted sidewalks, despite the high population density of gated communities (2011, 192). In this way, numerous activities can be pursued more pleasurably within the gated community than on the exterior street. Thus, the social life of the inhabitants is disconnected from the exterior street (Bhatia 2008, 73). The result is an absence of street life on the exterior street (Pow 2007b, 1543).

Open space. The collective open area within the gated community is usually characterised by a vast variety of different types of open spaces: streets, squares, piazzas, greenery, garden architecture, water elements, playgrounds, outdoor fitness facilities, pedestrian areas, and also parking lots (Münch 2004, 45). These introverted spaces are diverse in terms of landscape architecture; nevertheless, the degree of coverage and the share of sealed areas is still high (Hassenpflug 2010, 56f). Greenery, a pristine natural scenery, and a cultivated garden landscape are a prestigious elements that serve as selling points for gated communities, and are therefore strongly advertised (Pow & Kong 2007, 146). The verticalisation of housing, however, might cause a looser connection between the single housing units and the collective space located on the ground floor (Citterio & Pasquale 2015, 106). High-rise living might cause people to disconnect from the ground floor, especially since they no longer depend on appropriating those collective spaces for any activities. In terms of design and layout, the gated communities have inherited their interior orientation from the former courtyard houses (Hassenpflug 2010, 58). Generally, the towers are oriented towards an interior centre, such as the former courtyard, which is easily recognisable as such because of its design.

Design of the open space. Special attention is paid to the design of open spaces, with a strong focus on landscape architecture and its maintenance. Both layout and landscape design are premised on a strict understanding of order: houses have to be evenly spaced, and the interior areas should be equipped with uniform street furniture. The entire spatial structure of open spaces mirrors the principles of orderliness and homogeneity; in certain cases, there are even signs that state the rules on how to behave (Pow 2007b, 1551). Residents are occasionally bound by a common code of conduct developed by the management, which even might be included in their contracts (Wang & Pojani 2019, 1). The design and reputation of the gated communities are meant to serve as reference points for identification of both individuals and groups (Pow & Kong 2007, 132), as well as aim to foster a sense of belonging. One of the main functions of the landscape design of the gated communities is of social nature: the integration of the residents.

Activities. The open space within the gated community is attractive for activities due to the high-quality design, the diversity of its spatial amenities, and the social homogeneity of the residents. Furthermore, a traditional sense of solidarity with the neighbourhood and the presence of a potential group identity among the residents might contribute positively to the attractiveness of the open space and cause residents to favour the interior open spaces (Hassenpflug 2010, 58). The open spaces are strongly frequented and are mainly used for recreation or leisure – activities that do not always involve an interaction with strangers (Hassenpflug 2010, 58. Bhatia 2008, 73). The exclusive open space within the gated enclave allows for encounters with other residents of similar socio-economic features but shields them from the broader public. The majority of open spaces is designed for specific purposes and uses. This has an impact on the approach towards open spaces; generally, in the Chinese context, open spaces are considered fluid spaces that can be temporarily appropriated for private and public tasks and whose meaning is not fixed. This boundary seems to be rigid within gated communities. There is a clear division of functions and a blurring between the exterior, collective, or private realm seems hardly possible.

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Community & Lifestyle

Community. The inhabitants of gated communities share similar socio-economic characteristics, which reinforces a social homogenisation of living according to social status and income (Pow 2007b, 1543): this causes a spatial segregation of society. The residents of a given gated community are filtered based on housing affordability (Wu 2005, 241). The result is a clusterisation and fragmentation of society within emerging homogenous enclaves. Arkaraprasertkul claims that the segregated cells of high-rise living are responsible for the death of liveable streets and the sense of community (2012b, 147).

Balancing community and privacy. Privacy is a marketable lifestyle concept and can be seen as an indicator of social status (Pow 2007, 824). According to Chinese traditions, being able to close oneself off is associated with having power. The higher the level of enclosedness, the more powerful is a person, and the higher is his or her social status (Bhatia 2008, 73). Nevertheless, people also long for living in a community. Marketing brochures of gated communities suggest that it is easy for residents to socialise and naturally make friends within the compound. The socio-economic fragmentation of housing is further used for advertising purposes. Popular phrases that serve for promoting individual gated communities are *to be among equals*, *meet others just like you* or *congregation of like-minded people*[30] (Pow & Kong 2007, 141). The desire for living in a homogenous community can be contextualised by considering the weakened social ties at both the workplace and in the overall Chinese society (Ibid.). Pow also identifies a strong moral undertone concerning the values attributed to gated communities. They are referred to as *civilised spaces for a cultivated middle class*. This lifestyle is portrayed as a counterpart to the rustic and uncultured way of living of peasants and migrants (Pow 2007b, 1541).

Attachment. When speaking of the design and status of gated communities, the phrase *interplay of exclusion and inclusion* should be introduced (Hassenpflug 2010, 54): this phrase does especially apply to high-end residential gated communities. The access to them is exclusive, but the design of the villas is alike, therefore inclusive for the selected group of inhabitants. Living in a gated community represents someone's *membership of a collective (...) exclusive neighbourhood* (Ibid, 55). The feeling of belonging is spatially defined; according to Münch, being a member of a spatially defined community is of importance in Chinese society. Shops, services, and further facilities within the gated community might serve as a point of identification. They are usually not fully used but are crucial to support interaction among residents and create a common identity. They might even contribute to the development of a sense of belonging and a sense of community, and are therefore perceived as highly important (Münch 2004, 45-47). A study conducted in the Chinese town Wenzhou illustrates that the most crucial factors for neighbourhood attachment in gated communities is the satisfaction of residents with their neighbourhood services, and the image of the neighbourhood itself. Certain studies criticise the potential social isolation in gated communities; nevertheless, the case study in Wenzhou shows a different picture: people know some of their neighbours and participate in community activities (Lu et al. 2018, 150).

[30] A community of like-minded people evokes the notion of a community of interest rather than a community of place (Mahmoudi Farahani 2016, 2).

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Social implications. Some case studies reveal that the average sense of community is fairly high within gated communities (Yip 2012, 232). Other studies appear to be more critical towards this: *"The community sense diminishes with increasing distance from the common areas, the amenities and the accommodation size"* (Citterio & Pasquale 2015, 106). Wu even states that gated communities allow their residents to retreat from any unnecessary social interaction; which turns the formation of a community in an impossible mission (Wu 2005, 251). Activities that are common in lilongs, for instance visiting neighbours' houses, are not pursued in gated communities as most often they do not know each other well enough (Pow 2007a, 824). The personal autonomy might result in a loss of community in gated communities (Yang & Zheng 2011, 9). The community is shaped by investors, based on a separation from the exterior and a strong recognition value of the compound. Gated communities define themselves through a distinct lifestyle, socio-economic status, and the interest in property rights (Citterio & Pasquale 2015, 186). The decline in neighbourhood life and community interaction is especially appreciated by young urbanites. They enjoy the freedom of not knowing the people living next to their doors. Interviewees claim that privacy is crucial for their personal well-being (Pow 2007a, 825).

The benefits of gated communities. There are multiple advantages for the residents of a gated community: for instance, residents are enabled to keep distance to pollution, traffic noise, disease (like SARS, and probably also COVID-19) and inner-Chinese migrants, who are believed not to follow civilised moral values, such as safety, order, and hygiene. Gated communities create a wholesome atmosphere, protect the residents from crimes and maintain order, plus they regulate the physical and social environment (Pow 2007b, 1550-1553). Moreover, they prevent any disturbances of door-to-door peddlers and are simply oases of relaxation amid the hectic and chaotic urban environment (Kan et al. 2017, 15. Hewitt 2016). Gated communities are characterised by a distinctive lifestyle that emphasises consumerism and individualism (Citterio & Pasquale 2015, 106), granting the inhabitants more personal freedom and anonymity. Living in a gated community is simply considered a status symbol[31] (Wang & Pojani 2019, 1).

Image and lifestyle. In general, gated communities are associated with prestige and a modern lifestyle – this notion is often utilised for marketing. The interior courtyard, for example, is used for promoting the gated community, and serves to project a certain image as well as create an internal identity. Interestingly, this identity is artificially created by a top-down approach. Multiple aspects can shape this identity: extraordinary roof structures, uniform facades, luxurious neighbourhood names (Hassenpflug 2010, 62), but also *foreign chic,* such as western architectonical elements, and various cultural as well as national symbols of foreign countries (Pow & Kong 2007, 148). Gated communities strongly reproduce and use the image of a high-quality living structure (Pow 2007b, 1542). The design reflects the extravagant lifestyle of the rich and powerful elites. Also, the exclusive access to greenery and gardens is symbolic of an elitist lifestyle, and a sign of privileged status and wealth (Pow & Kong 2007, 141-147). High-rise living is seen to embody a modern, sometimes even superior, image of the residents (Arkaraprasertkul 2012b, 162). Even the gates represent an important status symbol of the compound (Pow & Kong 2007, 144), and are perceived as an easily identifiable label that brands the community (Wu 2010a, 387. 395). Notably, it is argued that gates contribute to *happiness, harmony,* and *freedom* (Caldeira 1999, 311).

[31] In individualistic societies, space (such as home) is regarded as a status symbol. This redefinition of space marks the transition from a traditional collective to an individualistic society (Iossifova 2012, 202).

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4.3 Housing development in Shanghai since the 1990s and the relationship between lilong and gated communities

Generally, the scale of city planning is much bigger in China than in Europe: the population growth is immense, and new towns have to be planned from scratch. Ever since the economic reform in 1978, Chinese cities have experienced a large-scale redevelopment and an unknown expansion (Miao 2011, 179). This has required a vast modification of the urban morphology and the public space allocation (Ibid, 179). The reform policy initially targeted selected coastal cities; in the 1990s, however, Shanghai has become the centre of attention prompting the first large-scale developments. The district Pudong was announced a special economic zone in April 1990 (Schoon 2007, 24): within a few decades, the north-western peak of Pudong, Lujiazui, was transformed into a world-renowned financial centre characterised by a futuristic skyline. Within a short time, Shanghai has been assigned the epithet *head of the dragon*: 龙头 (*longtou*) (Ibid, 22-25).

Housing: on becoming a commodity

In the wake of the mentioned reform, the housing sector was privatised and private home-ownership promoted, i.e. housing was transformed into a commodity[32], called 商品房 *shangpinfang*. Private investment in the housing sector was encouraged, and simultaneously, the government withdrew funds from public housing provisions. Prior to the reform, housing was provided by the state as a type of welfare-housing (Flock et al. 2013, 41). The commercial housing provision by private property developers prompted large-scale constructions of gated communities (Miao 2003, 47). The reconstruction of the housing market took place within several phases, during which private home-ownership was legalised, a housing market established, new financial instruments such as housing loans and mortgages introduced, and property rights legally protected by article 13 of the constitution (Pow 2009, para 12).

The commodification did not account for social equity, nor affordability of housing. The housing prices increased sharply; hence, low- and middle-income families were not able anymore to afford proper housing (Wu 2008, 1094). By turning housing into a commodity, the housing sector changed rapidly. China transformed into a nation of homeowners. In 2000, the rate of homeownership reached 80% (Flock et al. 2013, 41. Wu 2008, 1094) - this is remarkable since two decades ago – prior to the reform – housing was publicly allocated. Today, people claim that housing property has a considerable impact on their satisfaction with their living conditions (Lu 2008, 179).

In the 1990s, Shanghai's government further reinforced the process of zoning, which prompted the urban pattern to turn monofunctional and caused a spatial separation of functions such as housing, commerce, business, and recreation (Hassenpflug 2010, 51). Zoning is noticeable in newly developed, monofunctional urban areas in Shanghai where monotonous land use is prominent (Yue et al. 2019, 17). In the wake of the reconstruction, building blocks were merged, hence superblocks emerged. Both the process of zoning and the urban superblock morphology have a severe effect on walkability, the choice of means of transport, the overall urban atmosphere, and the perception of the environment by pedestrians.

[32] Commodity housing became a term to describe commercial, non-welfare housing (Flock et al. 2013, 41).

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Street development: on becoming car-oriented

During the Maoist time between 1949-1976, urban life was organised in danweis, so-called work units (see chapter 3.3). Since the lives of urbanites were centred in the danwei, commuting did not exist at that time. Consequently, there was no need for investments in traffic, nor expanding the traffic infrastructures (Gaubatz 1995, 32-33 cited in Münch 2004, 45). As already mentioned, housing was commodified in the course of the reform policy, which lead to a detachment of housing and work. Patterns of daily commuting and a commuter culture emerged – the scale of which was unprecedented. This put high demands on the urban infrastructure, which was not designed for such a high degree of utilisation (Schoon 2007, 28. Münch 2004, 45). At the beginning of the 21th century, approximately 60% of Shanghai's residents commuted in and out of the city on a daily basis (Williams & Arkaraprasertkul 2017, 2).

The construction of the metro system further exemplifies the giant leap in infrastructure development: in 1995, the overall route length of the metro system was 16.1 km; in 2017, however, it was 644 km (Frazier 2019, 239). Nevertheless, the main focus of the infrastructure development was on the road infrastructure. After 15 years of investing in infrastructures, the total length of the road network within Shanghai was 8 times higher than in the 1990s. The annual growth rates in infrastructure investments (1990-2005) were 24.7%. Investments, however, were not equally distributed within the city: the street network in Pudong was nearly built from scratch; due to the inner city building density, much money was also spent on the verticalisation of the street network with up to four overlying levels of roads (Schoon 2007, 26. 34). As emphasis was put on individual motorised transport, widened arterial roads, ring roads, spiralling approach ramps, and elevated highways emerged. The space between buildings became clearly dominated by cars (Chow 2014, 16), representing a new vehicular logic of the city. The impacts on pedestrian mobility, however, were less encouraging (Chow 2014, 16. Calthorpe Associates 2012, 2-3).

Although Shanghai is one of the most expensive[33] cities in terms of owning a car, car ownership[34] became a lifestyle concept. Cars are associated with status, prestige, and financial as well as personal success (Williams & Arkaraprasertkul 2017, 4. 8). This car culture is supported by infrastructure investments (Aymonino 2018, 33), the land-use pattern, and the street network design which makes any other modes of transport less appealing. Walking and cycling turn into dangerous and inconvenient activities, and the access to public transport is limited; since this represents a self-reinforcing process, entire districts have started focusing on car-oriented street networks (Calthorpe Associates 2012, iv).

Due to the development of superblocks, with lengths of 500 to 1000 meters (Calthorpe Associates 2012, 3), fewer streets are available to accommodate an increasing number of vehicles. To compare, in Tokyo the average block length is 50 meters per side, and 120 meters in London or Paris (Tosi 2018, 24). The roadway density was 4.42 km/km² in Shanghai in 2003 – in London it was 10.70 km/km² – which indicates that building blocks in Shanghai are quite bigger than in London (Purcher et al. 2007, 395). As a result, the remaining roads are vehicle-dominated, wide, multi-lane and busy with traffic (Hewitt 2016). Recently the road density in Shanghai was reported to have increased to 7.15 km/km² in 2019 (Chen 2019).

[33] This calculation takes purchase price and running cost like taxes, registration fees, and insurance into account. Parking fees are excluded as well as the cost of a licences plate, which might as well be as expensive as the purchase price of the car itself (Williams & Arkaraprasertkul 2017, 4).

[34] In 2017 almost 4 million cars were registered in Shanghai, of which about 75% were privately owned (Shanghai Statistical Yearbook, 2018, Chapter 15.12 and 15.13).

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Today, Shanghai's street network is dominated by arterial, high-capacity roads which prioritise car mobility at the expense of walking (Calthorpe Associates 2012, 3). Arterial roads constitute impassable barriers within the city and reduce the connectivity between sealed neighbourhoods, as people, in the worst case, are forced to walk a 700-meter-detour to cross an 80-meter-wide road (World Bank 2014, 142). Furthermore, multi-lane roads also possess a low degree of connectivity and comparatively few intersections (Tosi 2018, 23-24). The crossing of streets other than on intersections is prevented by encompassing fences (Miao 2011, 204). Additionally, the width of the streets makes walking uncomfortable, especially in summer, with average temperatures of 30°C (Shanghai Statistical Yearbook 2018, Chapter 1.3). As is known, heat especially builds up on large, sealed surfaces. Miao generally concludes that the street design marginalises pedestrians (Miao 2011, 203).

The street infrastructure intensifies the fragmentation of Shanghai as it separates the plots of high-rise towers (Bhatia 2008, 67). Multi-lane roads and closed-off residential cells are not reproductions of Western city planning paradigms of the mid-20th century though but deeply rooted in Chinese traditions. The fragmentation is in line with Chinese principles of a good structure of space and society. The roads are not perceived as barriers, as they are located outside the *wall*, in the traditional exterior non-space between the gated cells. Living preferably takes place within the cells. In addition, road infrastructure is perceived as a symbol of progress (Münch 2004, 44-45). This indicates that despite policy papers and design guidelines, the relation to the street space is based on cultural conceptions and cannot simply be altered through a top-down approach.

Some initiatives aim to make the street network of Shanghai more pedestrian-friendly. In 2016, a new directive was issued to stop the gating of residential blocks. This potentially makes open spaces within gated communities publicly accessible– Miao already supported this action a decade before (2003, 63). In 2016, a new directive for street design was approved, shifting pedestrians back into the centre of attention (Shanghai street design guidelines, 2016). It represents a change in the public's perception of the street. In this way, the perspective shifts from a transit-focused approach to a holistic approach including public health, culture, social exchange, and sustainable lifestyle (Villadsen 2018). Nevertheless, one has to consider that this guideline cannot simply erase the infrastructure development of prior decades.

At the time of the economic reform in 1978, the housing sector was in a poor condition. A lack of maintenance of existing housing structures and only few new housing projects in previous decades led to increasingly dilapidated housing conditions. Worse, the demands for housing were high (Frazier 2019, 239), as was the desire for modern living conditions. Although lilongs supported a medium population density, its plot ratio was not enough to accommodate the growing population in the city (Arkaraprasertkul 2012b, 146). In addition, Shanghai was already incredibly densely populated with up to 60,000 people/km² at that time. The city was bursting at the seams; the ground floor was maximally built over, so that there was hardly any free space left for trees (Zhang 2004, 113. 124). The situation was relieved by replacing old building blocks with modern high-rise dwellings (Iossifova 2009b, 101). Especially lilong neighbourhoods were affected by this redevelopment[35]. In general, lilongs are centrally located and composed of low-rise dwellings whose living space cannot be extended vertically in their given structure

[35] The demolition of old building structures is not a phenomenon that happens in Shanghai only, but is generally common in China. Like the lilong in Shanghai, the traditional dwelling structure of hutong in Beijing is being demolished and redeveloped: In 1949, there were 6,074 hutongs in Beijing; by 2005, the number was 1,571 (Ren 2013, 96).

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(Schoon 2007, 41). The redevelopment caused large-scale alterations of the urban pattern. For instance, priorly unknown high-rise residential towers of gated communities gained in popularity. As far as cost-efficiency and housing provision were concerned, the reform policy could be regarded as successful. The redevelopment and alteration of the urban pattern is summarised in the following saying: *"Shanghai has grown taller, Shanghai has gained weight"* 上海长高了，上海长胖了 (Zhang 2019).

The reconstruction of Shanghai's housing structure is happening step-by-step which causes a morphological fragmentation: Derelict, and sometimes overpopulated neighbourhoods are existent next to high-rise luxury towers (Zhang 2019. Ren 2013, 158). Even though residents might live in the same street, their standard of living can differ remarkably according to their type of housing. The fragmentation can be observed on both a physical and social level.

As for architectural and urban cultural aspects, certain downsides are associated with the redevelopment. For instance, the architectural diversity decreases, the original urban fabric is destructed, as well as social lifestyles change because of the aforementioned alterations (Wu 2010b, 2). Chow considers the replacement of lilongs as a removal of legible heritage (2014, 24). Between 1995 and 2003, for example, more than 700,000 households in Shanghai were relocated due to redevelopment issues (Ren 2008, 29). In less than five years, between 2009 and 2014, a third of Shanghai's lilongs were demolished (Zhang 2019). Until 2007, 40 million square meters of living space in the nine inner districts of Shanghai, including Pudong, were destroyed to be reconstructed in a more modern and profitable way. This replacement was done on a large scale and at a fast pace: the redevelopment in Shanghai started in the 1990s, and today, there is only little left of the former characteristic lilong structure (Yang 2014). Besides profit, substandard living conditions have been the prime reason for the replacement of lilongs. The lilong resembles the old Shanghai, therefore, it does no longer fit the modern, wealthy conception of Shanghai as a global centre (He 2009, 345).

As already outlined, the transformation of the housing sector affected the affordability of housing in Shanghai. According to the UN, affordability of housing is no longer provided, if more than 30% of the total monthly income of a household is spent on housing (United Nations Human Settlements Programme 2018, 8). The average selling price of housing in Shanghai was 30,677 RMB/m² in December 2019; hence, an average 100 m² flat would be sold for a price of 3,067,700 RMB[36] (CEIC Data). Almost two thirds of the employed population in Shanghai earn less than the average annual wage[i37] of 85,582 RMB[38] (Shanghai Statistical Yearbook 2018, Chapter 3.1. Chapter 3.6). A study by the OECD claims that in 2017, it would take 40 years for Shanghai residents with an average disposable income to be able to purchase a 100 m² dwelling – thus, housing prices are simply not affordable for regular earners (OECD 2019, 17). Given this increasing unaffordability, it can be assumed that ordinary citizens are displaced out of central locations.

[36] By mid-December 2019, the exchange rate was 1 EUR – 7.8 CNY (European Central Bank 2020). Hence, the price is almost 4,000 €/m² or nearly 395,000 € for an average 100 m² flat.

[37] There are two figures given on the average annual income: The average disposable income per resident is 58.988 RMB in 2017, the average annual wage of staff and workers is 85.582 in 2017 (Shanghai Statistical Yearbook 2018, Chapter 10.5, Chapter 3.6)

[38] Calculated with the same exchange rate of 1 EUR – 7.8 CNY (European Central Bank 2020), the average annual wage is close to 11,000 €.

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Social implications of the urban development

The alterations of the housing sector and the differentiation in the housing typology affects society. *"People are sorted according to their income into commodity housing ranging from affordable housing to luxury villas, housing in unit compounds and old neighbourhoods, to migrant enclaves on the edge of the city"* (Lu 2006, 77). This quote describes social segregation which causes people to interact less with other groups of society. The design of housing creates social distance, community disintegration, and conveys a false sense of insecurity towards the outside (chapter 4.2).

Others further identify a prioritisation of the elites. Urban redevelopment causes displacement, which is coupled with an exchange of local inhabitants based on socio-economic criteria. Iossifova associates these developments with socio-spatial restructuring (2012, 197) and gentrification[39] (2009b, 102). Due to the redevelopment, original residents have been compensated or relocated from central locations to contemporary apartments in the periphery, giving way to a higher-income clientel[40] in the centre. Moreover, Iossifova stresses that thousands of the original low-income, inner-city residents have already been displaced to the urban fringe (2009b, 99-101).

The relocation of former lilong residents unquestionably increases their living comfort, as compensation apartments are often equipped with modern amenities, for instance. However, unpleasant social implications are linked with this relocation. One of the detriments of living in the periphery is the monofunctional structure of the city fringe. In a case study, former lilong residents considered the following four aspects as the biggest downsides of relocation: an inconvenient access to public facilities such as hospitals, a risk of unemployment, a fragmentation of the social network, and dramatically prolonged commuting distances to the centre (He 2009, 357).

The fragmentation of the social network can be manifold. As an example, the social microstructure of the former lilong neighbourhood is disassembled and the level of interaction decreases in the new neighbourhood (Pow 2007a, 826). People lament about the loss of their social status: their self-conception as *genuine Shanghai people* turns into that of a less prestigious *country folk* (Frazier 2019, 250). One lilong resident claims that *"(...) although living conditions in Nanshi were poor, relationships between neighbours were good— they all knew each other and would help each other, for example, to look after children. On one occasion, I visited Nanshi accompanied by a former resident who now lived in a high-rise flat. He felt nostalgic for life in Nanshi and missed the closeness of relationships between neighbours and the frequent visits they made with each other. He contrasted this situation with his new accommodation where there was little or no contact with neighbours."* (Gamble 2003, 137). The given relocation is occasionally associated with a social uprooting: people lose their social networks (Schoon 2007, 43) and the sense of being nested (Chow 2014, 24). One study even concludes that due to the worse quality of life and the decreased life prospects, the resettled residents are actually worse off than prior to the relocation: *"Displacement not only deprives low-income groups of convenience and the joys of urban life in central areas, but also jeopardises their socioeconomic prospects and household livelihoods"* (He 2009, 358-359). In conclusion, the right to centrality seems to be exchanged with decent housing.

[39] Gentrification is a process by which the influx of a wealthier class – together with the accompanying rehabilitation of housing stock – results in the displacement of lower-income residents from the given neighborhood (Glass 1964 cited in Iossifova 2009b, 101). As for the Chinese context, gentrification is linked to the transition from a planned economy to a market economy with Chinese characteristics (Iossifova 2009b, 101), and as a result, the transformation of housing from being a welfare-good to a commodity.

[40] An analysis on socio-economic characteristic shows that the renewed lilong areas, such as Xintiandi and Jing'anli, lead to a replacement of original residents (He 2009, 357).

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Different studies reveal different results though: one research states that most lilong residents prefer an on-site upgrading of their unit to a resettlement. The distinct community atmosphere in the lilong is highly regarded by the residents, especially by those who spent most of their lifetime in the given neighbourhood. Life in a lilong is further beneficial for poorly educated residents due to locational advantages and ample working opportunities (Zhao 2003, 73). Other studies conclude that most of the resettled residents prefer new, spacious, and modern flats over lilong housing (Frazier 2019, 250-251. Arkaraprasertkul 2010, 28). None of the interviewed former lilong residents seriously want to move back to deprived alleyway housing. However, an alleyway nostalgia has evolved: people lost social and communal intimacy with their neighbours (Li 2015, 136). They miss the community that evolved through physical proximity.

In some cases, the lilong fabric has been discovered to be an asset: residential neighbourhoods have been transformed into pricy commercial and leisure areas for tourists and wealthy Shanghainese (like Xintiandi or Tianzifang). An increasing number of traditional neighbourhoods in downtown Shanghai have been transformed into commercial districts or high-end luxury residential complexes (Schaefer & Hyat 2013, 22. 27. He & Wu 2005, 10). In addition, lilongs have been put under heritage protection – which again has affected original residents and their socio-economic transformation. Today, lilong residents are not always passive victims of urban redevelopment strategies. They own the lilong properties and make considerable financial gains by renting out their properties or negotiating with local governments. Heritage protection preserves the built lilong structures but changes their usage and users, and in this way, also the community life. The old lilong residents are voluntarily involved in the process of urban renewal to pursue their own financial interests (Arkaraprasertkul 2016, 15). Nevertheless, this *gentrification from within*, initiated by the residents, is an exception not comparable to the large-scale macro-gentrification (Iossifova 2009b, 100).

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4.4 Comparison between the lilong and the gated community

In this section, the two housing prototypes, namely the lilong and the gated community are compared, and both their similarities as well as their main differences are briefly outlined. More detailed information on single features can be found in the previous chapters (4.1 – 4.3). The comparison is based on the same division in four categories. As the given on-site research deals with open spaces, these are shifted into the focus and are discussed in broader detail. Furthermore, the relation of the housing prototypes towards open space – which is examined in chapter 3.3 – is discussed in this section.

Housing features

In today's Shanghai, lilong structures are largely replaced with gated communities. There were low investments in housing prior to the economic reform, which means that most present-day lilongs are in dilapidated conditions. Because of their poor state, they are even considered a risk to the health of the inhabitants.

Parallels in origin. A common feature of both housing prototypes is that they gained in popularity due to a lack of housing. Both the lilong typology and their present appearances (modifications, alterations, expansions) result from a lack of housing. Gated communities can be seen as the structures that relieved Shanghai from the pressure of housing scarcity and serve to provide adequate housing. Furthermore, both structures originated as private commodities, and the driving force behind them were private developers.

Parameters. Lilong housing is dense, the living space per capita is limited, and the amenities are substandard. The typology of gated communities is more massive. It is a high-rise structure preferably erected on huge building blocks. The flats are fully equipped with modern facilities, and no collective compensation areas are needed. The verticalisation of housing further generates generous open spaces on the ground floor level. In gated communities, there is a greater distance to the open space, whereas open spaces in low-rise lilong neighbourhoods are more accessible and integrated in the residents' way of living.

Privacy. One of the most remarkable aspects of gated community housing is a regained personal privacy. As the living space per capita has increased, people have a space to retreat from both their families and the rest of the community. A sense of forced sociability that emerges from the collective use of domestic facilities, such as sanitation, seems irrelevant in gated communities. Lilongs, on the other hand, are characterised by a striking lack of privacy.

Inhabitants. Today, gated communities represent the dominating housing typology in Shanghai. Therefore, high-rise living in gated communities is the basic housing condition of most Shanghai residents. Thus, this type of housing should not automatically be associated with the rich. In general, gated communities differ vastly in terms of the socio-economic characteristics of their inhabitants; however, within a single gated community, the composition of the inhabitants is homogenous. Within one compound, similar lifestyles and comparable income strata prevail. This uniformity can be seen as an important criterion for housing choices and is used for marketing purposes, as people want to live among equals (Fleischer 2007, 292-294). Also, lilongs become increasingly homogenous, since those who can afford it leave for a more convenient housing situation. In this way, the lilong becomes the type of housing for the poor, although there are renovation projects for lilongs that aim to attract more wealthy citizens. In that case, the houses are upgraded, which in turn affects the design and the community life.

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Building block

Closed units. Lilongs and gated communities are both closed units with clear determined outer boundaries and a collective inner realm that is mainly reserved for the inhabitants (Schoon 2007, 44-45). Both are equipped with collective spaces and are typical of a certain inwards orientation and an insular character (Münch 2004, 45. Krusche n.d., 33). Moreover, the two housing typologies have a clear separation between the public and the collective space, their general accessibility differs though. In particular gated communities show little interest in being part of the public realm. The aspect of isolation is foregrounded, as privacy and independence are seen as major advantages of living in gated communities. Exclusive access is ensured by a set of measures, such as guards, physical barriers, and technical support. Lilongs, on the contrary, are associated with community-living. Lilong residents as a collective community provide safety in their neighbourhood through social control instead of physical barriers. Hence, the passageways to the interior of lilongs are usually open – despite the gates.

Enclosing. In the Ancient Chinese City (chapter 3.2), the state was in favour of gating neighbourhoods in order to exercise and maintain control. Walls have always been basic elements of Chinese cities and are still prevalent today. Lilongs have a physical perimeter structure which is permeable though, and their interior is therefore visually and physically accessible. In today's gated communities, the inhabitants themselves demand gating as a means to seal them off and create personal distance to the exterior. Furthermore, gating enables developers and investors to shield their property from the public (Hassenpflug 2004, 36). In today's Shanghai, even construction sites remain fenced during the entire construction process. A new government policy now calls for gated communities to be opened to public though, which might be difficult to realise.

Security. Security is easily ensured in lilongs as residents know their neighbours and keep an eye on outsiders who enter the unit. This represents an informal way of surveillance that is carried out by the community since they share a common interest in keeping their living environment in order. In gated communities, on the other hand, an emerging discourse of fear is observable. The maintenance of control is outsourced to guards or gates. Still, this way of securing the unit seems less successful.

Sequence of spaces. The building blocks of both housing types are defined by a sequence of diverging spaces that range from the exterior to the interior. An exterior space seldom borders with a private one in China (see chapter 3.2); the domestic sphere can hardly be accessed from the exterior street – which is the case in European inner-cities. A gradual succession of different spaces with different levels of accessibility is a defining factor for residential units in China. In the case of gated communities, the succession is characterised by a straightforward structure and is physically defined (Münch 2004, 45): one passes the gates and the open space, enters a single tower, and reaches the floor, and finally the private flat. Due to access control, the spaces transform from being exterior to finally being private. To access of a single lilong house, one passes several types of spaces as well: the surrounding street, the alley, and the alleyways. The space is less defined in terms of physical structures and tangible borders but rather by usage.

Allocations of functions. Commercial functions are usually located around the lilong neighbourhood, meaning they are accessible for anyone. Hence, lilongs are not solely residential but multifunctional units. On the contrary, additional functions in gated communities, such as services, shops, and leisure facilities, were initially located within the compounds. Therefore, these are mostly accessible for residents only. Recently though, a relocation of functions towards the exterior streets can be observed. The former, almost autarkic, unit of the gated community was reduced to the function of a dwelling, and therefore, residents now have to leave the gated community to run their daily errands (Ibid, 47). The relocation of functions can potentially lower the degree of isolation in gated communities.

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Open space

Users. As for the gated community, open spaces are mainly used by the inhabitants and their guests. This limited accessibility to open spaces indicates the exclusiveness of the compound. As for lilongs, the situation is different: open spaces are generally accessible to anyone. Nevertheless, it is most likely that the lilong inhabitants are the dominant users of these places, especially since they rely on the appropriation of the open space for certain activities, such as household-related tasks.

Availability of open spaces. The open space within the gated community is defined by a rich landscape architecture and a variety of purpose-bound spaces. The residential towers are objects in space; the ground floor is mainly comprised of open spaces. The opposite is true for lilongs, where the focus is on habitation, not on the high quality of open spaces. The lilong houses are defining and enclosing the space; the only open space are lanes which are rather seen as left-over space necessary to access the single dwellings. In lilongs, the open space is linear, however, in gated communities it is planar. In a lilong, the open space can hardly be avoided since it is needed for movement. In this way, the alleys are considered highly distinct gathering places, other than planar surfaces that offer niches and distinctive spots. The difference in accessibility of greenery and recreational spaces is remarkable. Lilongs, on the one hand, are often deprived of greenery which certainly affects the quality of life of the residents. Lilong residents are used to adjust their living environment based on their needs, hence, the upgrading of alleys with potted plants is not an unusual sight.

Relation to the exterior street. Both housing units are surrounded by public streets, but only the lilong has a relation towards the exterior realm. Gated communities are inwards-oriented and rather neglect the surrounding exterior streets. Furthermore, they seem to impede the access to the exterior space by implementing walls and a limited number of gates. Moreover, the rich open space within the gated community serves as a retreat for the residents from the exterior sphere. The reason for this is that the collective open space within the gates is often more diverse and comfortable, and therefore, more attractive than the exterior street for the majority of outdoor activities. Most neighbourhood activities as well as socialising occur in the collective space of the gated community. Residents are encouraged to use the interior open spaces (Orum et al. 2009, 385). A common result is that the exterior streets start lacking public life (Ren 2013, 102) and are mainly reduced to transit. It is claimed that *the rise of the private* is accompanied by the loss of public life (Bhatia 2008, 73-75). However, the typical lilong has a different relation to the surrounding exterior street. This is where shops and services are located that provide for the neighbourhood. As lanes and streets are the only open spaces for lilong residents, both the lanes within and the exterior streets around the lilong are appropriated. Here, both optional and necessary activities are pursued on the street. Hence, the street possesses the potential of being a place of exchange between different parts of society and of bustling with street life.

Demarcation of space and function-determination. The different types of space (exterior, collective, private) have strict boundaries in gated communities. Open spaces are the product of sophisticated landscape architecture. Consequently, a multitude of different open spaces is available in gated communities which are generally designed for specific purposes and usages. Thus, their utilisation is less flexible. As for lilongs, it is mainly streets that represent open spaces with minor differences in terms of layout apart from their width. The streets are not designed for certain purposes, and due to a lack of general available open spaces, they are utilised in manifold ways. In this way, their usage is temporarily flexible and adaptable. Open space is defined by an ambiguity: the utilisation itself and the conception of which is fluid. Spaces might bear different meanings on different times of the day; for instance, they can be publicly or collectively used. The definition is temporary and alterable, mainly depending on the current utilisation. The attribution of space is routinely transgressed, which makes the open space unique and negotiable. A reason for that intense practice of open space usage in lilongs is probably the lack of personal private space (Pow 2007a, 820). According to Sennett, the demarcation

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towards the exterior of gated communities constitutes a boundary, a strict limitation that is not to be transgressed. Gated communities are defined by strict space categories which is supported by physical boundaries. They allow less adaptation and blurring between spaces. The open space allocation and the usage within lilongs, on the other hand, rather resemble a border. This is the sphere of encounter and exchange.

Relation to street level. The lilong provides *a unique typology that reaffirms a sense of reality and place in the public realm* (Bhatia 2008, 71). The extensive use of the collective and exterior space within lilongs enables the residents to reaffirm their perception of their surroundings and supports their continual concern for the common space (Ibid, 70). They cannot withdraw themselves from the collectively used spaces, and therefore, do not stop caring for these spaces. The verticalisation of gated community living probably reinforces a certain sense of disconnection from the ground floor. Thus, gated community living, in comparison to lilong living, does simply not depend on the use of open space.

Voluntary and forced activities. Generally, lilong lanes are vivid spaces utilised for manifold activities. In collective open spaces of the gated community, mainly recreational and leisure-related activities can be found. These spaces are generally designed to facilitate interaction and communication between the residents. The single flats are nevertheless equipped with modern amenities, hence, residents do not rely on open spaces and are free to choose whether they want to use them or not. In this way, they also have the freedom to choose when to socialise but also possess a spacious place to retreat – which is considered a new type of luxury. The activities performed in the open space of the gated community are intentional, unwanted interaction with others can be avoided. As for lilong housing, a wider range of activities is outsourced towards the open space. Some activities are performed on the lanes by choice because there is no other possibility, as the flats are not suitable for performing certain activities. However, this sparks an intriguing street life but also expresses the deficiencies of lilong living in this regard. Limited private space in lilongs forces the residents to intensely utilise the open space. A set of rules on how to behave in open spaces is typical for both housing types. In a gated community, the code of conduct is part of the resident's contract and stated in an official document. There might as well be signs in the open space instructing the residents on how to behave. In the lilong, behaviour is rather informally negotiated among the residents.

Streets & Walkability. Lilongs are accessible to anyone and defined by high permeability, plus the overall structure of lilongs is pedestrian- and biker-friendly. Walking is partially separated from motorised-traffic. The lilongs can be transgressed and used as shortcuts; hence, they do not constitute a barrier. The lilong housing typology was developed prior to the individual motorisation, and consequently, many interior lanes are too narrow for cars to pass through. Cars circulate around the lilong neighbourhood rather than within. Furthermore, the block size of lilongs is comparatively smaller than that of gated communities. The urban pattern of gated communities and the related superblock morphology cause inconveniences for pedestrians. Accordingly, walkability and permeability decrease. Also, roads are axial with few intersections, and there is a lack of excitement due to few points of attraction along the paths. Finally, the streets are often enclosed with walls. As pedestrians are increasingly forced to detour, the overall mobility behaviour is adversely affected and shifts towards a preference for motorised transport (Schäfer 2007, 105).

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Lifestyle and Community

Image. Housing in gated communities – especially in high-end buildings – represents a modern lifestyle. It is associated with privacy, exclusivity, and anonymity. Also, gated communities manage to create a distinct sense of identity, a means for residents to distinguish themselves from the masses. Housing is the prime marker of socio-economic status and an origin of prestige (Fleischer 2007, 287-299). Ungated living has the image of informality and rural poverty today (Hassenpflug 2010, 83). Lilongs are a symbol for Shanghai, yet they are linked to the past. Lilongs are appreciated as a cultural asset of the city and embody a picturesque scenery; however, they are not a preferred housing choice anymore. In recent times, the lilong has further been connected with poverty and backwardness, and faces stigmatisation in this sense. With the transformation of the housing structure, the unique and once omnipresent lilong typology and its respective lifestyle seem to vanish.

Role of community. Within lilong alleyways, a unique lifestyle emerges because of the dense and deprived living conditions. Lilong streets are characterised by a village-like atmosphere and a neighbourly, almost familial climate (Krusche n.d., 33). Proximity, frequent encounters, and collectively used facilities often lead to a strong bond between the inhabitants. Some consider the communities within lilongs as valuable social capital that are typical of a distinct sense of community. However, the downsides of living in these communities are social control and a lack of privacy. Gated community residents, on the other hand, enjoy increased personal space and anonymity. The built structure of gated communities mirrors the transition of society from a community-based to an individualistic one. Neighbours might appear to be strangers in gated communities; physical proximity is no longer a guarantee for knowing each other. There is just one crucial meeting point in gated communities that is difficult to avoid: the elevator (Bhatia 2008, 73). A social implication of this regained personal autonomy might be a loss of community in gated communities (Yang & Zheng 2011, 9), although this concern is not shared by all scholars. The attachment in gated communities is based on an individual's perception rather than on a community identity, which rather constitutes a sense of belonging than a sense of community. Certain scholars state that the reduction of social space for interactions within the gated community results in a diminished social capital (Arkaraprasertkul 2010, 28).

Concluding statement. The two housing prototypes are emblematic for two different epochs and bear significant differences in many aspects. The comparison and analysis of the two prototypes serves as the basis for the following on-site research and already indicates that most of the analysed aspects are interrelated with each other. The density, the overpopulation, and the lack of diverse open spaces within the lilong intensify the usage of the street space. Furthermore, socio-demographic aspects and the design of the open space have an impact on people's usage of open spaces. According to the housing type, the way of living diverges notably. An ordinary day within a lilong involves the usage of diverse open spaces and the interaction with neighbours, whereas a gated community resident could probably pursue the same activities without leaving his or her private flat. Moreover, the inscribed value and meaning of street spaces differs significantly. In a lilong neighbourhood, the alleys and alleyways represent important social spaces; in a gated community, however, residents enjoy the freedom to choose whether or not and when to socialise. The place of residence predefines certain aspects of the resident's way of life. Likewise does the type of housing predefine the extent to which open spaces are integrated in the everyday lives of the residents. Consequently, the activities on the streets are expected to vary according to the adjacent housing type. In the following, the on-site analysis is presented (chapter 5).

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5 An on-site analysis on street usage in Hongkou

In this chapter, the design, outline, and the results of the empirical analysis are presented in-depth. The research was conducted in the district of Hongkou, Shanghai, in June 2018. As for the applied methods, a pedestrian observation and questionnaire survey were conducted. The combination of which allows insight into both the direct activities on the street space and the residents' relation and attitude towards the street. The two methods complement each other and provide a more comprehensive understanding of the utilisation of street space and its meaning for individuals and the collective.

First and foremost, the site of the research is introduced (chapter 5.1). For this reason, the district Hongkou is briefly outlined, and in the following, the precise building blocks under investigation are presented. Secondly, the on-site research design is described (chapter 5.2). Thirdly, the findings of both methods are presented, which is done in two separate subchapters. Chapter 5.3 shows the result of the pedestrian observation, and chapter 5.4 illustrates the findings on the residents' attitude and point of view. The findings of both methods are combined and discussed in further detail in the concluding chapter 6.

The research interests are street spaces and their usage by local residents. The emphasis is on the ordinary usage and the daily routines that occur in open spaces. Also, special attention is paid to the everyday activities performed in open spaces by individuals who live nearby. Hence, non-representational open spaces, such as shopping streets or plazas, are examined. As illustrated in chapter 3, collective open spaces are perceived as an important domain in Chinese culture, and their existence is widespread. In this respect, also gated communities tend to include spacious open areas, which are yet of limited accessibility. Hence, the focus of the research is extended and does not only include streets, but more generally, immediate open spaces in the direct living environment of the residents. The streets around lilongs and gated communities, as well as the open areas within gated communities are the sites of examination. Those open spaces are analysed with regards to their capability to satisfy the demands and needs of the local population.

The aim of the research is to examine whether the open street space of a lilong is used in different ways than open spaces in and around a gated community. It is often the case that street spaces around large-scale gated communities in Shanghai increasingly impoverish and hardly possess what is called urban life and liveability. How does the street space around gated communities differ from the nearby street space around lilong neighbourhoods? To answer this question, open spaces around one given gated community in Hongkou, called Pujiang Mingdi, and the open spaces adjacent to lilong neighbourhoods nearby are studied and compared. The five specific spots of observation are presented in the next subchapter.

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5.1 Site of research: Extended Hongkou creek area, Hongkou, Shanghai

The site of research is located in one of Shanghai's inner-city districts, namely Hongkou. The following figure (18) locates Hongkou within Shanghai; the exact site of research is highlighted by a red square.

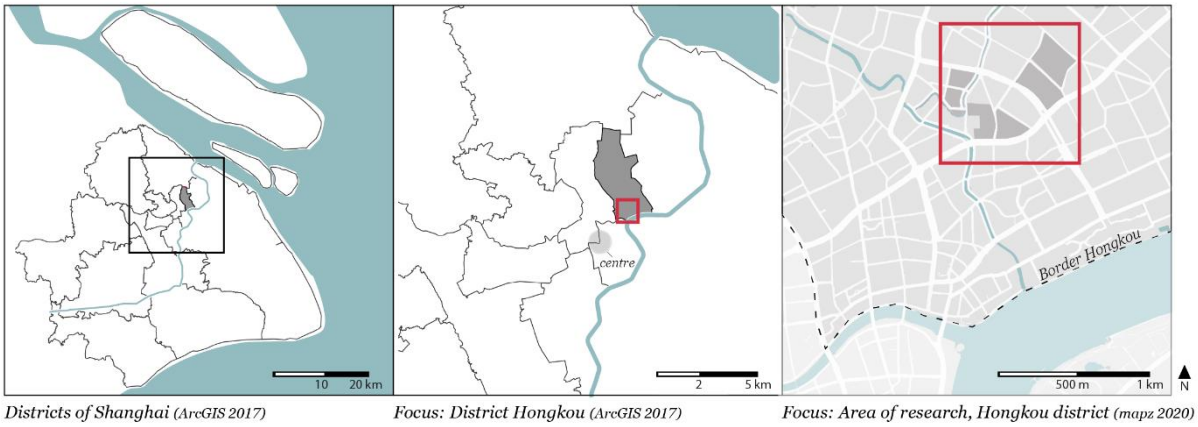

Figure 18.
Location of the area of research within Shanghai (ArcGIS 2017. mapz 2020)

Hongkou is located northwest of the centre of Shanghai. It comprises 23.4 km², and the population is 790,000 (Shanghai Municipal Government 2019). In 2017, Hongkou was the most densely populated district in Shanghai, with more than 34,000 persons/km² (Shanghai Statistical Yearbook 2018, Chapter 2.2). Two thirds of the floor area in Hongkou are residentially used, making it one of the most residentially used districts of Shanghai (Ibid, Chapter 11.5). Hongkou borders with the Huang Pu river in the south. This area is called the *North Bund*, the waterfront of which is 3.2 km long. This is the northern extension of the well-known *Bund*. The North Bund, the Bund, and Luijazui – the new financial centre on the other side of the river – form the *Golden Triangle*, which represents the central business area in Shanghai. An important pillar of Hongkou's economy is the cultural and creative industry (Shanghai Municipal Government 2019). This branch of business is located around the *1933 Millfun* and the *Shanghai Music Valley*, both of which are located in the Hongkou creek area.

The economic impulses have a major impact on the urban fabric in Hongkou. Major infrastructure investments, a vast renewal of the old building fabric, and a remarkable waterfront development have been realised in Hongkou, especially in the southern part. High-end residential areas have been developed, and the cultural assets of Hongkou have been highlighted by the implementation of historical and cultural landscape protection zones. This is exemplified by investigating *Duolon Road*, which has been transformed into an educational trail for literature, where visitors are presented with well-known local poets and writers (Shanghai Municipal Government 2019).

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Figure 19. Urban Renewal in Hongkou (own picture, spring 2018). Background: High-rise towers of a gated community. Front: Demolished lilong

Whether lilong neighbourhoods are understood as a cultural asset, or rather a disturbance is still debated in today's Shanghai (chapter 4.1 and 4.4). And in the meantime, major redevelopment is in the process. A comparison of satellite images reveals that a considerable amount of building blocks in the area of Hongkou has been renewed since 2000 (see figure 19). This is not surprising, as major real-estate developments have been realised in the inner districts of Shanghai ever since the 1990s (Li & Song 2009, 1093) – see also chapter 4.3. From 2008 to 2017, almost 40,000 residential units in Hongkou were expropriated, assumingly to be renewed (Shanghai Statistical Yearbook 2009-2018, Chapter 18.5). Moreover, the total share of expropriated residential units in Hongkou has been rising steadily: in 2014, 15% of all residential expropriations in Shanghai happened in the district of Hongkou; the figure rose to 29% in 2017 (Shanghai Statistical Yearbook 2015-2018, Chapter 18.4 and 18.5). Hongkou has certainly been investing in the construction of housing: In 2018 alone, the construction of around 312 million square meters of housing was completed (Information Office of Shanghai Municipality and Shanghai Municipal Statistics Bureau 2019, 27). Furthermore, at the time of the comparison of satellite images in 2018, a remarkable number of construction sites were present in the area, indicating that the district is still in the process of urban restructuring (figure 20). This idea is further supported by the on-site observation conducted in 2018.

However, as for lilongs, no official data was available for this district. But there were some indications that might relate to lilong living in this area: Hongkou has one of the highest numbers of floating people per km² (Shanghai Statistical Yearbook 2018, Chapter 2.2). As already mentioned, rural migrants do not possess an urban housing registration and are often pushed into poor living conditions. The high number of floating people in Hongkou might be an indicator for the presence of old housing structures for migrants, yet it could also imply an active process of redevelopment where migrants represent the main workforce.

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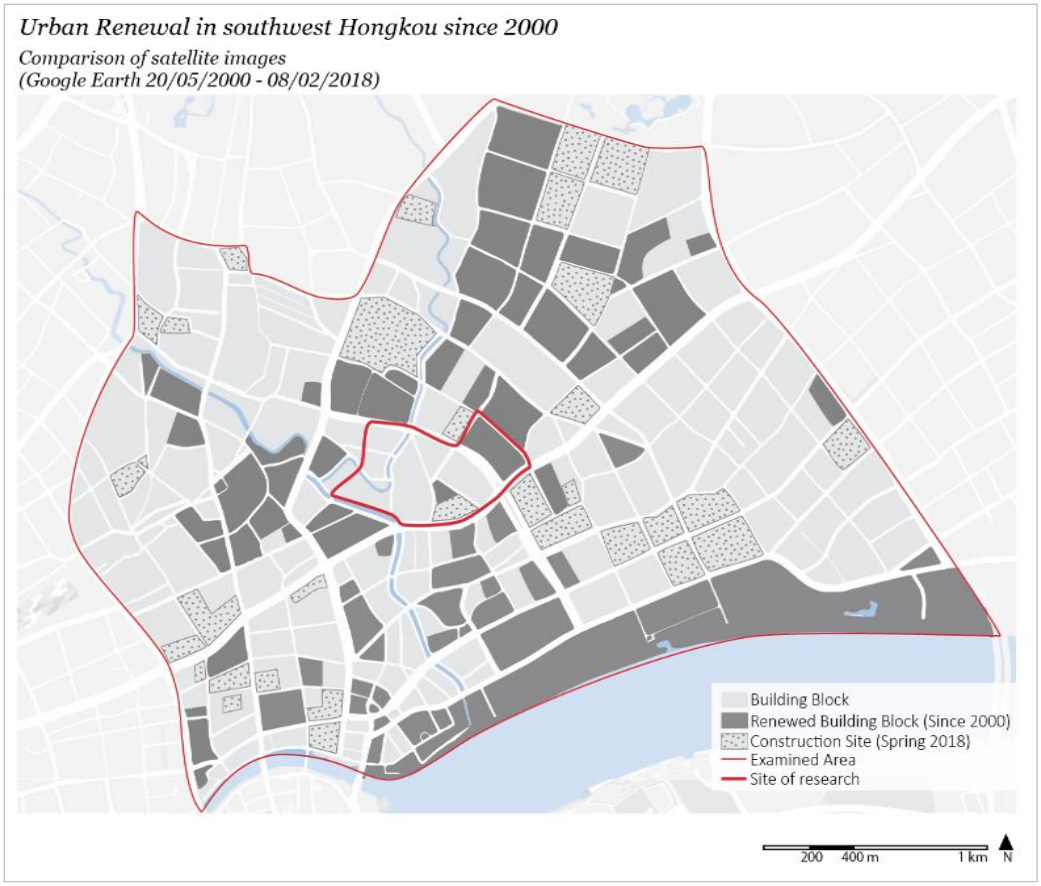

Figure 20. Urban Renewal in southwest Hongkou since 2000

In 2017, 1,510,000 m² of the total residential area in Hongkou was classified as *Old Residential Blocks,* and in the same year, 600,000 m² of residential housing was improved (Shanghai Statistical Yearbook 2018, Chapter 11.6). Hongkou has the second highest number of *Old Residential Blocks* after Huangpu District. However, there is no information available on the definition of O*ld Residential Block*. It can be assumed that it refers to the built structure that was erected prior to the economic reform. Therefore, it can be argued that lilong structures – among others – are part of this category. Additionally, Hongkou had the lowest percentage of young people (< 17 years) in 2017, which constituted not even 10% of the district's total population. Also, the district had the highest percentage of people aged 60 and older, that is, almost 38% of the population (Shanghai Statistical Yearbook 2018, Chapter 2.6). Despite these indications about the age distribution of lilong residents, no official data could be retrieved concerning this topic (Arkaraprasertkul & Williams 2015, 143. Doctoroff 2009). In summary, there is a number of aspects that indicates a comparatively higher occurrence of lilongs in Hongkou, yet this still remains an assumption.

As with lilongs, it was also difficult to retrieve data on gated communities in Hongkou. Generally, 1440 buildings in Hongkou were higher than eight storeys in 2017, which made up 40% of all buildings in Hongkou. Nevertheless, there was no information given on the usage of these high-rises. In general, 61% of the buildings in Hongkou are residentially used (Shanghai Statistical Yearbook 2018, Chapter 11.5, 11.7). Since there was no data available on high-rise gated community living, a comparison of satellite images has been conducted (figure 20): the majority the renewed building blocks are walled and comprise high-rise towers – their functions are unknown though. Whether the redevelopment of the built fabric in the case of Hongkou is accompanied by an exchange of the population is also unknown.

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FOCUS AREA: Extended Hongkou creek area

The research was conducted in the southern area of Hongkou district. The following figures illustrate the research area in more detail. First of all, a current satellite image is presented (Google Earth 2020) which visualises the different building typologies located in close proximity to each other (figure 21). The focus areas are highlighted in red. Furthermore, it illustrates the two given building typologies: 1) lilong and 2) gated community. The lilongs analysed in this research are located in close proximity to the cluster of creative industries called *Shanghai Music Valley*. The gated community Pujiang Mingdi is located approximately 300 meters east of the cluster. Given the assumption that the Shanghai Music Valley influences its surrounding urban fabric, it is briefly introduced before the two sites of research are presented in greater detail.

Figure 21.
Ortho-image of the site of research.
Google Earth, May 29th, 2020

The subsequent figure (22) visualises the transmission of the satellite image into a map, focusing on building blocks and building typologies. The final figure (23) further zooms in on the area, highlighting the sites where the pedestrian observation as well as questionnaire survey were conducted. Generally, a street was defined as a linear segment between two intersections. Three streets border lilong neighbourhoods: Jiaxing Road, Liaoning Road, and Wuzhou Road. All of which are located in close proximity to *Shanghai Music Valley*. The gated community Pujiang Mingdi was selected for comparison. Here, the pedestrian counting was conducted within the compound and on Tongzhou Road, which was considered the most pedestrian-friendly access street to Pujiang Mingdi – more details on Tongzhou Road on page 100. The five sites of research are presented in detail in the following paragraphs.

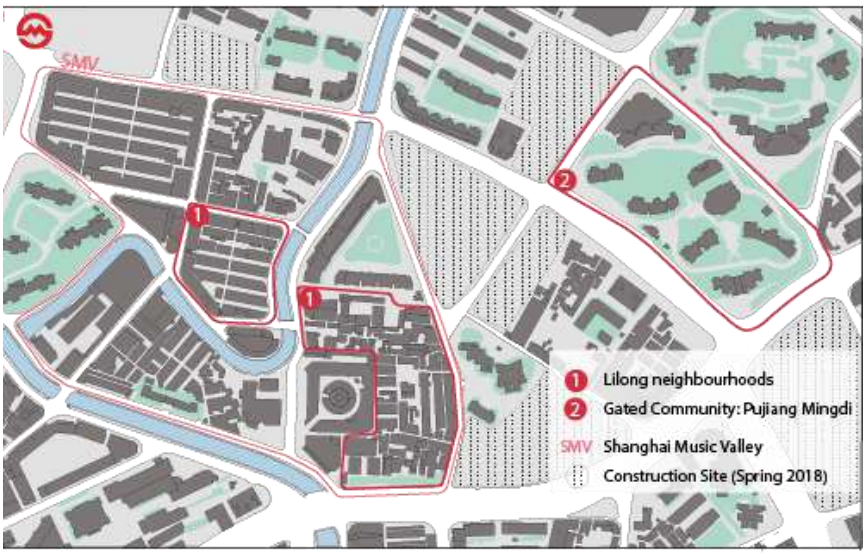

Figure 22.
Map of site of research

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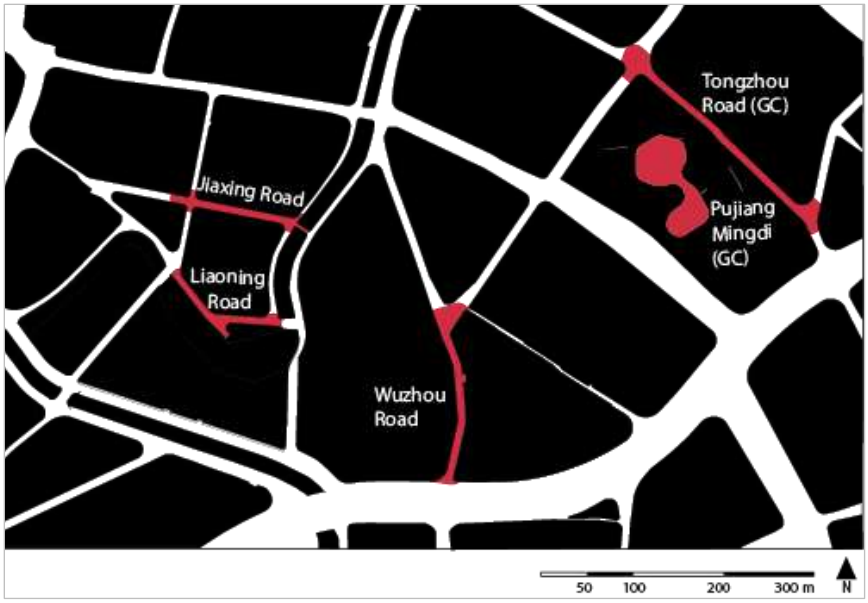

Figure 23.
Site where the research was conducted (pedestrian observation and questionnaire)

Shanghai Music Valley (SMV)

Shanghai Music Valley represents an innovative renovation project that aims to transform the district of Hongkou into a new economic centre of Shanghai. SMV is not an isolated cluster but is embedded in the nearby neighbourhood, and therefore, also affects its surroundings. Hence, both the development of SMV, and the different positions regarding its influence on the adjacent lilongs are briefly introduced. Generally, SMV is located around the architectural landmark of the 1933 Millfun, the former Shanghai Municipal Slaughterhouse, which serves as the incubator for creative industries along the Hongkou creek. The area is characterised by a rich variety of historical buildings that exemplify different epochs of Shanghai, and which are arranged around the winding river beds of Hongkou Creek. Thus, they contribute to the establishment of a highly distinctive atmosphere. This picturesque system of canals is the scenery for a new cluster of creative industries, based on music, culture, design, fashion, entertainment, and art (Gonzalez Martinez 2017, 9-12). Figure 24 illustrates the present day composition of Shanghai Music Valley.

In 2009, the *National Music Industry Base* was established in the Hongkou creek area. In the following years, more and more musical enterprises settled down in close proximity to the 1933 Millfun. As a result, the area has steadily developed into a cluster for cultural and creative industries (Zhou et al. 2020, 12). The rich existing urban fabric has been preserved, renovated, and reused. Hence, the industrial heritage is still visible today, but the usage of the buildings has changed. Factories and warehouses have been preserved due to reutilisation for high-end consumption. One prime example is 1933 Millfun: once a slaughterhouse, it has been renovated without changing the original typology, and today, it hosts different boutiques, art galleries, cafés, and other luxury facilities, such as the headquarter of the Ferrari Owners Club of China (Gonzalez Martinez 2017, 12).

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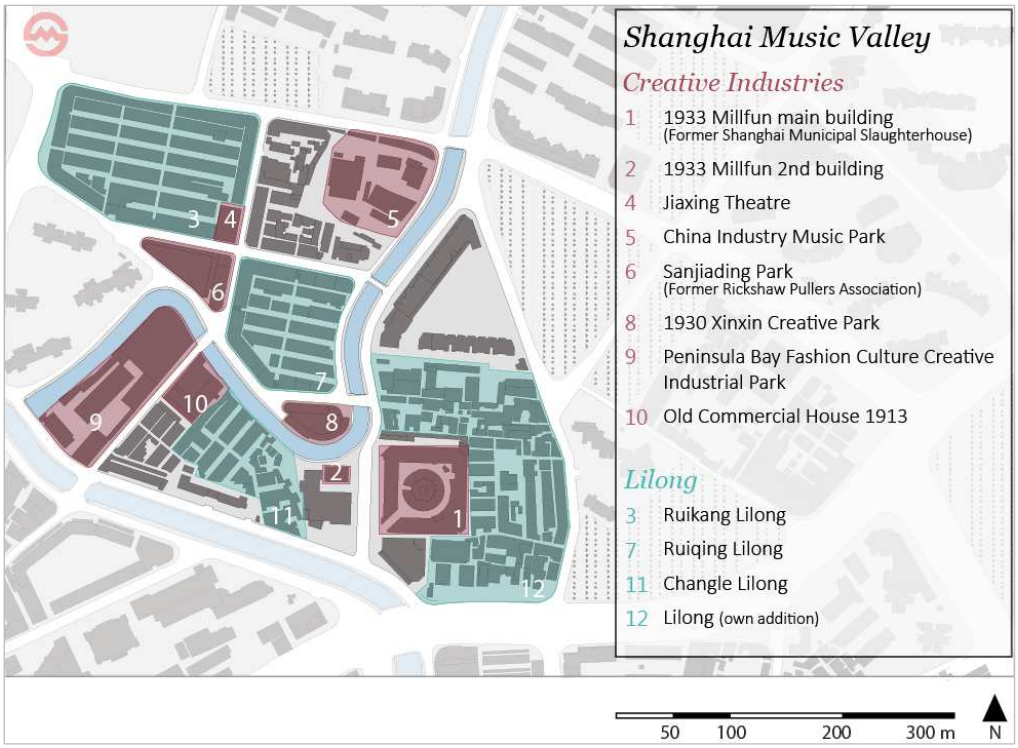

Figure 24. Shanghai Music Valley (redrawn from Gonzalez Martinez 2017, 9)

It is intriguing that the creative cluster is located next to traditional lilong neighbourhoods (Gonzalez Martinez 2017, 10) – see also figure 24. There are two contrasting viewpoints concerning the influence of the creative industries cluster on the lilong housing: Some claim that due to preservation initiatives for the traditional neighbourhoods, both the traditional lilong life and community businesses have been maintained and preserved. Moreover, the lilongs and the innovative urban cluster have a symbiotic relationship, that is, both benefit from the upscaling. The creative industries and the lilong neighbourhoods, the high-end and low-end businesses co-exist in harmony. The transformation of Hongkou creek area into an innovative urban cluster has happened selectively and punctually. This is further supported by an analysis on the price levels of stores and shops in the Hongkou area: the commercial belts around the lilong neighbourhoods have managed to sustain an affordable price range for goods that are sold there. Therefore it is argued that the transformation of the Hongkou creek area does not affect the less-wealthy lilong residents nor provoke any processes of displacement (Zhou et al. 2020, 12-15).

However, others are concerned that the economic reorientation of the area represents a threat to the lilong neighbourhoods. Economic values might be given priority over social, cultural, or historic values; hence, real estate prices might rise, and consequently, that could lead to the displacement of the local residents. During the process of redevelopment in the area, the demolition of the lilongs and even the entire area surrounding the 1933 Millfun was proposed more than once (Gonzalez Martinez 2017, 2-11).

As for now, the remaining lilongs serve as a picturesque setting for the creative industries. The future will reveal how the creative industry and cultural hubs will shape and influence the surrounding neighbourhoods. What can certainly be said is that in the Hongkou creek area the physical proximity of different urban typologies, different lifestyles, ways of consumption, or simply put, the different realities of life are striking. Current satellite pictures further raise doubt about the harmonious relationship between the traditional lilong neighbourhoods and the creative industries. The lilong at Wuzhou Road (number 12 in figure 24) has already been partly demolished (Google Earth 2020).

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Lilong neighbourhoods

The research focuses on Ruiqing lilong and the lilong at Wuzhou Road, bordering the 1933 Millfun in the west. The building height of these lilongs is low; buildings are a maximum of two or three storeys high. They are partly surrounded by shops and services, which creates a buffer effect between the surrounding exterior streets and the interior residential areas. A constant upgrading of the lilongs within the area can be observed though; for example, their facilities, kitchens, bathrooms etc. are upgraded (Taylor 2020, para. 11-12). In the following paragraphs, the selected three street spaces for the on-site analysis and their surroundings are briefly described, maps are attached (figure 26, 28, 30).

Wuzhou Road.

Figure 25. Outdoor kitchen of a restaurant on Wuzhou Road (own picture, spring 2018). Picture taken at e on the map in the following figure

The adjacent building typology of Wuzhou Road was in a process of transformation at the time the research was conducted in June 2018. A lilong is located west of the street, a gated community is located to the northeast, and a construction site can be found in the southeast. Hence, Wuzhou Road can be seen as a borderland between the past and the future, the old and the new Shanghai. The construction site is surrounded by concrete walls. The gated community is also almost entirely surrounded by walls, which turn into fences only at the entrance gate. All these bordering elements east of Wuzhou Road are more than two meters high, and therefore, block any human views. The western side of Wuzhou Road is lined with several points of attraction: eleven shops, six restaurants (for example figure 25), five service companies, and two small manufactories are located on this side. This line of commerce comprises the already mentioned perimeter belt that separates the interior residential realm of the lilong from the exterior streets. On both sides of the street only one entrance leads inside the building blocks: a gated and guarded entrance to the gated community, and a narrow entrance to the lilong, located between a shop and a fruit store. The lilong entrance is fenced as well, however, the gate was never closed during the entire time of conducting the research. The lilong at the side of Wuzhou Road is equipped with a sidewalk, in contrast to the gated community and the construction site where there is none. These physical conditions are expected to be reflected in the location of people's stationary activities (see chapter 5.3, figure 38).

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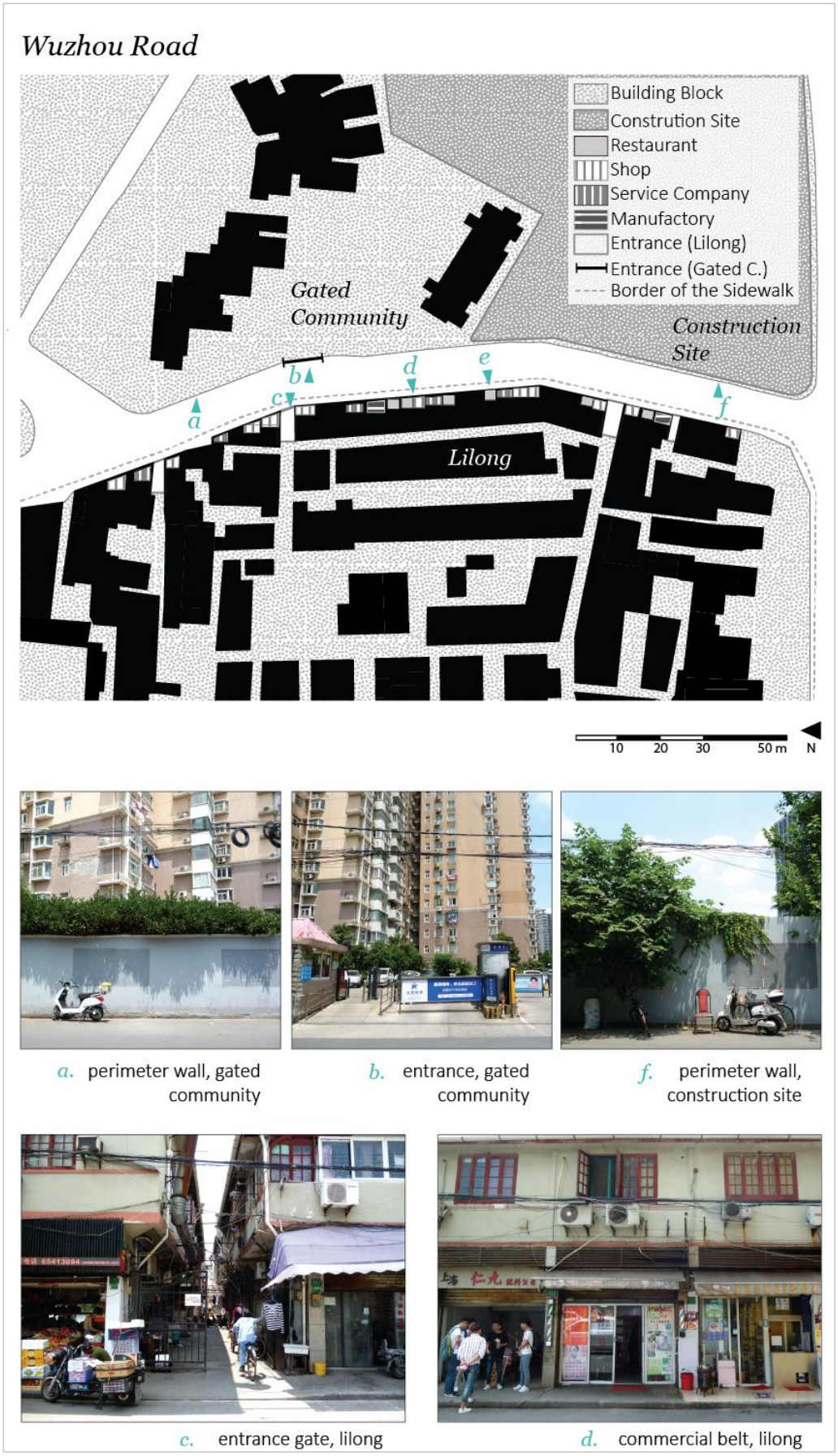

Figure 26. Map of Wuzhou Road and impressions of the street (own pictures, spring 2018).

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Liaoning Road.

Figure 27. Lilong houses on Liaoning Road (own picture, spring 2018). Picture taken at b on the map in the following figure

In the north of Liaoning Road, Ruiqing lilong is located. In the south, the road borders with a creek called Shajinggang River, and a single low-rise building. The typology of this single building resembles the lilong structure on the opposite side of the street. All buildings are low-rise and form a closed façade (see figure 27). The rearward side of the southern single building though is part of the creative industries cluster. Gonzalez Martinez locates the *1930 Xinxin Creative Park* in this building (2017, 9). Thus, along Liaoning Road, creative industries immediately border the lilong. There are sidewalks on both sides of the street. The entire street section along the creek is equipped with racks and clotheslines for drying clothes. The creek is not accessible but encompassed by a wall as high as a grown human. On the lilong to the side of Liaoning Road, there is one single entrance leading towards the interior of the lilong. The buildings facing the street are residentially used, the only exceptions are two restaurants, one at each intersection. On this street section, Ruiqing lilong has no perimeter structures, such as a commercial belt or surrounding walls. The immediate buildings bordering the street are residentially used and accessible from the exterior street, not from within the lilong. Thus one can find traces of residential usage on this side of the streets as well: private furniture, plants and clothes are found on the exterior street space.

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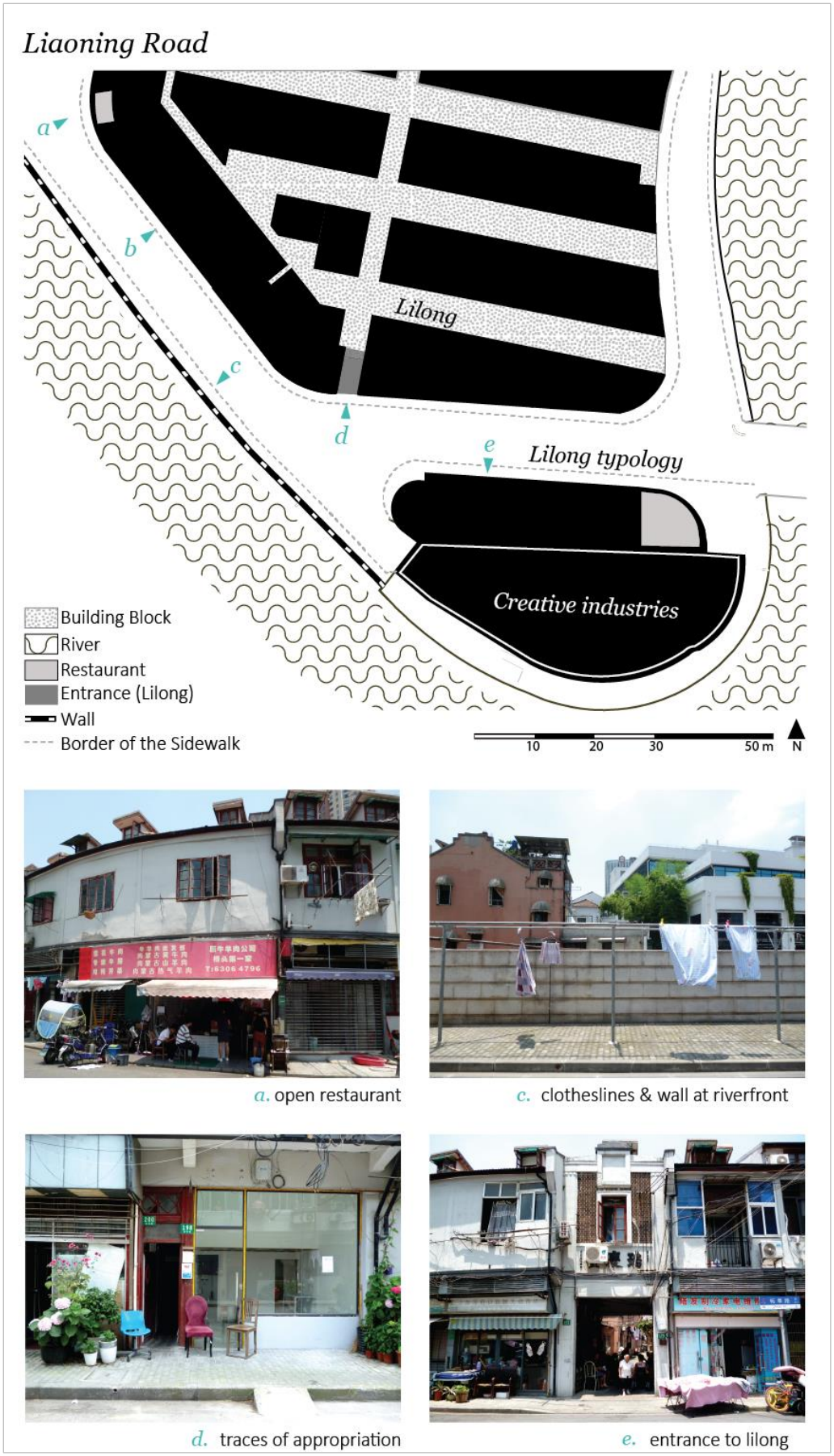

Figure 28. Map of Liaoning Road and impressions of the street (own pictures, spring 2018).

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Jiaxing Road.

Figure 29. A sign of appropriation of exterior street space on Jiaxing Road (own picture, spring 2018). Picture taken at c on the map in the following figure

The third street section is Jiaxing Road, which also is bordered to Ruiqing lilong in the south. In the north, another lilong typology is located. Also, elements related to SMV are close to this lilong. For example, a theatre is located right at the intersection on the western end of Jiaxing Road (Park Gonzalez Martinez 2017, 9). Moreover, many commercial facilities are located on Jiaxing Road: in total there are 13 shops, six restaurants, and five service companies scattered on both sides of the street, which are slightly aggregating on the western part. A commercial belt surrounds both lilongs. This belt, however, is not continuous but interrupted with solely residentially used sections. Sidewalks are located on both sides of the street. The southern lilong has one, and the northern lilong two entrances, all of which are flanked with stores. Also on Jiaxing, on finds signs of appropriation of the street space such as private furniture or greenery (see figure 29).

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Figure 30. Map of Jiaxing Road and impressions of the street (own pictures, spring 2018).

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Gated Community

Same as for the lilong roads, the two sites related to a gated community are presented in the following: a perimeter road, Tongzhou Road, and a gated community itself, Pujiang Mingdi. The selected spaces are briefly described, maps are presented as well (figure 32, 34).

Tongzhou Road.

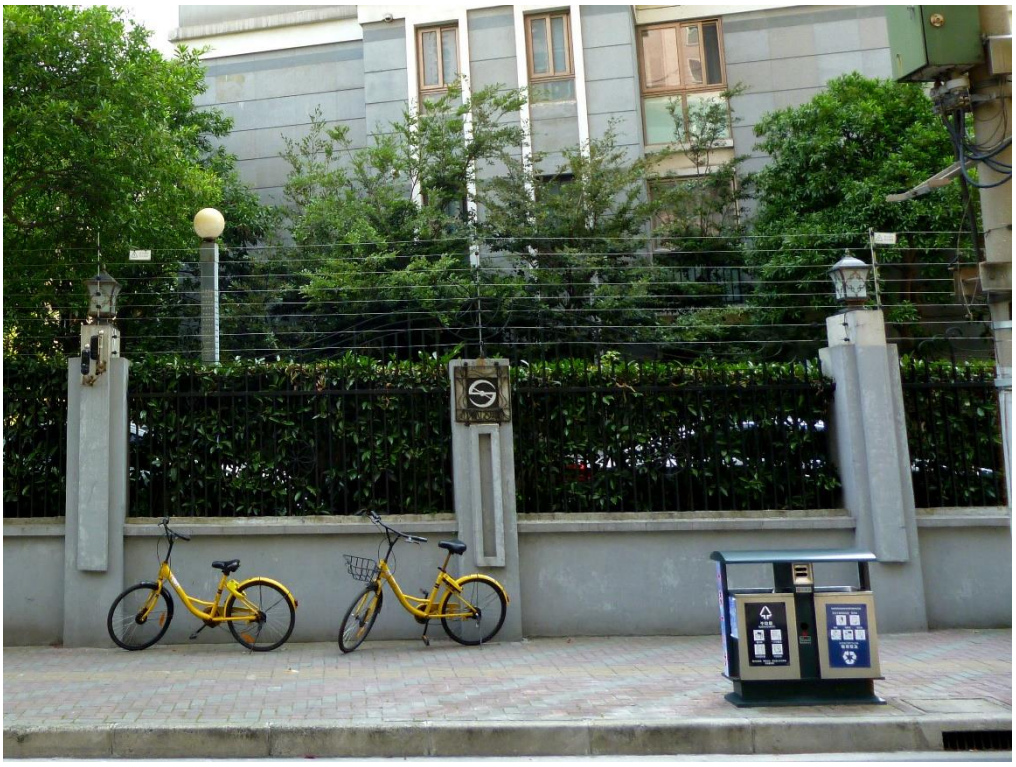

Figure 31. Perimeter fence between Pujiang Mingdi and Tongzhou Road (own picture, spring 2018). Picture taken at d on the map in the following figure

The compound Pujiang Mingdi is accessible from three sides, namely Tongzhou Road in the east, Hailun Road in the west, and Zhoujiazui Road in the south. There is no access gate to Pujiang Mingdi in the north of the compound. At Pujiang Mingdi, Hailun Road leads into a tunnel which connects the district Hongkou with the southern district of Lujiazui on the opposite site of Huangpu river. Hence, when leaving the compound at the western gate, a pedestrian faces the tunnel walls, which constitute a strong linear barrier. The paths to walk on are limited. As a result, no shops or services are located on this section; the sole function of the street is transit. Leaving Pujiang Mingdi through the southern gate, one faces a four-lane road with multiple linear elements, such as ornamental green strips, small hedges, or fences – that separate the paths determined for different road users. Pedestrian movement is strongly channelled. The third access gate to Pujiang Mingdi is located east of the compound on Tongzhou Road. This street is considered the most pedestrian-friendly of all access streets since there are no barriers, such as tunnels. It is a one-lane street in the northern part where several service companies are located: two hairdressers, a real estate agency, a laundry, and a mechanical workshop. The utilisation of the area around Tongzhou Road is primarily residential. It is lined with trees and spacious sidewalks. On the border to both building blocks, it is equipped with gating elements that are, fences, and greenery (see figure 31).

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Figure 32. Map of Tongzhou Road and impressions of the street (own pictures, spring 2018).

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Pujiang Mingdi.

Figure 33. High-rise residential tower in Pujiang Mingdi (own picture, spring 2018). Picture taken at a on the map in the following figure

Since the gated community of Pujiang Mingdi is a more recent construction project, more details are available on the compound, as opposed to the selected lilong units: The gated community was built between 2004 and 2006. It encompasses seven high-rise residential towers (see figure 33) with a total of 918 apartments (Fang 2020). The average apartment size is 140-170 m². Overall, 957 households live in Pujiang Mingdi (Lianjia 2020). 40% of the surface is covered with greenery (Anjuke 2020) – compared to the adjacent lilongs which are deprived of any greenery at all, this rate is considerably high. The average price of living space in Pujiang Mingdi is 65,390 RMB/m² (Anjuke 2020), or 73,192 RMB/m² (Lianjia 2020). The price per square meter is higher than the average disposable income in Shanghai in 2017, which was around 59,000 RMB (Shanghai Statistical Yearbook 2018, Chapter 10.5).This already indicates crucial information on the affordability of living in Pujiang Mingdi for regular earners.

The interior open spaces in Pujiang Mingdi are manifold: there is greenery and landscape architecture, winding walking paths among the garden, benches and pavilions, a playground, outdoor fitness facilities, a square, several water elements, fountains, and sculptures. There are different plantings as well, for instance, ornamental green spaces with flowers, but also hedges that create niches and areas of retreat. Nevertheless, the green spaces are surrounded by small bricks or fences, instructing passersby to keep off grass. These spaces are decorative but not intended to be used. Roads and parking lots are located on the ground level. A hierarchy concerning the accessibility of paths is existent. For instance, some paths are designed for cars, while others are only reserved for pedestrian usage. Generally, a rich variety of open spaces is available within the gated community, the function of most spaces is determined by their design. Some of the open spaces primarily serve a decorative purpose, whereas others encourage the active engagement of the community. The residential towers are arranged around these open spaces, surrounding them, and form a centre within the building block. These towers turn their backs on the exterior streets around the gated community. The only non-residential offerings are located on the central square: a shop, a hairdresser, and a fitness centre.

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Figure 34. Map of Pujiang Mingdi and impressions of the compound (own pictures, spring 2018).

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Statistical data

The available statistical data about the inhabitants of the respective building blocks are presented in the following (see figure 35). This section aims to provide a comparison between the socio-demographic criteria of lilong and gated community residents. The latest statistical data on the level of building blocks originates from the 6th National Census in 2010. This data is already outdated. Hence, the numbers and figures listed in this chapter should be interpreted as an approximation to the factual circumstances in 2018.

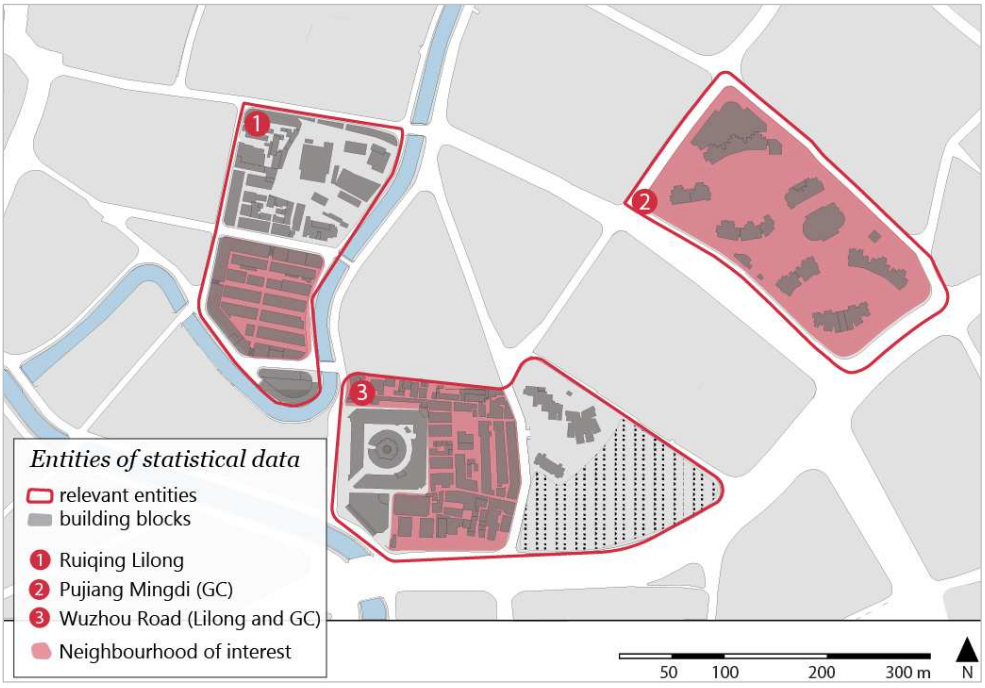

Figure 35. Entities of the 6th National Census (2010)

Pujiang Mingdi is listed as one survey unit, therefore, the data does not need to be modified. Ruiqing lilong, the block to the north and the single building in the south, comprise another unit. Parts of the typology of the northern building block resemble the lilong typology, as does the single building in the south. Hence, this data can be used for further analysis. It is assumed that approximately half of the population living in this cluster resides in Ruiqing lilong itself. Thus, half of the data about this cluster is used for the juxtaposition of lilong and gated community living.

The lilong on Wuzhou Road and the gated community to the east represent one survey unit. As the two typologies are highly different, it can be assumed that the socio-demographic characteristics of the inhabitants differ as well; therefore, this data will not be used for any further comparisons. In addition, when the survey was conducted (June 2018), a large area of the eastern building block was still a construction site – which had probably not been the case when the census data had been collected. Hence, this data does not reflect the reality of the building blocks, and more importantly, cannot be separated according to lilong and gated community residents. This cluster is not included in the subsequent analysis.

The statistical data is illustrated with the help of pictograms in figure 36; the corresponding calculations are attached in the appendix (9.3).

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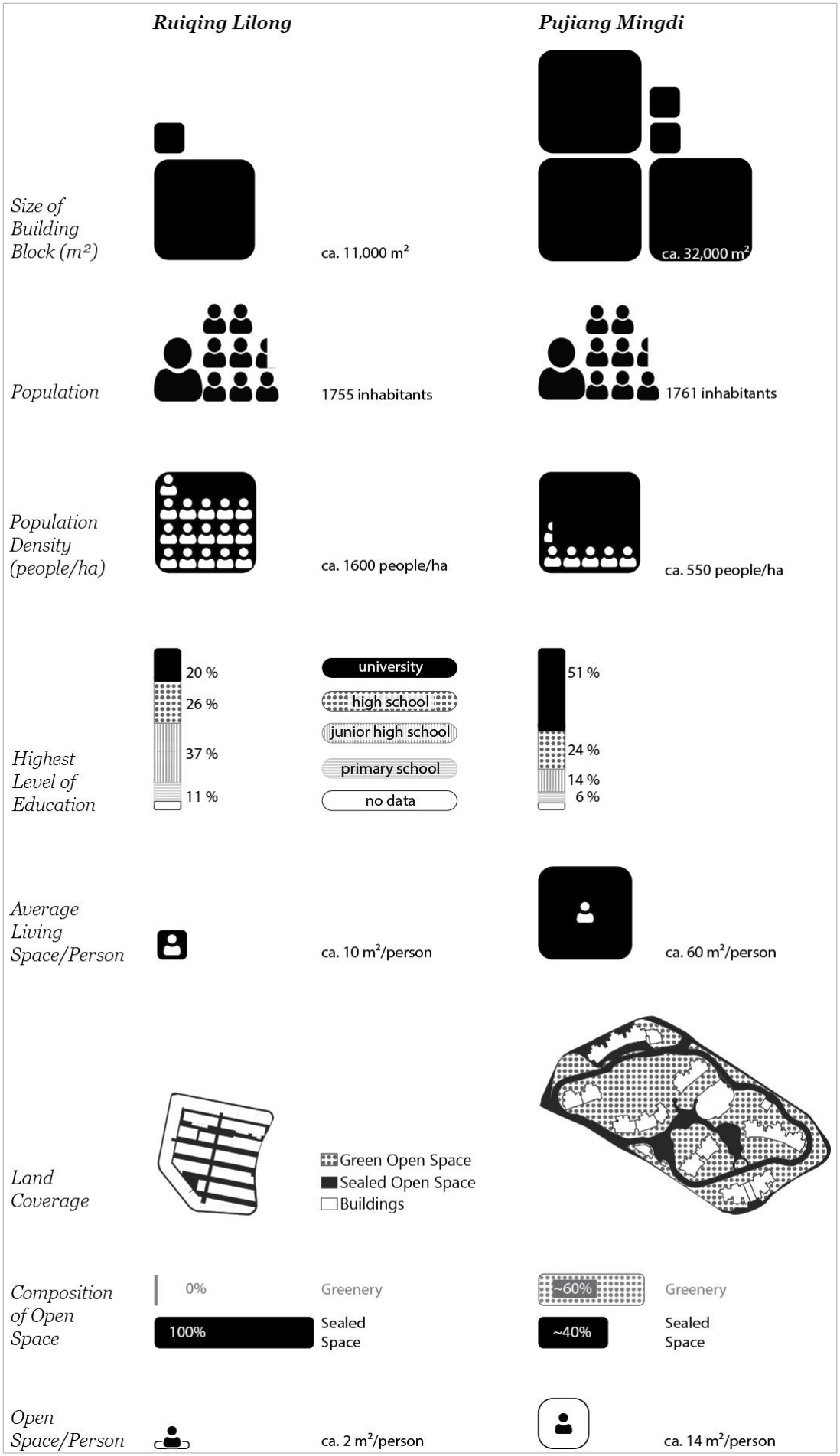

Figure 36. Comparison of statistical data of a gated community (Pujiang Mingdi) and a lilong (Ruiqing lilong).

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Population

3510 residents live in the cluster of Ruiqing lilong. As Ruiqing lilong constitutes about half of the cluster, and the building typology north and south of it are similar, it is assumed that probably half of the cluster's population, that is 1755 residents, live in Ruiqing Lilong itself. The size of the lilong is approximately 11,000 m². The population density of Ruiqing Lilong is therefore about 1600 people per hectare. On the other hand, 1761 people live in the cluster of Pujiang Mingdi. The gated community has a size of approximately 32,000 m². Although the overall number of inhabitants within Pujiang Mingdi and Ruiqing lilong is almost equal, the population density differs significantly. The population density in Pujiang Mingdi is only a third of that in the lilong and totals 530 people per hectare.

Education level of the residents

A striking difference between the cluster of the gated community and the lilong neighbourhood is the residents' level of education. Especially the percentage of residents on an academic education level is noteworthy: In Pujiang Mingdi, half of the residents attended a university or college. As for the lilong neighbourhoods, the numbers are drastically lower, but with 20% of the residents on an academic education level still correspond to the Shanghai-wide average in 2010 (6th National Census, 2010. Shanghai Municipal Bureau of Statistics 2011). The numbers confirm that there is a significant difference in terms of education level of the residents.

Age structure

The age structure is similar in both units. About 70% of the residents are of working age (20-59 years). The population in Pujiang Mingdi is slightly younger. Here, 16% of the residents are between 0 and 19 years old (in the lilong, the number is 12%). The lilong population is slightly older, that means 15% of the residents are 60 years or older, compared to 13% in Pujiang Mingdi (6th National Census, 2010). The overall age distribution in Hongkou in 2010 differs from the numbers of the two units, since within the district, the share of the elderly (60 years and above) is a quarter of the total population (Shanghai Statistical Yearbook 2011, Chapter 2.9). The average age of the population of the two examined clusters Pujiang Mingdi and Ruiqing lilong is considerably lower than that of the entire district. The latest data on the district level reveals a proceeding over-ageing. In 2017, already 38% of Hongkou's population were at least 60 years old (Shanghai Statistical Yearbook 2018, Chapter 2.6).

Hukou

In Pujiang Mingdi, almost 90% of the residents have an urban hukou (6th National Census, 2010). This division mirrors the city-wide division in 2010, when almost 90% of the residents possessed an urban hukou (Shanghai Statistical Yearbook 2011, Chapter 2.2). In Ruiqing lilong, about 70% of the inhabitants have an urban hukou, and 30% a rural hukou. Possessing a rural hukou indicates that a given person does not origin from a city but from the countryside. Furthermore, a person who does not have an urban hukou in Shanghai faces certain disadvantages, that is, he or she has no access to local public services, welfare, etc. Hence, some lilong residents do not only have to cope with less comfortable living standards but also face disadvantages in their access to public facilities, if they do not possess an urban hukou (6th National Census, 2010).

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Average floor area per capita

According to the UN, the floor area per person is an indicator for measuring the adequacy of residential living space; low value points indicate overcrowding. The calculation is basic: the median floor area is divided by the average household size (UN n.d., 79). By comparing the number of residents of the 6th National Census with the total living space available per block (floor area multiplied with number of storeys minus structure area when high-rise), it becomes evident that in Pujiang Mingdi the average living space per resident is 60 m². In Ruiqing lilong, on the other hand, the average living space is not even 10 m² per resident. The number of inhabitants in Ruiqing lilong is an approximation though, as has already been mentioned. Nevertheless, it is sufficient to provide a glimpse into the housing conditions. For comparison, the average living space per capita in urban areas in China was 37 m² in 2017 (Textor 2019).

Ratio between open space and buildings

This parameter compares the area of the surface occupied by buildings and open space. In Pujiang Mingdi, the area of open space clearly outnumbers the buildings. The ratio open space to buildings is 4.5 : 1. In Ruiqing lilong, the opposite is the case: buildings occupy more space than the open areas. Here, the ratio between open space and buildings is 1 : 1.6. The building coverage ratio (BCR) expresses this ratio: it shows the percentage of the given ground floor area that is occupied by buildings. In Ruiqing Lilong, the BCR is 64%, and in the gated community of Pujiang Mingdi it is approximately 20%. Another remarkable difference is the availability of green spaces. No green spaces can be found in the lilong, whereas in Pujiang Mingdi, almost half of the open space represents unsealed green spaces. Additionally, the open spaces in Pujiang Mingdi are more diverse than those of the lilong, which are mainly streets. The urban parameters are listed in the appendix (chapter 9.3).

Another parameter, the floor area ratio (FAR) includes the variable of building height. As for the building block of Pujiang Mingdi, the FAR is 4.4, meaning that if the buildings of the block were only 1 storey high, a plot area more than four times the size of the current block would be needed to accommodate all flats. As only 22% of the entire building block is used for buildings, this number clearly implicates a high-rise typology. In Ruiqing Lilong, the FAR is 1.6 that is, half of the ratio of the gated community. This number once again illustrates that the lilong is an efficient building typology to efficiently house a high number of people. Despite the low building height, the number of residents is remarkable.

By contrasting the number of inhabitants per building block with the available open space per block, the high population density of the lilong becomes apparent: assuming that the open space is equally accessible to the residents, every resident of Ruiqing lilong can occupy an open space of 2 m². Again, this is an approximation, since the actual number of residents in the lilong is not available. The luxury of living in a gated community is reflected in the availability of open space per capita: in Pujiang Mingdi, there is 14 m² of open space on average available for each resident.

To sum up, living conditions in Pujiang Mingdi appear to be more pleasant. That is because housing is more spacious, more private living space is available, and green space is directly accessible. The data on the education level further suggests that living in the gated community is also connected with a higher income level, since higher-educated residents simply tend to earn more. The living conditions in Ruiqing lilong outline the usual problems as described in chapter 4.1: overpopulation, dense living conditions, a lack of open spaces, and a total lack of greenery.

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5.2 On-site execution of the research

Based on the methodological foundation (chapter 1.5), the design of the on-site execution of the research methods, namely the pedestrian observation and questionnaire survey, is outlined. As for the observation, the research interests were the activities that are pursued in the selected open urban spaces, hence, the observation focused on ordinary, everyday situations. Therefore, the ratio between passersby and those who sojourned in the open space was listed; the activity of sojourning was further divided into different predetermined activities. Additionally, the exact location of the activities was mapped. To include the residents' point of views, a questionnaire was distributed among the lilong and gated community residents. This served to prevent the research from becoming an external attribution but strengthened its explanatory power.

Execution of the pedestrian observation

The ratio between passersby and actual street users formed the basis for the observation. What is the share of people that uses the street as transit space only, and how many people use the street space to sojourn? The two opposing groups are called *pedestrian flow*, referring to passersby, and *stationary activities*, that is, those who sojourn on the street. Additionally, the exact usage of the street users was recorded, for which a predefined list of 22 different activities was applied. This list was created beforehand during test walks.

The test walks proved to be valuable for the preparation of the list of activities: As for the former category *work,* for example, it was necessary to differentiate between different types of work: people *cook* on the open street space, they *sell* or *repair* goods, and are employed to keep the streets *clean*. The category *clean* also includes the work of gardeners in the gated community. Furthermore, *walking ones dog* was added to the list. On the other hand, some activities were excluded, such as activities related to transport. In front of the entrance gate to Pujiang Mingdi on Tongzhou Road, some people were waiting in small motor taxis to offer their services to the residents. Even though these people merely intended to offer their taxi services, the observable activity though was classified as *standing* or *sitting*. The reasons for the presence of people in open spaces are hardly ever known when conducting an observation. Any attempt of interpretation contains a source of error and lacks an objective basis. Therefore, it was plainly noted what was being observed. The challenge was to describe what was being observed and not to provide any additional interpretations. The two activities *sing* and *dance* were observed during the test walks but not during the observation. Hence, the list of stationary activities was reduced to 20 activities afterwards (see table 1).

Activities were not always clearly distinguishable: the border between pedestrian flow and the activity *to walk* might blur. As for these cases, an own definition was applied: A way of walking that seems directionless and leisurely was classified as *to walk*. Additionally, the single stationary activities were mapped, which further reveals different usage preferences and enables a linkage between clusters of frequent stationary activities and the built environment.

Stationary Activity				
Sit	Stand	Clean	Drink	Lie
Lean	Chat	Buy	Eat	Walk a dog
Walk	Cook	Read	Play	Domestic tasks
Hock	Sell	Phone	Sports	Repair
~~Sing~~	~~Dance~~			

Table 1.
List of stationary activities

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The observed pedestrians who sojourned on the streets were divided into three age groups: children, adults, and elderly. These three groups generally differ in their daily schedules due to their employment status (student – employed – retired). As a result, their usage of space is also assumed to differ. Further, the given differentiation was done for convenience reasons, as a more differentiated division of age groups would be more time-consuming and bears a higher potential for misjudgement.

The usage of the street space was examined from dusk till dawn. The research interest was not only the usage in peak hours but also the daily rhythm of the places. As a result, observations were conducted both on a given weekday and weekend day. Each of the five sections was being observed for 10 minutes every hour, from 7 am to 8 pm, under comparable pleasant weather conditions of around 25°C. For each observation day and observation section, 13 counts were made. This totalled 130 counts, which constitutes 650 minutes of total observation. The result of the observation illustrates how many people of the three given age groups followed which activity in which part of the observed open space. The following table (2) outlines the general conditions for each observation.

Neighbourhood Type	Day	Section	Date	Weather condition
Gated Community	Weekday	Tongzhou Road Open space in Pujiang Mingdi	Tuesday, June 5th 2018	Cloudy, warm. ~26°C
Lilong	Weekday	Jiaxing Road Liaoning Road Wuzhou Road	Thursday, June 7th 2018	Sunny, warm. ~27°C
Lilong	Weekend day	Jiaxing Road Liaoning Road Wuzhou Road	Saturday, June 9th 2018	Sunny, cloudy morning. ~26°C
Gated Community	Weekend day	Tongzhou Road Open space in Pujiang Mingdi	Saturday, June 16th 2018	Sunny, partly overcast. ~25°C

Table 2.
General conditions of the pedestrian observation

It can be argued that the observation is distorted to a certain extent, since only those who have an affective relationship to the open space would also use it. Firstly, due to the crowded and dense living conditions within a lilong, this sense of affection might not necessarily be the reason for the street usage in the lilong areas. Secondly, the prime research interest is the usage itself. The popularity of the open space might be identified by examining the ratio of pedestrian flow and stationary activities. As a matter of fact, almost every resident has to pass the examined open spaces at least on his or her daily ways.

Each of the four streets could be observed without any inconveniences. This was not the case in the gated community of Pujiang Mingdi, due to its vast size; the entire compound could not be observed from one single point. As a consequence, the focus was narrowed to the open spaces that were most likely to be used for stationary activities: the main square, and the adjacent playground and garden. If people want to leave the compound, they do not necessarily pass these open spaces. As a result, the outcome concerning the ratio of pedestrian flow and stationary activity in Pujiang Mingdi might deviate from the real ratio. This deviation is tolerated though since the research interests are the stationary activities and in how far these differ between lilong and gated community residents.

The results of the pedestrian observation are illustrated in chapter 5.3. The overall usage of the examined open spaces is presented. In this chapter, it was not possible to determine the housing conditions of the people being present in the open spaces. Hence, a differentiation between local residents and others was not possible.

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Execution of the questionnaire survey

The questionnaires were distributed in person in the open spaces of interest. The focus groups were local residents of both the gated community and lilongs. The questionnaire is used to examine whether people living in different typologies have a different relation to and demands for open spaces. The questionnaire was distributed within the gated community and on the three mentioned lilong streets (Wuzhou Road, Liaoning Road, Jiaxing Road). No questionnaires were distributed on Tongzhou Road, as the residents of Pujiang Mingdi were more accessible within the gated community.

Prior to the survey, the housing management of Pujiang Mingdi required insight into the questionnaire. A permission for the distribution of the questionnaires was received without any modification requests to the survey. Nevertheless, the necessity to involve the housing management for this matter emphasises their efforts to shield the inhabitants from any nuisances. This might also have been the reason why the housing management did not allow the questionnaires to be distributed in the mailboxes of the residents – in this way, it would have been able to reach a greater number of residents. As a result, the questionnaire was distributed in person within the open spaces of the gated community on six days in June 2018[41]. Chapter 5.4 shows the results of the questionnaire.

In the exterior streets surrounding the lilongs, no permission was necessary. However, in this area it was more difficult to establish contact with locals, as well as to distinguish local residents from any other passersby. Lin Ni, a local fellow student kindly helped to distribute the questionnaires in this area in order to receive a reasonable number of replies. The distribution of the questionnaire in the lilong streets happened on two days in June 2018[42].

Generally, anyone who was present in the open space was asked to contribute to the survey. The questionnaire was translated to Mandarin and consisted of two pages. The questionnaire was advised to be kept short as – due to previous experience – the number of respondents would decrease drastically with an increased length of the survey. As for the pedestrian observation, the place of residence of the observed was irrelevant. As for the questionnaire, in particular local residents of the gated community and the lilongs represented the target group. Two versions of the questionnaire were developed, which were predominantly identical but deviated in three questions (see appendix 9.1 and 9.2). As for the potential lilong residents, a question was included to ensure that they live in the area of interest. The interviewees were filling in the questionnaires without the interviewer being present in order to provide an unpressured environment and to receive genuine answers.

An on-site distribution of the questionnaires bears the risk that only those are included who have a certain affection for the given space. But as the open spaces are accessible to residents, and almost unavoidable in their daily routines, this objection seems rebutted. Anyone leaving the flat in Pujiang Mingdi necessarily needs to pass the open spaces of the gated community. Only those who use the elevator to the underground parking area and leave the compound by car could avoid the survey. However, as minor traffic was observable in the compound, their share seems to be low. The situation in the lilong streets is similar: people need to pass the streets on their everyday ways. There is a greater variety of possible paths, but generally, streets cannot be avoided. Also, one has to bear in mind that people with strong opinions towards a given topic are more likely to participate in surveys, as are people who have a desire to communicate. Due to limited language skills, it was not possible to inform the respondents about the topic of the survey beforehand. Hence, the residents did not know the subject of the survey – which in turn weakens the just mentioned argument.

[41] The exact dates were Friday, 15.06.2018, Sunday, 17.06.2018, Monday, 18.06.2018, Tuesday, 19.06.2018, Thursday, 21.06.2018 and Saturday, 23.06.2018

[42] The exact dates were Wednesday, 13.06.2018, and Tuesday, 19.06.2018.

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5.3 Result of the pedestrian observation: the usage of selected open spaces

In this section, the general usage of the open space based on the pedestrian observation in June 2018 is presented. This method did not allow a differentiation between local residents and others in terms of users. The local residents, their usage of, and relation towards the street space are examined in more detail in the next chapter (5.4). As already mentioned, in each of the five sites two counting sessions were conducted: one on the weekend, and one on a weekday. The selected sites are the gated community Pujiang Mingdi, the access road to the gated community Tongzhou Road, and three roads along the lilongs, namely Wuzhou Road, Liaoning Road, and Jiaxing Road. All five sites are located in close proximity to each other. In the following analysis, partially the results for each of the five single space are presented; partially the three lilong roads – Wuzhou Road, Liaoning Road, Jiaxing Road – are subsumed into one category: lilong streets. If this is the case, the average of the counts is used to ensure comparability.

Since three lilong roads but only one gated community as well as one access road to a gated community were examined, it can be argued that the methodological design of the research is in favour of the lilong streets. This is opposed by the fact that certain activities mainly occur in lilong streets due to the distinct features of lilongs: proximity, overpopulation, and little private living space. Some lack private sanitary facilities, outdoor cooking is common, and generally, a more accessible open space design prevails. The decision to observe the three lilong streets in greater detail can be explained by an interest in displaying the lilong lifestyle and variety of street usage. It was not the intention to push any possible outcome in favour of the lilong streets.

Due to the methodological design of the analysis, only the positions of those who actively use the street space can be included. For those residents who do not enjoy the given open spaces and refuse to use them, this section is not valid. The research interest is to display how those spaces are currently used (June 2018); the intention is not to develop a design proposal for an intended future design – for which the inclusion of non-users and their point of view would be crucial as well.

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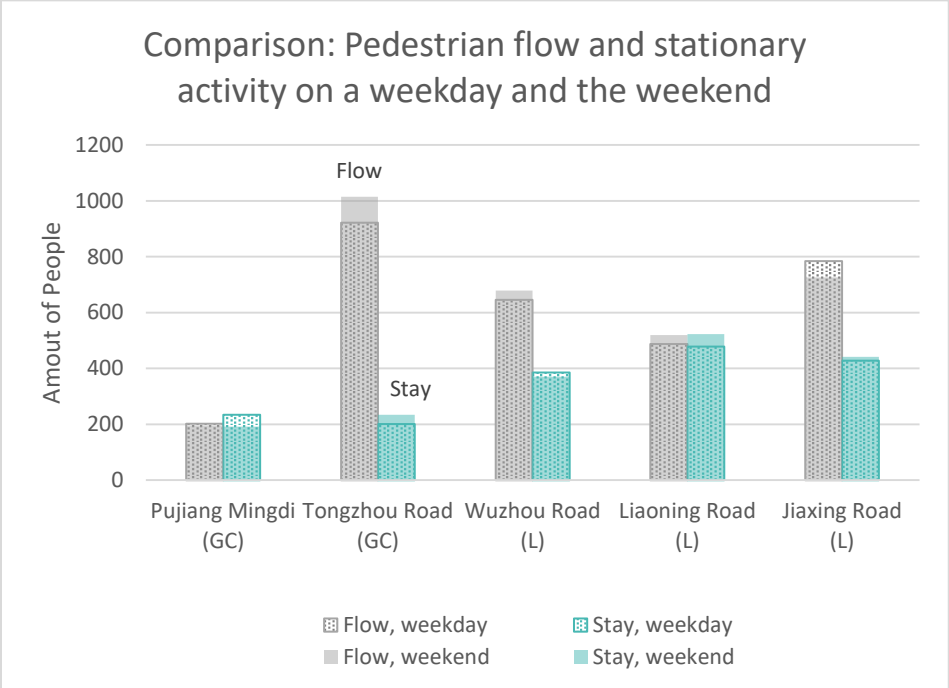
Ratio pedestrian flow and stationary activities

As a first approach to examine street usage, the ratio between pedestrian flow and stationary activities is examined. As displayed in graph 1, the number of people passing by (*flow*) and the number of those who perform stationary activities (*stay*) are confronted. Stationary activities refer to the share of pedestrians who sojourn in the street space. It is noticeable that there is little fluctuation in the usage of streets between a weekday and a day of the weekend. This graph does not illustrate, however, the total number of pedestrians since counts were made for only 10 minutes an hour, from 7 am to 8 pm.

In proportion to the number of passersby, Tongzhou Road, the access street to the gated community



Graph 1. Total number of pedestrian flow and stationary activity on five sites on a weekday and a day of the weekend

Pujiang Mingdi, is least used for stationary activities. The ratio is 1:4, both on weekdays and weekends. The open space within Pujiang Mingdi is characterised by an equal distribution of stationary activities and pedestrian flow – as is Liaoning Road. As for Pujiang Mingdi, the counts were made in the open spaces deliberately designed for stationary activities – as already mentioned, this choice of site might cause a deviation from the real ratio. Liaoning Road has a similar balanced ratio as Pujiang Mingdi. Every second person used the street for any other activity than passing by. Furthermore, it becomes apparent that the total number of people who perform stationary activities in the three lilong streets is clearly higher than in the two sites related to the gated community. Roughly speaking, the number is twice as high in the lilong streets. Moreover, within Pujiang Mingdi and on Wuzhou Road, on a day of the weekend fewer stationary activities were observed than on a weekday.

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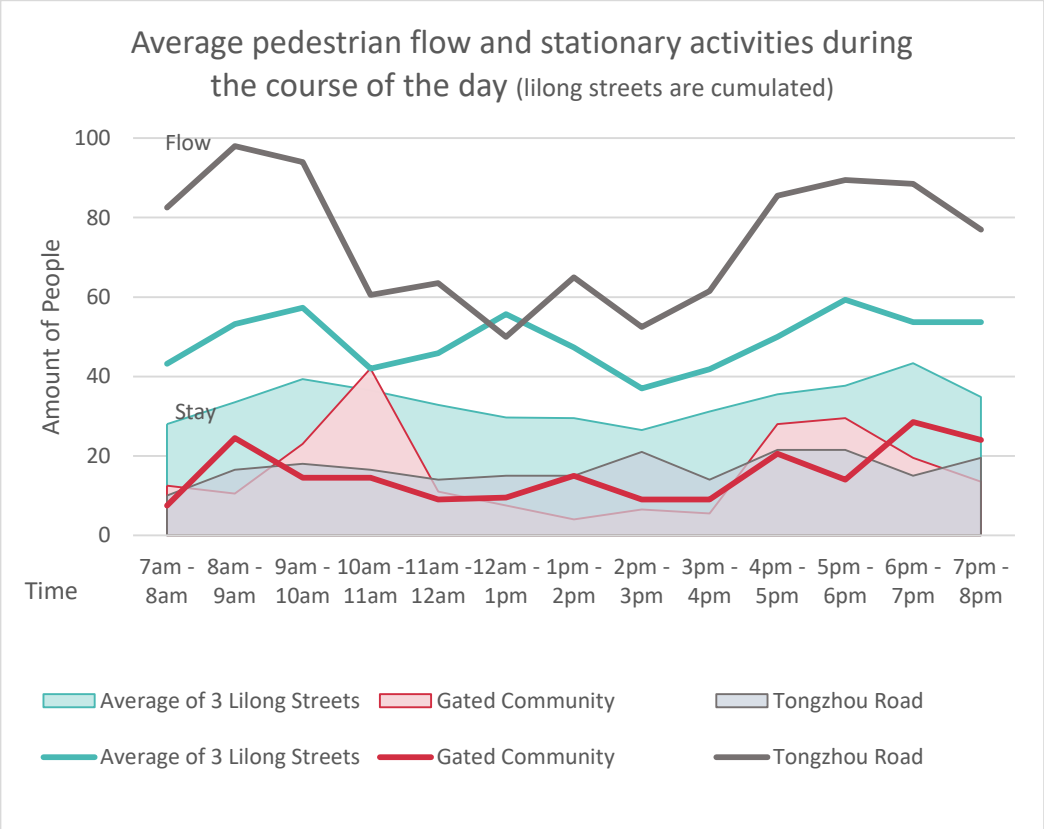
Fluctuation during the course of the day

It is worth mentioning that the pedestrian counting revealed minor differences in the ratio of pedestrian flow and pedestrian stay between a day of the weekend and a weekday (graph 1). How is the usage of the street distributed during the course of the day then? For increased readability, the hourly average of the weekend and weekday observation is presented. Furthermore, the lilong streets are subsumed into one category (see graph 2); hence, the hourly average of the three lilong streets is used. The three remaining open spaces – the gated community, Tongzhou Road, and the hourly average of the lilong streets – are thus brought down to a common denominator. In this way, a high degree of comparability is given.

Concerning pedestrian flow, Tongzhou Road (the access road to Pujiang Mingdi) shows a pattern that resembles the daily rhythm of a classic work life with peaks in the morning and in the late afternoon (9-5 office hours, for example). The pedestrian flow within Pujiang Mingdi shows the same pattern but less pronounced. In the lilong streets, most pedestrian movement happens around 9 am, noon, and 5 pm.

In both the lilong areas and Tongzhou Road, the stationary activities (in the graph referred to as *stay*) are equally distributed during the day, while according to the total numbers, sojourn activities are more common and almost twice as frequent in the lilong streets. In the interior of the gated community Pujiang Mingdi, two clear peaks of stationary activities are observable: one before noon and another one in the late afternoon. During those peak hours the stationary activities even outnumber the pedestrian flow.



Graph 2. Average pedestrian flow and stationary activities during the course of a day

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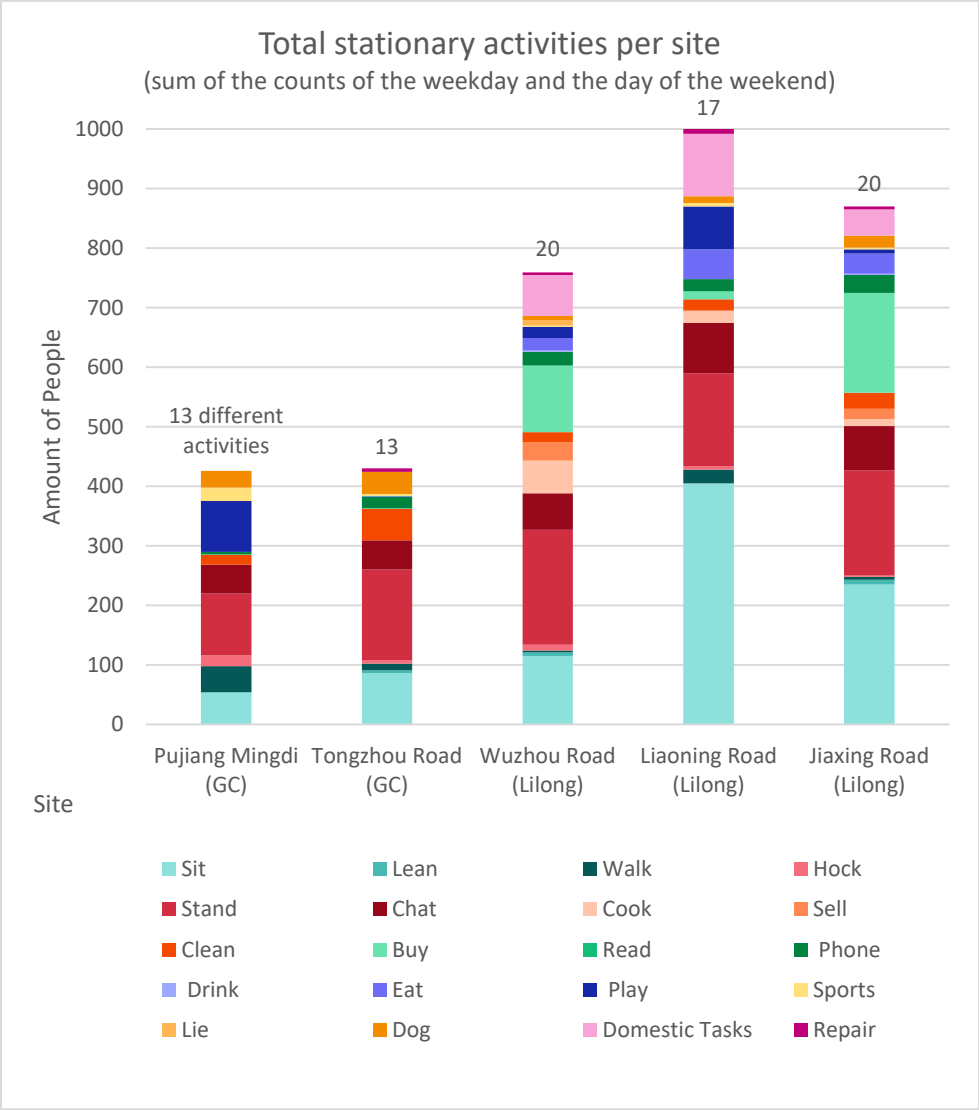
Diversity of activities according to site

In this section, the focus lies on stationary activities. To give an overview of the diversity of the activities of the five sites, the total sum of activities that were observed on both the weekday and the day of the weekend is presented in graph 3. It is striking that the total number of stationary activities within the Pujiang Mingdi is only slightly higher than on the adjacent Tongzhou Road. This is remarkable, since the interior spaces of Pujiang Mingdi are characterised by a high design quality, a sophisticated landscape design, a variety of spaces dedicated to sojourn activities – none of which is found on Tongzhou Road.



Graph 3. Total number of stationary activities according to site

In each of the two open spaces related to the gated community 13 different activities were observed. However, the respective activities differ in both of these spaces. Almost 20% of the stationary activities conducted in Pujiang Mingdi are related to children *playing*, which is an activity not being observed in Tongzhou Road at all. Furthermore, walking and doing sports are more common in Pujiang Mingdi. All of these three activities are strongly related to leisure. The high degree of greenery in Pujiang Mingdi makes the open spaces attractive to move outdoors. On the other hand, the three stationary activities appearing more often on Tongzhou Road than in Pujiang Mingdi are *to stand*, *to clean,* and *to sit*. Generally, activities on Tongzhou Road accumulate in front of the gates of the gated communities and in the north of the street close to the services. *To stand* and *to sit* can be considered general activities, allowing little insight into the specific usage of the street space. Furthermore, the activity *to clean* is work-related, as it refers to staff of the road administration who keeps the streets clean and in order.

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There are certain activities that are only pursued in the lilong streets: *to cook*, *to sell* and *to buy* goods on the street. A mobile vendor, an outside kitchen of a restaurant, or an open store front where customers stand on the open street space while shopping, exemplify this observation. Also, *domestic tasks* are highly present in the lilongs streets, yet do not occur on the other sites. An example for a domestic task would be to hang up laundry on the exterior street. People also *eat* along the lilong streets, another habit hardly apparent in the open spaces related to the gated community. Another habit which was only observed on lilong streets is adults playing on the street space. They take a table outside on the street and join for a game of mah-jongg. The exact numbers of stationary activities and their percentage share are listed in table 3. Activities only present in the lilong streets are highlighted with a red frame.

Activity	Pujiang Mingdi (GC)		Tongzhou Road (GC)		Wuzhou Road (L)		Liaoning Road (L)		Jiaxing Road (L)	
	n	%	n	%	n	%	n	%	n	%
Sit	53	**12.4**	86	**20.0**	115	**15.2**	405	**40.5**	235	**27.0**
Hock	18	4.2	6	1.4	10	1.3	6	0.6	2	0.2
Lean	1	0.2	5	1.2	6	0.8	-	-	8	0.9
Stand	104	**24.4**	152	**35.3**	193	**25.4**	156	**15.6**	177	**20.3**
Walk	44	10.3	11	2.6	3	0.4	23	2.3	5	0.6
Chat	48	11.3	49	11.4	61	8.0	84	8.4	74	8.5
Cook	-	-	-	-	55	7.2	20	2.0	12	1.4
Sell	-	-	-	-	31	4.1	1	0.1	17	2.0
Clean	17	4.0	53	**12.3**	17	2.2	19	1.9	27	3.1
Buy	-	-	1	0.2	111	**14.6**	13	1.3	167	**19.2**
Read	1	0.2	-	-	1	0.1	1	0.1	1	0.1
Phone	4	0.9	20	4.7	23	3.0	20	2.0	30	3.4
Drink	-	-	-	-	2	0.3	-	-	2	0.2
Eat	-	-	1	0.2	21	2.8	550	5.0	34	3.9
Play	85	**20.0**	-	-	19	2.5	72	7.2	7	0.8
Sports	22	5.2	3	0.7	2	0.3	6	0.6	2	0.2
Lie	1	0.2	-	-	9	1.2	-	-	1	0.1
Walk a dog	28	6.6	37	8.6	7	0.9	11	1.1	20	2.3
Domestic tasks	-	-	-	-	69	9.1	105	**10.5**	44	5.1
repair	-	-	6	1.4	4	0.5	9	0.9	5	0.6

Table 3.
Stationary activities per site: Lilong-only activities in red frame. Three most frequent activities per site in bold

The sojourn activities were not only counted but also mapped; also, peculiarities were noted as well. The following figures (37-41) show the stationary activities on a day of the weekend and on a weekday. It needs to be mentioned that the figures are approximations. Although the exact location of any activity was noted, completeness in mapping could not always be ensured during busy hours. However, the maps are beneficial to identify popular spots, general clusters for sojourning, and clusters of certain activities. The maps help to put the activities in context with the built environment. In addition, as further notes were taken, the following paragraphs help to communicate the atmosphere of the five spots in greater detail.

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In Liaoning Road, the presence of groups was striking. Two spots were particularly popular among them: groups either gathered in the entrance area to the lilong – which is a busy area since people need to pass by in order to leave the lilong – or on the opposite site of the street, underneath a sun sail that covered the street space. Moreover, the street was intensely used in the evenings. People preferably sojourn along the line of buildings on the northern side of the street. The southern side of the street, where a wall blocks the riverside, was especially popular for domestic tasks, such as hanging clothes on clotheslines. Furthermore, the washing lines are a good indicator for the time of the day. They were getting more and more crowded during the mornings and were empty again in the evening. As can be seen on the map, the dominant colour is a light blue, meaning that most people use the street space to sit. Generally, Liaoning Road has a distinct atmosphere, where people seem to know each other. One person was observed to carry a chair from far away to a group sitting on the sidewalk to join their talk. Another person stood on the sidewalk while chatting with an old lady sitting inside her house.

On Wuzhou Road, the sojourn activities accumulate on the lilong side of the street. Here, there is a sidewalk and a number of shops, services, and restaurants. The other side of the street is drastically reduced; there is no sidewalk and the adjacent building block is surrounded with high walls, blocking the interior from any outside gaze. The role of this side of the street is best illustrated by the fact that only trash bins are located there. Throwing away trash, which is categorised as *domestic activity*, is one of the few exceptions for which people actually use this side of the street. Commercial activities are common on Wuzhou Road; besides permanent stores there are also mobile street vendors who conduct business there. The category *to sell* further includes sell-related tasks, such as to erect a stall, unpack goods, and arrange them in an appealing manner. Correspondingly, the number of commercial transactions performed on the sidewalk is high; a number of people *buy* goods along the western side of Wuzhou Road. The restaurants fairly naturally appropriate the street space. They prepare vegetables and cook on the street; as for one restaurant, not even the rice cooker is inside the restaurant but stands on the exterior street. All activities conducted by restaurants are subsumed as *to cook*. Correspondingly also the guests of the restaurants dine on the exterior street. Some of the customers *eat* while sitting on the pavement. Most of the shop owners along Wuzhou Road spend parts of their time outside on the street. They do not only sell goods but also *chat* with acquaintances; in this way, commerce- and leisure-related tasks intertwine. Lastly, some street users – some of which are shop owners – spend the entire day on the street. Obviously, they also know each other. This mutual recognition creates a certain village-like ambience. This further affects the atmosphere along the street, and after a couple of visits, evokes the impression of familiarity.

Along Jiaxing Road, both sides of the street are equally crowded. The commercial activities are concentrated in the west and in the middle of the street. This division seems to be mirrored in the location of stationary activities which occur more rarely in the east. Jiaxing Road seems to be the most commercially used site of observation; *to buy* is one of the most popular activities there. Moreover, like on Wuzhou Road, some people are present on the street during the entire course of the day. The atmosphere on Jiaxing Road differs therefore from Tongzhou Road or Pujiang Mingdi, where activities are of rather short duration. Although the same number of restaurants (six) is located on Jiaxing Road and Wuzhou Road, on Jiaxing Road outdoor *cooking* is less prevalent. Nevertheless, in both cases, customers *dine* on the sidewalk. Another activity most likely related to the commercial focus of the street is the habit *to lean* next to the entrance of shops.

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On Tongzhou Road, the busy spot is in the northwest of the street, in front of the stores and the two entrance gates of the gated community. This illustrates how those shops and stores contribute to the viability of the street. One can assume that some of the observed activities occur as a side effect of the services: customers wait in line for their turn or hold commerce-related conversations on the sidewalk, the workforce conducts parts of their work on the street space, for example changing the wheels of cars, and spends some breaks on the street. The workforce is recognisable by its uniform. The southern area on the other site is barely used to sojourn. Some of the people *standing* on the streets actually wait for the school bus to arrive. These are mostly adults who pick up children. Others are employees of the real estate agencies who use the street space to advertise. Furthermore, a number of those *standing* or *sitting* are actually e-bike or rickshaw taxi drivers. People also stop and *chat* with the taxi drivers. Only one old person was observed *sitting* on an apparently private chair for two hours one morning. This is noteworthy as first, on Tongzhou Road, little private furniture is present on the street and second, the users of Tongzhou Road were usually not seen a second time except for the employees of the local businesses.

Within the gated community Pujiang Mingdi, the central square proved to be the hotspot for adults who spend time with their children and other adults who join in for a *chat*. Especially dark blue (*to play*) and red (*to stand* or *to chat*) appear to be the dominating colours in that area. The colour scheme further illustrates that the activities differ according to the specific spot within the gated community. The winding paths around the garden in the north are used differently than the paved open spaces. People either move (*they walk, do sport* or *walk their dog*) or *sit* on the benches along the paths in the garden. Some also interact with selected spaces. The fountain, for example, is used as a scenery for photographs. Apart from that, hardly any extraordinary observations were made.

Generally, the observed street activities are more diverse than the 20 categories are able to communicate: the category *domestic activities* alone – which only occurred in the three lilong streets – includes several different activities, such as brushing teeth, hanging up clothes, washing clothes, washing one´s hands, peeing, throwing out thrash, trimming nails, shaving one´s beard, emptying a chamber pot, and drying one´s hair. There is a further subdivision of the tasks: when hanging clothes for example, some clotheslines are reachable while standing; others are attached to the windows in the upper levels of the buildings. Hence, a tool, such as a wooden bar, is needed to take down the laundry. This shows that the classification of the street activities is already an abstraction of the street usage.

Further activities might have a different meaning according to their location. The activity *to sit* can serve as an example to illustrate this point. Within Pujiang Mingdi, the residents sit on the benches which are designed for that usage. In the lilong streets, on the other hand, no public benches exist. Those who sit do so on their private furniture. Hence, sitting in this context bears a notion of appropriation and adaption of the open space to meet individual needs. Along Tongzhou Road, no benches are available. Here, those who sit are mainly taxi drivers who sit on their e-scooter or rickshaw, waiting for potential customers.

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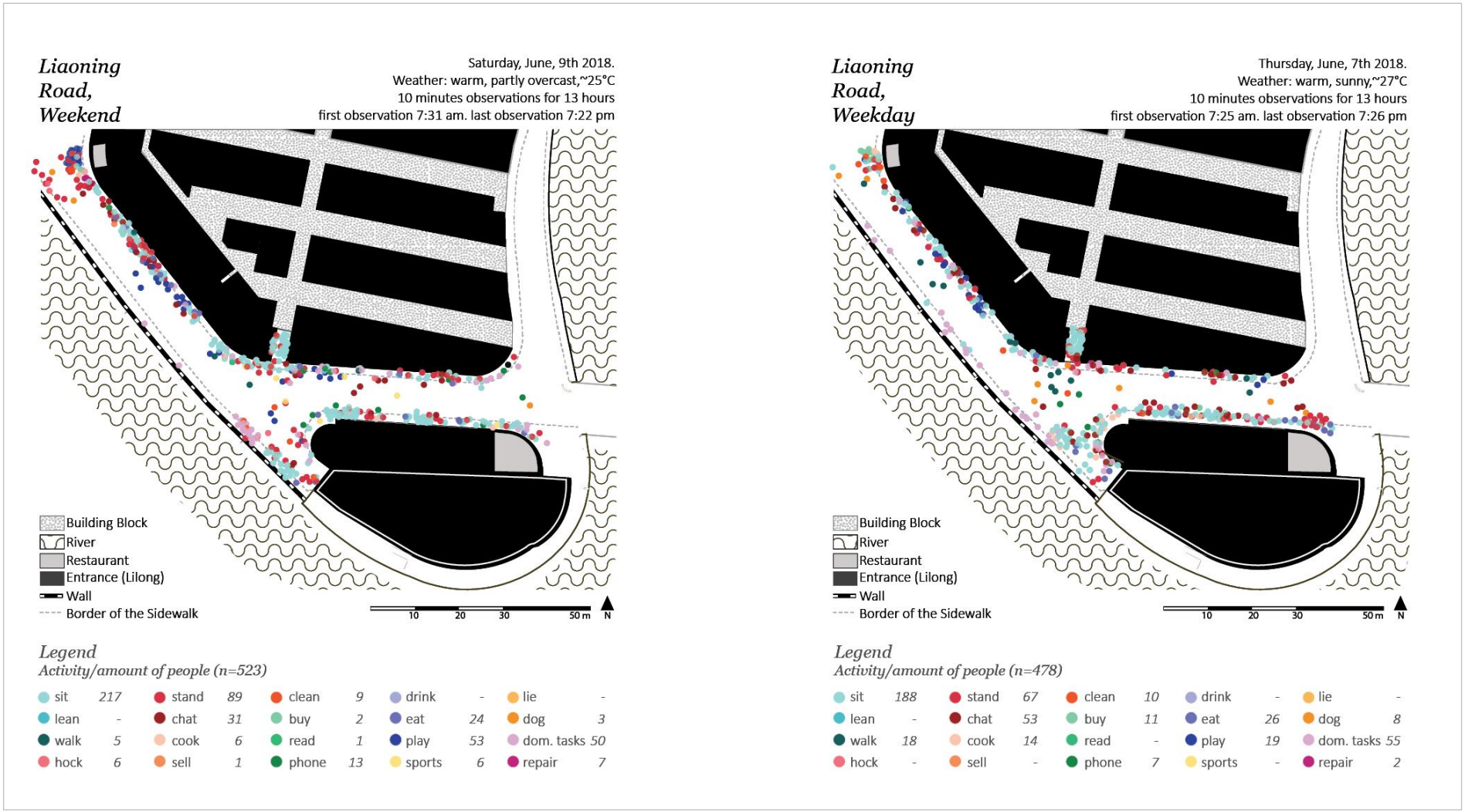

Figure 37.
Liaoning Road, map of stationary activities of pedestrians (weekend and weekday)

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Figure 38.
Wuzhou Road, map of stationary activities of pedestrians (weekend and weekday)

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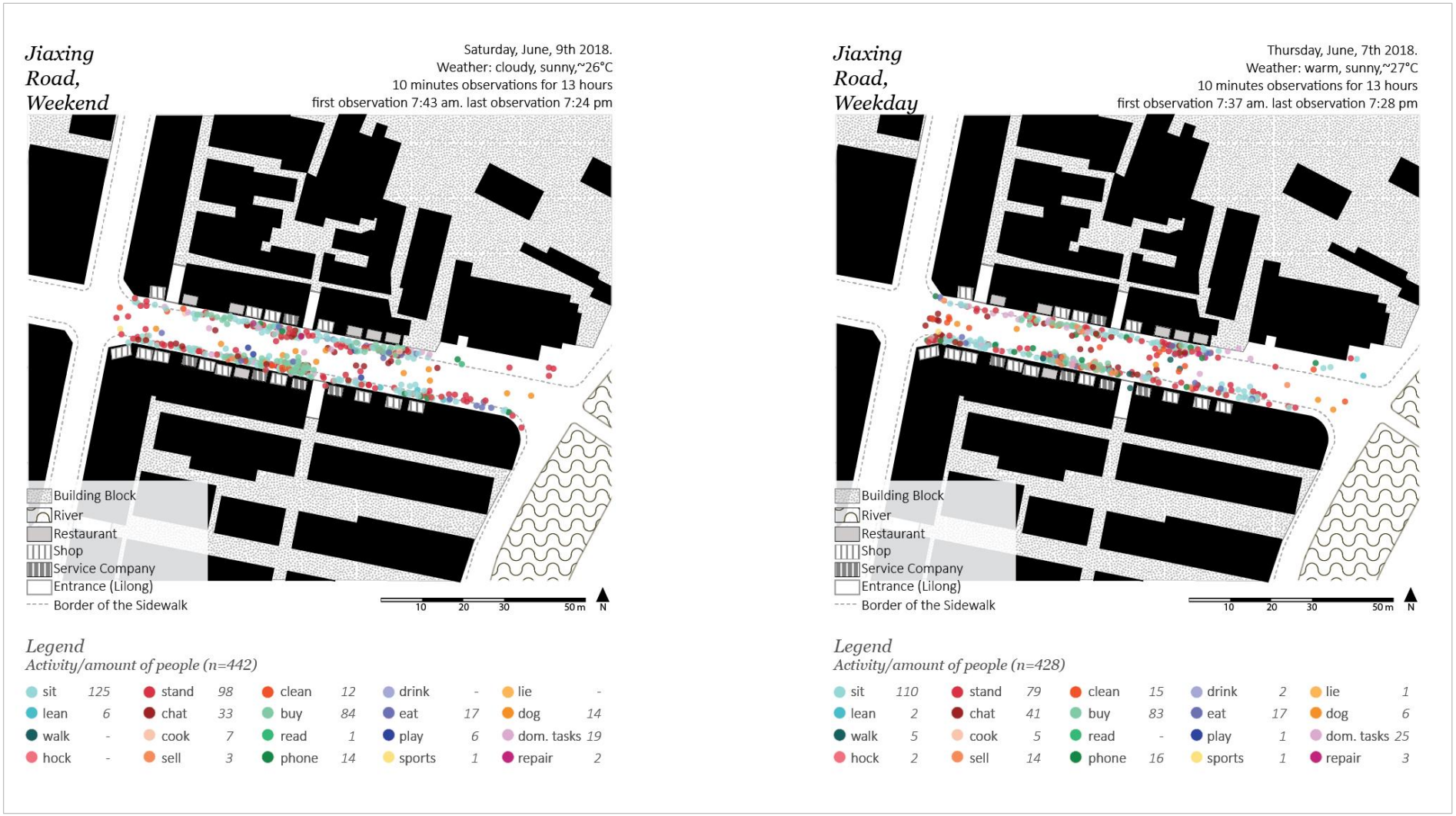

Figure 39.
Jiaxing Road, map of stationary activities of pedestrians (weekend and weekday)

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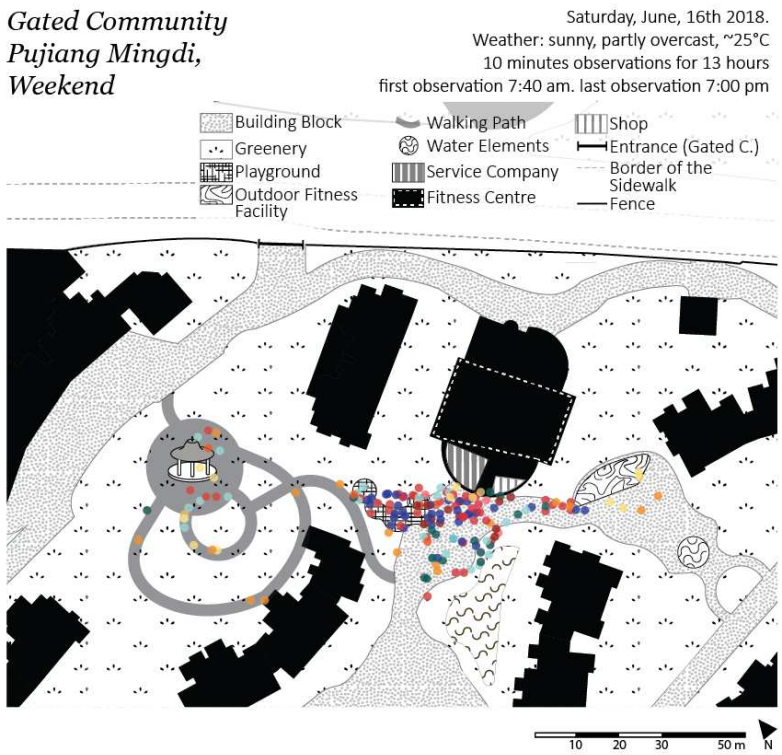
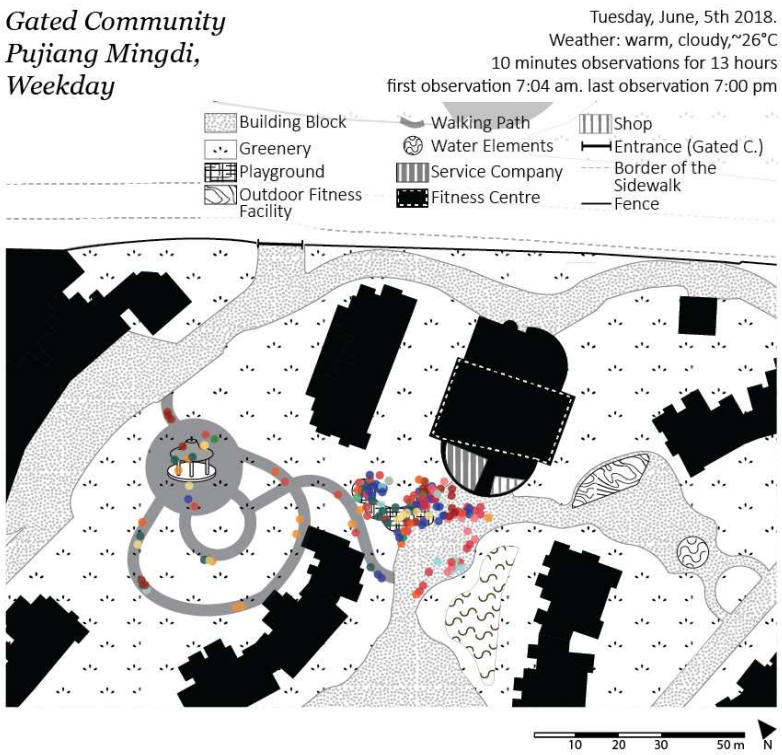


Legend
Activity/amount of people (n=192)

sit	27	stand	51	clean	4	drink	-	lie	1
lean	1	chat	21	buy	-	eat	-	dog	17
walk	15	cook	-	read	-	play	38	dom. tasks	-
hock	3	sell	-	phone	-	sports	14	repair	-



Legend
Activity/amount of people (n=234)

sit	26	stand	53	clean	13	drink	-	lie	-
lean	-	chat	27	buy	-	eat	-	dog	11
walk	29	cook	-	read	1	play	47	dom. tasks	-
hock	15	sell	-	phone	4	sports	8	repair	-

Figure 40.
Pujiang Mingdi, map of stationary activities of pedestrians (weekend and weekday)

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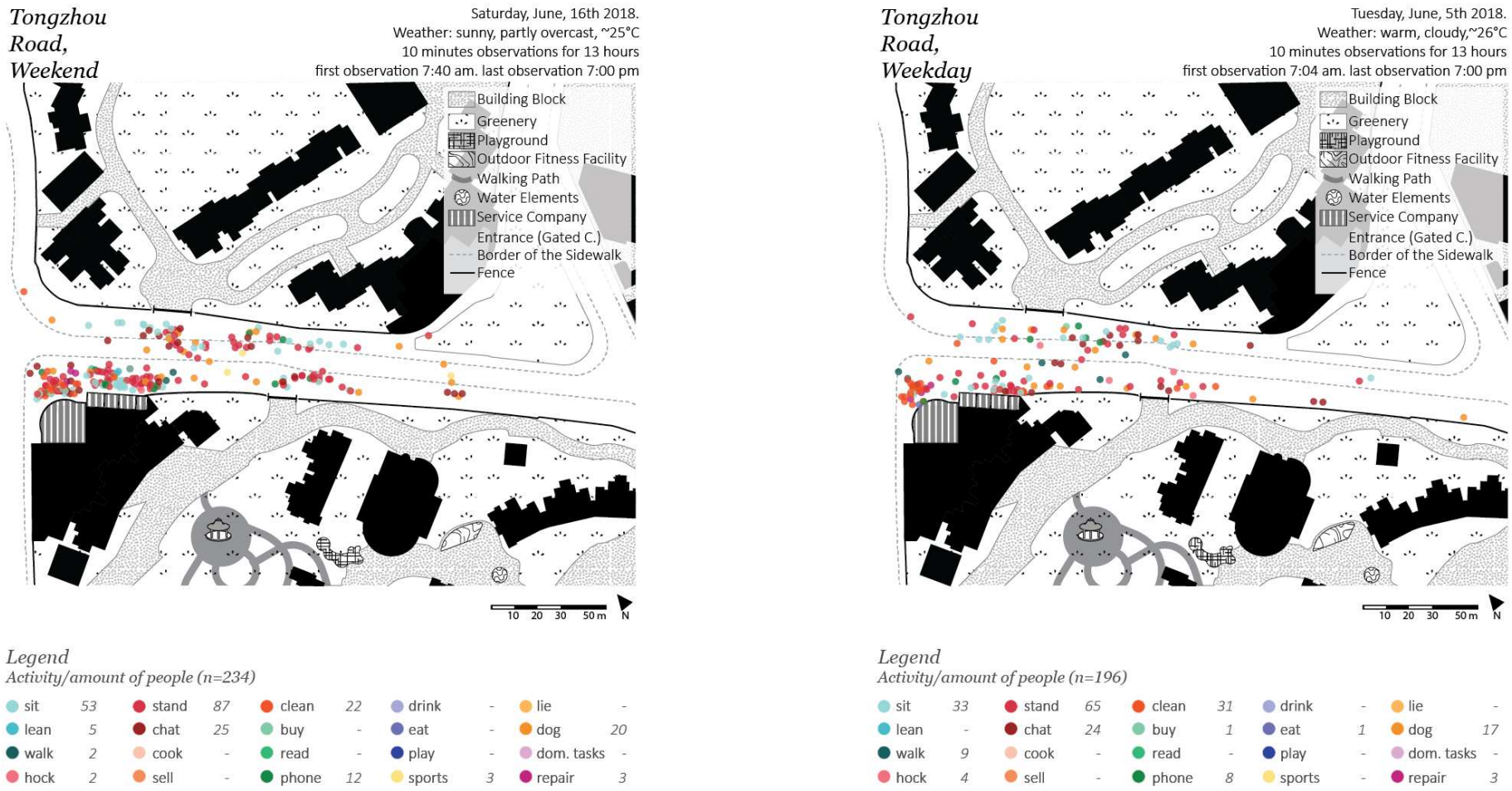
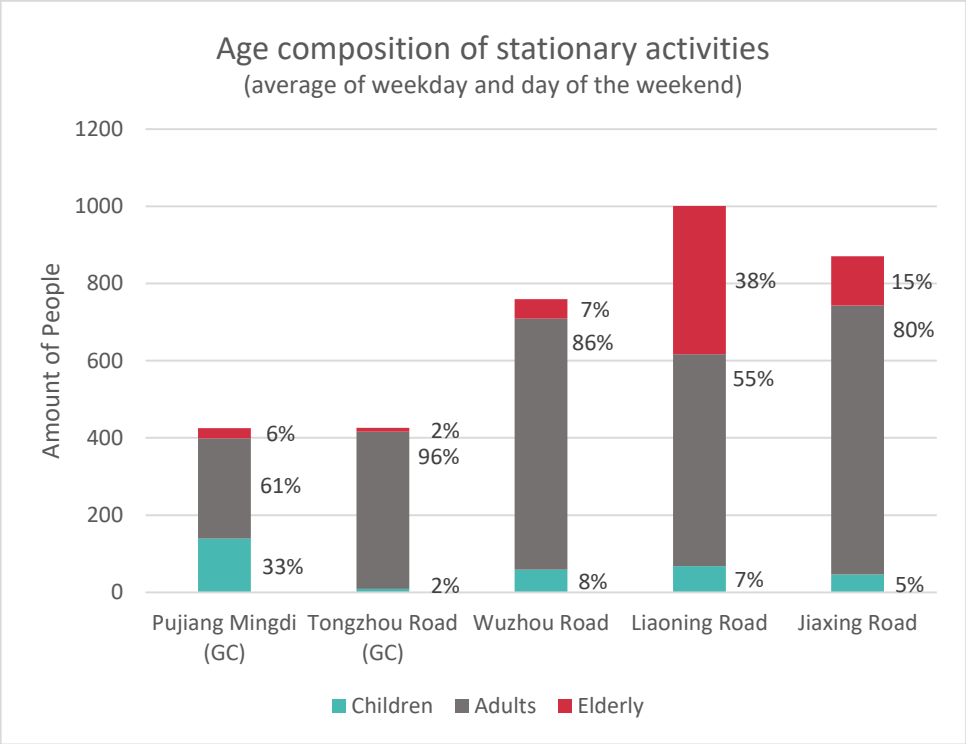


Figure 41.
Tongzhou Road, map of stationary activities of pedestrians (weekend and weekday)

Diversity of users

People sojourning on the streets are further differentiated according to their age (see graph 4). Generally, there is hardly any difference between weekdays and weekend concerning the distribution of the age groups in the given open space. Both in total numbers and in percentage, children are most present within the gated community Pujiang Mingdi. In 2017, 10% of the population of Hongkou were aged 17 or younger (Shanghai Statistical Yearbook, 2018, Chapter 2.6). Comparing the district data with the data of the observation, the young population is clearly overrepresented within the gated community, while it is slightly underrepresented within the lilong streets. Current data on the age distribution of the residents of the single blocks would provide further insights; however, the latest available data dates back to 2010. Comparing Pujiang Mingdi and Tongzhou Road, it seems that children living in gated communities rather use the interior open space of the gated community than the adjacent exterior streets for sojourn activities.



Graph 4. Age composition of stationary activities in the five areas of research (average of the weekday and the day of the weekend)

It is remarkable that especially in Liaoning Road, the share of the elderly is considerably higher than in the other lilong streets, and even six times as high as in Pujiang Mingdi. Assuming that parts of the elderly observed in Liaoning Road live in Ruiqing Lilong, Jiaxing Road would be equally accessible to them. Both streets border with Ruiqing Lilong. Nevertheless, the elderly were particularly present in Liaoning Road. In 2017, 38% of Hongkou residents were older than 60 years (Shanghai Statistical Yearbook, 2018, Chapter 2.6). This age distribution was reflected only in Liaoning Road. Again, current data on the age distribution on the building block level would provide further information. In the other four sites of observation, elderly perform fewer to almost no stationary activities. Tongzhou Road shows little diversity of users; only 2% of the users are elderly and only 2% are children.

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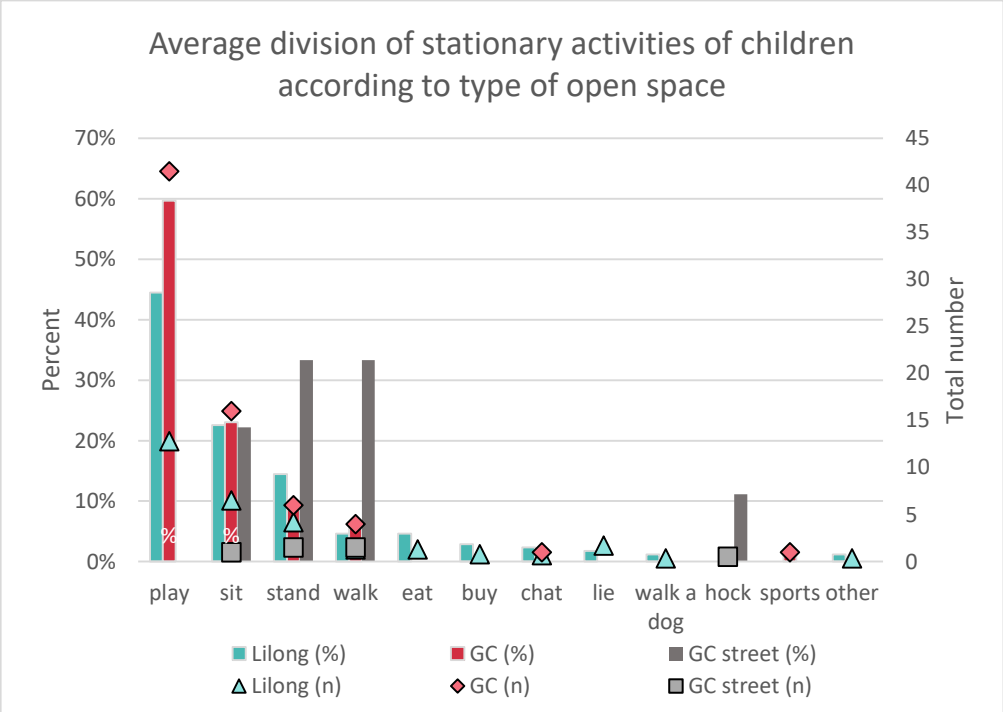
In this context, it is worth mentioning that according to the design of the pedestrian observation, a single person can be counted multiple times. If somebody spends most of the day sitting in front of one's home, this person is counted in every counting section anew. In the most extreme case, a person could be counted 13 times a day. Hence, the distribution of age groups does not necessarily refer to different individuals, but rather shows the dominance of an age group in a certain space.

The three age groups are examined in detail in the following paragraphs. In order to ensure readability and to allow conclusions for each type of open space, the three lilong streets are classified in the superordinate category *lilong*. Therefore, the average of the counts in each open space was calculated. In Pujiang Mingdi and Tongzhou Road, the average of two counting sessions was calculated, whereas for the new category *lilong*, the average of three street sections, on each of which two counts were made, was calculated. Thus, comparability is given.

Children were altogether observed to engage in 14 different stationary activities: *sit, hock, stand, walk, chat, buy, phone, eat, play, sports, lie, walk a dog* and *domestic activities* – almost half of which were only observed in the lilong streets. Graph 5 shows both the total number of children engaging in an activity (symbol) and the proportional share of that given activity (bar) for the respective site of observation. *Playing* represents half of all the activities done by children in open spaces. In the lilong streets, the most diverse activities are observed. Hardly any children are present on the access road to the gated community, Tongzhou Road, and if they are, they only pursue static activities (*to stand, to walk* or *to hock*). Apart from Tongzhou Road, children are more present in the open spaces on a day of the weekend – the increase ranges from +0.6% in Wuzhou Road to +5% within Pujiang Mingdi. Assuming that children have more spare time on the weekends, Tongzhou Road seems to be the only place that is not attractive enough to be used.



Graph 5. Average division of stationary activities of children according to type of space (in percent and in total)

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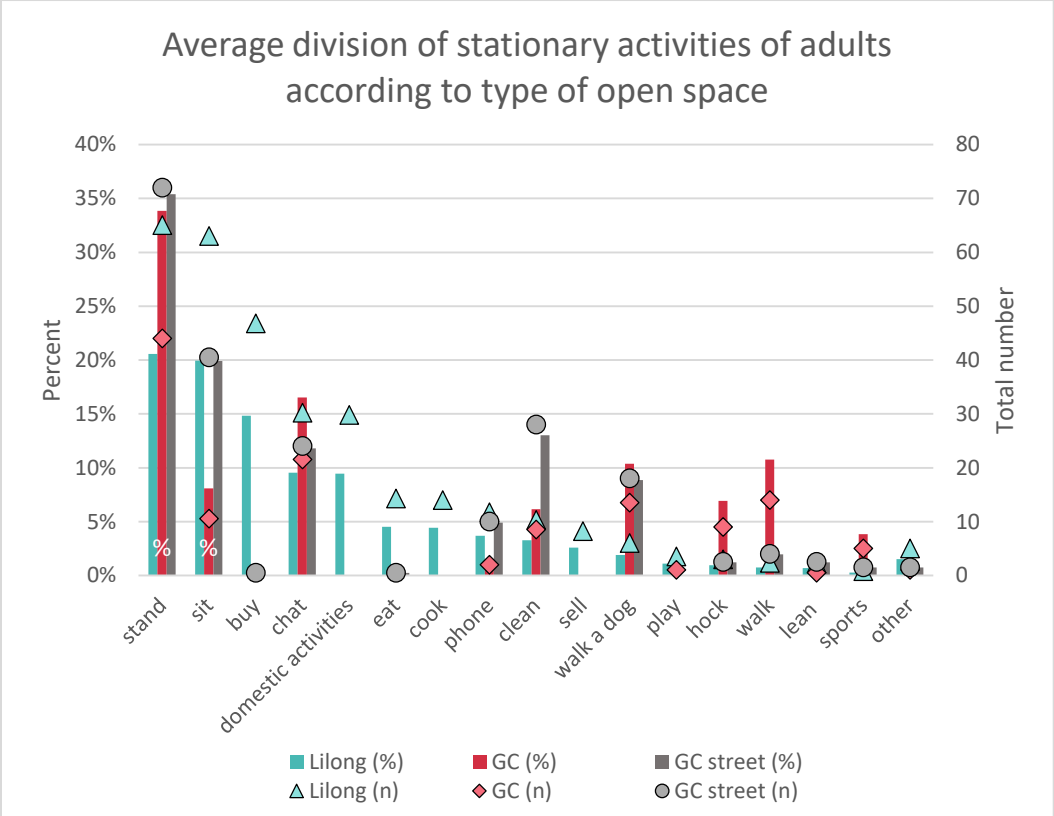
Adults engage in all stationary activities except for *singing* and *dancing*; as for this group, in total 20 different activities were counted. The activities were not equally performed in all three sites: 20 different activities were counted in the lilong streets, whereas in the gated community it was 13 activities, and on Tongzhou Road it was 12. Graph 6 follows the logic of the previous graph and shows the total number and the percentage share of people engaging in a certain activity in the respective site of research.

Most of the observed stationary activities of this age group are performed in the lilong streets (316 stationary activities on average per day), followed by Tongzhou Road (206/day), and Pujiang Mingdi (131/day). It is also striking that, similar to the division among children, activities such as *to buy,* or *to eat* are only prevalent in the lilong streets, as are *to cook*, *to sell* goods, and *to perform domestic activities*. Within lilong streets, the activities are more evenly distributed among different categories. In both Pujiang Mingdi and Tongzhou Road, the share of the most popular activity (*to stand*) represents a third of the overall activities, making it by far the most dominant activity.



Graph 6. Average division of stationary activities of adults according to type of space (in percent and in total)

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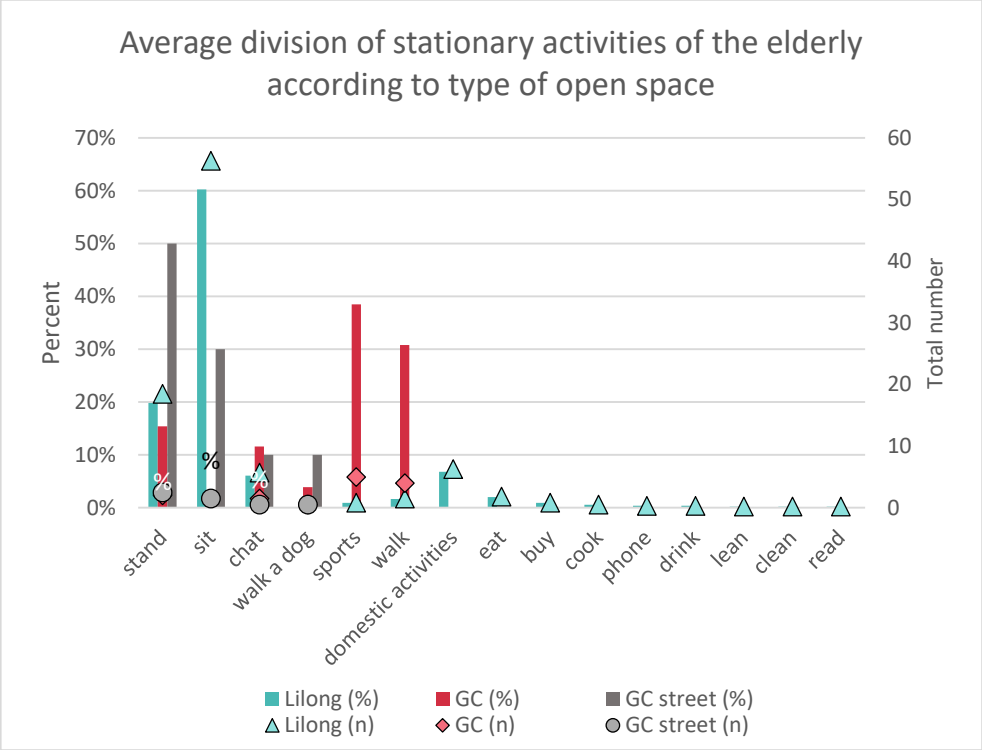
The vast majority of the elderly pursues stationary activities in lilong streets. The highest diversity of activities was recorded there. About half of the activities listed in the graph below (7) were only observed in the lilong streets – those sojourn activities were conducted only rarely, however. Nevertheless, the results illustrate that there are clearly dominating activities: the main pursuits in the lilong are *to sit, to stand, to do domestic tasks* and *to chat*. In comparison to that, elderly of the gated community pursue activities mainly related to movement: they engage in *sports* and in *walking*. As a matter of fact, the open spaces within Pujiang Mingdi are well designed for such activities. There is a fitness court for adults and a hierarchy of different paths around the gardens, some of which are free of motorised transport. Tongzhou Road, the access road to the gated community, is hardly used by the elderly. As for the daily average, only five elderly persons were observed performing stationary activities there.



Graph 7.
Average division of stationary activities of the elderly according to type of space (in percent and in total)

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Recapitulation

Lilong. The ratio of pedestrian flow and stationary activities in lilong streets ranges from almost 1:1 to 1:0.6. Hence, a considerable amount of people also sojourn on these streets. Just as for the other sites of observation, there is little variation between weekdays and days of the weekend. The distribution of the pedestrian flow during the course of the day is rather evenly, with three minor peaks around 9 am, noon, and 5 pm. Similarly, stationary activities are distributed evenly during the course of the day, with a small peak around 9 am, and another one after dinner, around 6 pm.

Lilong streets are steadily used during the entire day. The general usage is more intense than in the gated community or on Tongzhou Road. According to the counting, the usage of streets is more diverse in lilong streets and more evenly distributed. 17 to 20 different activities were observed there. On an average day, twice as many stationary activities are performed on the lilong streets. Furthermore, this pattern is true for all three user groups; young inhabitants, adults, and the elderly. Their usage of space is most diverse in the streets of lilongs. Certain activities are only observable here: *to cook, to sell, to drink* and *to perform domestic tasks.* Lilong streets seem to be highly popular among the elderly; however, they were hardly observed sojourning within the gated community, nor on its access road.

Despite the proximity of the single lilong streets, they still seem to vary. For example, Liaoning Road is most popular among the elderly. Jiaxing Road has the highest share of commercial activities. And Wuzhou Road, located between a gated community and a lilong, is still typical of various activities related to lilong life: *cooking, eating*, and *performing domestic tasks*.

Gated Community. The central area of the gated community of Pujiang Mingdi is an exclusively accessible, interior realm. It is shielded from the public through gates, fences, and guards, and therefore, is mainly used by those who live there. The total number of observed people is considerably lower than on the lilong streets (400 persons a day on the average), but the ratio between pedestrian flow and stationary activities is almost equal; on weekdays, stationary activities even slightly outnumber the pedestrian flow. As already mentioned, this dispersion might be due to the site of observation in Pujiang Mingdi. Here, places with a higher quality to sojourn were selected. As already argued, the research interest is not necessarily the ratio between pedestrian stay and stationary activities but the diversity of activities.

During the course of the day, little fluctuation is observable in the pedestrian flow. The curve indicates busier hours around 8 am and after 6 pm. Nevertheless, those peaks are not significant. When examining popular hours to sojourn in the open spaces of Pujiang Mingdi, more fluctuation becomes evident. The open spaces are particularly intensely used around 10 pm and followed by a less intense, but still noteworthy second peak after 4 pm.

13 different activities in total were observed in the open space of Pujiang Mingdi; the share of four of them is less than 1%, however. Hence, the space is utilised, but certain activities prevail in terms of usage. The three most popular activities (*to stand, to play* and *to sit*) comprise almost 60% of the overall usage. Especially children intensely use the open space of the gated community. For this group, the most popular and most intensely used space is the interior space of the gated community. More than two thirds of the overall counted children were observed within the gated community. Overall, *to play* is the second most frequent stationary activity in Pujiang Mingdi with a share of 20%; only *to stand* (24%) is more popular.

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Only 6% of the observed people in Pujiang Mingdi are elderly. This came as a surprise, since according to the data for the entire district Hongkou in 2017, 38% of Hongkou residents were older than 60 years (Shanghai Statistical Yearbook, 2018, Chapter 2.6). This distribution of age is not reflected in the sojourn activities in the open space. The district-wide share of children in 2017 is 10% of the overall population (Shanghai Statistical Yearbook, 2018, Chapter 2.6). It seems that children are overrepresented in the open space of Pujiang Mingdi, whereas the elderly are underrepresented.

Gated Community Access Road. The pedestrian count on Tongzhou Road, one of the access roads to Pujiang Mingdi, highlights a clear focus on transit. The ratio between pedestrian flow and sojourn activities is around 4.5:1. Hence, one in five pedestrians uses the street to sojourn – the number of people using the street for vehicle movement is not included in the counting. This dispersion of pedestrian flow and stationary activities is by far the most extreme distribution among all sites of observation.

During the course of the day, the pedestrian flow on Tongzhou Road resembles regular working hours; the peaks of pedestrian flow are around 8 am and after 4 pm. During peak hours, within the 10 minutes counting sessions, almost 100 people were observed passing through the street. The stationary activities are evenly distributed during the course of the day, without any peaks. The sojourn activities on Tongzhou Road are less diverse than in the lilong streets: altogether, 13 different activities were observed, six of which have a share of less than 1.5%. Hence, there is a strong dominance of certain activities, which further cluster around the entrance gate of the gated communities and the services located in the north of the street. Moreover, as could be identified in the counts, there are small motor-taxis waiting in front of the entrance gate of Pujiang Mingdi, the drivers of which are most likely waiting for potential customers. The second accumulation of people, some of which are workforce, is apparent in front of the stores north of the street.

Elderly and children almost do not use Tongzhou Road for stationary activities at all. Only 2% of each groups were observed using the street to sojourn. In the case of the young population, the share of 2% is especially low when compared to their share of users inside Pujiang Mingdi (33%). Tongzhou Road is just a few meters further away but considerably less attractive to be used by this specific age group. The dominant group for activities in Tongzhou Road is adults.

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5.4 Result of the questionnaire: the locals' position to open spaces

A quantitative questionnaire was used to gain insights into the residents' position towards the streets and regarding their usage, their preferences, and their relation to the given streets. The questionnaire was distributed on four sites: the three lilong streets (Jiaxing Road, Liaoning Road, and Wuzhou Road) and within the gated community of Pujiang Mingdi. The interviewees were differentiated according to their place of residence and divided into two groups: lilong residents, n=52, and gated community residents, n=116. The two comparison groups were presented an almost identical questionnaire, as the intention was to identify possible differences with regards to the two types of housing (see 9.1 and 9.2).

As for the pedestrian observation, anyone present on the streets was included in the counting. The questionnaire, however, was distributed among adults and elderly, but not given out to children. Hence, the viewpoints of the younger residents are hardly represented in the results of this survey. Every now and then, their interests are indirectly included, for example when parents selected *to spend time with ones kids* as an important activity in open spaces, or *facilities for children (playground, etc.)* as an important factor for them to use exterior streets.

Demography

As a first approach towards the questionnaire, the demographic details are presented. The following table 4 lists the socio-demographic data of the interviewees as a whole and their division in the two groups of interest: lilong and gated community residents. The aspects in which the two groups significantly differ are highlighted in red. The single attributes are discussed in detail in the following sections (Own questionnaire 2018, question 10-13).

Attributes	Classification	Place of residence					
		Total		Lilong		Gated Community	
		n	%	n	%	n	%
Sex	Male	70	44.9 %	27	62.8 %	43	38.0 %
	Female	86	55.1 %	16	37.2 %	70	62.0 %
Monthly income (in RMB)	<2000	9	6.0 %	6	14.3 %	3	2.8 %
	2001-4000	24	16.0 %	17	40.5 %	7	6.5 %
	4001-8000	54	36.0 %	18	42.9 %	36	33.3 %
	>8001	63	42.0 %	1	2.4 %	62	57.4 %
Age	<20	7	4.6 %	0	0 %	7	6.3 %
	21-40	79	52 %	13	31.7 %	66	59.5 %
	41-60	41	27 %	13	31.7 %	28	25.2 %
	>61	25	16.4 %	15	36.6 %	10	9.0 %
Household members	1	4	2.6 %	2	5.0 %	2	1.8 %
	2	37	24.5 %	11	27.5 %	26	23.4 %
	3	57	37.7 %	18	45.0 %	39	35.1 %
	4	24	15.9 %	3	7.5 %	21	18.9 %
	5	20	13.2 %	4	10.0 %	16	14.4 %
	6	8	5.3 %	2	5.0 %	6	5.4 %
	8	1	0.7 %	0	0 %	1	0.9 %
Numbers of children in household	0	67	48.9 %	28	73.7 %	39	39.4 %
	1	48	35.0 %	7	18.4 %	41	41.4 %
	2	21	15.3 %	2	5.3 %	19	19.2 %
	3	1	0.7 %	1	2.6 %	0	0 %

Table 4. Socio-demographic data of the interviewees (June 2018)

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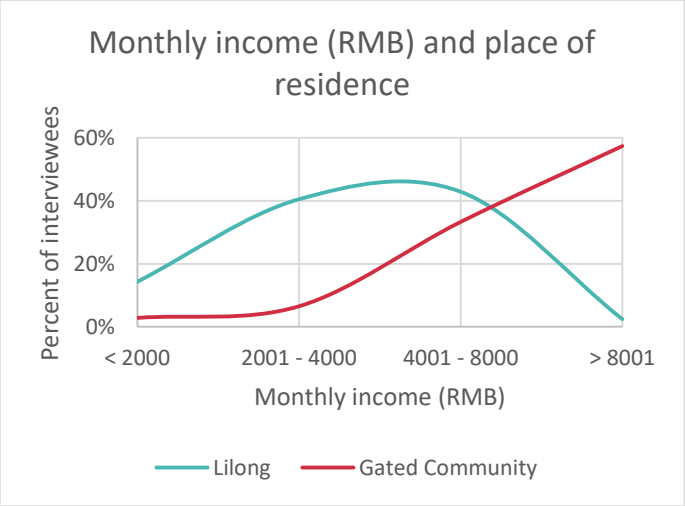
Sex

Altogether, slightly more women were interviewed (55%) than men (45%). As for the selection procedure of potential interviewees, anyone present in the open space within the gated community or on the public streets of the lilong was asked to participate in the survey. The division of sex differs notably between the gated community and the lilong streets. In the lilong, 37% of the interviewees are female, 63% male; in the gated community, the numbers are almost the exact opposite: the male participants account for 38%, the female for 62%. In the lilong, the male-female ratio is 2:1, and in the gated community it is 1:2. There is a significant association between place of residence and sex (Chi^2 after Pearson: 0.006); the strength of the association is medium with a Phi-value of 0.222 (see appendix 9.4.1) for the corresponding tables and chapter 1.5 for a general explanation on Fisher's exact test).

Monthly income (in RMB)[43]



Graph 8.
Monthly income (RMB) of the survey participants according to place of residence

Graph 8 clearly illustrates the difference in income level between the two groups. For comparison, the average disposable income in Shanghai in 2017 was around 59,000 RMB, which is 4,900 RMB/month (Shanghai Statistical Yearbook 2018, Chapter 10.5). According to Fisher's exact test, there is a significant association ($p<0.000$) between the level of income and the place of residence. The association is high, which is represented by a factor of 0.58 in Cramer's V. Especially in the upper income group (>8001 RMB), the standardized residuals are telling. As for the gated community residents, they indicate a strong positive effect ($z = 2.5$), whereas for lilong residents, the standardised residuals in the upper income group are $z = -4.0$, stating an even stronger negative effect. This means that significantly fewer lilong residents earn more than 8000 RMB/month than an equal distribution would suggest. The outcome supports the assumption that there is a severe difference in financial resources of lilong and gated community residents. The significant association between place of residence and income is mainly driven by the upper income group; gated community residents are considerably wealthier than lilong residents (see appendix 9.4.2 for the contributing tables).

[43] By the end of May 2018, the exchange rate was 1 EUR – 7.5 CNY (European Central Bank 2018), meaning that the division is roughly around <267 EUR. 267 – 534 EUR. 534 – 1143 EUR. >1143 EUR. The breaks where chosen to be applicable for both lilong and gated community residents.

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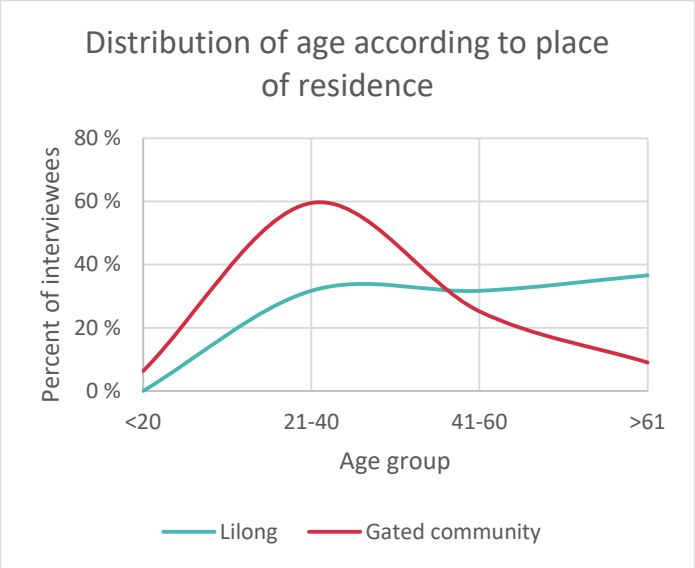
Age

The distribution of age according to the place of residence differs the most in the last age group (see graph 9): the interviewed residents of the lilongs are significantly older than residents of the gated community. According to Fisher's exact test, the relation is significant (p<0.000), and Cramer's V further states a medium association (0.38). The standardised residuals show that the number of lilong residents older than 61 years is higher than a normal distribution would allow (z = 3.2). This factor is the main driver for the different outcomes concerning the two groups (see appendix 9.4.3 for the contributing tables).



Graph 9.
Distribution of age of the survey participants according to place of residence

In this context, the distribution mode of the questionnaire has to be mentioned again. People who passed through or sojourned in the open spaces were asked to participate in the survey; hence, the data does not necessarily mean that lilong residents in the selected areas are older on average than residents of the gated community. Elderly people might simply spend more time outside in the lilongs than people of the same age group in gated communities. Likewise, the pedestrian observation reveals a higher presence of elderly in the lilong streets. In both cases, a stronger presence of the elderly in lilong streets can be deduced. Whether this is due to a general higher share of elderly people among the residents of the building block or the preference of elderly lilong residents to spend their time outside is unknown.

As already mentioned, no children were asked to participate in the survey. Hence, only 5% of the interviewees belong to the age group of 20 years or younger. It can be assumed that they belong to the top end of that age group.

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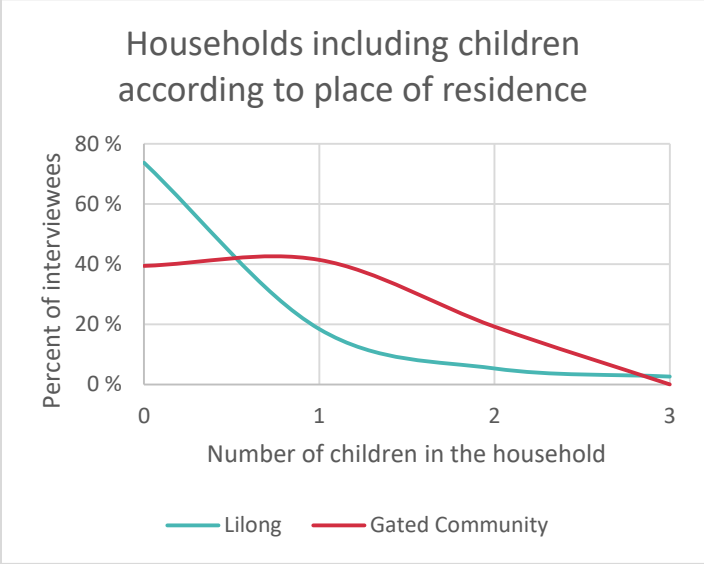
Household: size and children

There is no statistical association between household size and type of dwelling. This is surprising, as lilong flats are generally more densely populated according to literature (see chapter 4.1). The results of the survey are shown in graph 10.

According to Fisher's exact test, there is a significant relationship ($p<0.000$) between the place of residence and whether the household includes children (aged 18 or younger). The association is medium (Cramer's V 0.35). The households of the interviewed lilong residents contain significantly fewer children. In three quarters of the cases, the interviewed lilong household does not include children. This significantly contributes to the overall statistics, as is seen in the z-value of the standardised residuals ($z = 2.2$). More than 60% of the households in gated communities include children, whereas only a quarter of the lilong households does so (see chapter 9.4.4 for the table).



Graph 10.
Households with children according to place of residence

An association between the low number of children in lilong households and the age distribution – the interviewed lilong residents are older on average than gated community residents – was tested but could not be verified through statistical analysis.

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General attitude towards open spaces

The socio-demographic analysis serves as the basis for the evaluation of the questionnaire. It gives a rough idea about general characteristics of the residents and illustrates that the interviewed residents of the gated communities and the lilongs differ in certain aspects. The following paragraphs outline the analysis of the statements of the interviewees concerning open spaces.

As a first step, the ratio of leisure time spent outside and inside a building is examined (Own questionnaire 2018, question 2). A range of the possible answers can be made on a scale from 1 – 5 (*mostly inside a building, rather inside a building, balanced, rather outside, mostly outside)*. Fisher's exact test shows a significant association between the two comparison groups (lilong and gated community residents) and their selected place to spend their leisure time. Hence, the null hypothesis of the two variables being independent needs to be rejected. There is a significant difference between the two groups; the association is medium (Cramer's V 0.36); this value is highly significant ($p<0.000$). The standardised residual further indicates the precise association that lilong residents rather choose to spend their leisure time inside. Significantly more lilong residents spend their time *mostly inside a building* ($z = 2.4$, significant at $p<0.05$), and moreover, significantly fewer of them keep a *balance* between spending time outside and inside ($z = -2.8$, significant at $p < 0.01$). The association between type of residence and the ratio where leisure time is spent is mainly driven by those two aspects. Both comparison groups have a general tendency to spend their leisure time inside a building. However, in the case of lilong residents, there is significantly less tendency towards the central category (*balanced*) and a stronger affection for indoor space (see chapter 9.4.5 for the complete tables). Noteworthy, *inside a building,* does not necessarily mean inside one's home.

Moreover, the two resident groups were asked whether they use the most directly accessible open space, which means the open space closest to their home (Own questionnaire 2018, question 3). As for the lilongs, the most immediate open spaces are streets within and around the residents´ neighbourhood. As for the gated community, it is the exclusive open space within the borders of the neighbourhood. Fisher's exact test shows a significant association ($p<0.05$), meaning that the two aspects (type of residence and usage of the most directly accessible open space) are not independent. The strength of the association is rather low, however. (Cramer's V 0.183), the standardised residuals do not reveal any noticeable connection between the two variables. Nevertheless, almost 75% of the gated community residents use the immediately accessible open space, whereas roughly only every second lilong resident does so (see chapter 9.4.6). To sum up, gated community residents do not only keep a more balanced relationship between leisure time spent inside buildings and in open spaces, they also make a significantly greater use of the most directly accessible open spaces.

In the case of the lilong residents, greater emphasis is put on their direct living environment (Own questionnaire 2018, question 4, Lilong version). The interviewees were to decide whether they preferred *spaces inside one's home* or *in the neighbourhood streets*. The result is rather balanced, only slightly in favour of *the neighbouring streets*. According to this, the interviewed lilong residents prefer indoor spaces, not necessarily their own home, however. Only the lilong residents were presented this question. Hence, no comparison with the gated community residents can be made and no potential significance can be determined.

Instead, the gated community residents were asked about their preferences regarding open space and were to decide between *open space inside their community* and *open space in the neighbouring streets*. 80% of the interviewees clearly prefer the *open spaces inside their compound* (Own questionnaire 2018, question 4, Gated community version, appendix 9.2).

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Activities in the open space

As already stated, gated community residents make a significantly greater use of their most directly accessible open spaces. A follow-up question addresses the type of usage of these open spaces (Own questionnaire 2018, question 3.2). As for the lilong residents, the space in question are streets; as for the gated community residents, it is the interior open spaces within their community. The questionnaire presented the interviewees a range of activities that are likely to happen in both living environments; multiple answers were possible, as were own additions. For the analysis, the share of interviewees who stated a certain activity was used (column *% of interviewees*), not the share of a single category of the total answers (column *% of total responses*) – as the possibility of giving multiple answers would be redundant in that case.

The overall aim is to ensure comparability of the answers of the lilong and the gated community residents. Therefore, both comparison groups were presented the same selection of potential street activities; the listed street activities were chosen by their likelihood of occurrence in both areas. The disparity in the stated activities is smaller than in the observation. Differences and preferences are nevertheless indicated. The analysis (multiple response set, Chi² after Pearson) revealed those activities, in which the answers differed most between the lilong and gated community residents. The number of expected counts in the single cells is too small; hence, no significance can be deducted. Nevertheless, a degree of variation between the two groups becomes apparent – if this variation is by chance, or if it is significant to the place of residence, is uncertain though. In the following table 5, the activities that deviate most from the comparison group are highlighted by a red frame.

		Place of residence					
		Gated Community			Lilong		
		Count	% of interviewees (base: count)	% of total responses (base: responses)	Count	% of interviewees (base: count)	% of total responses (base: responses)
Activities performed in the open space (multiple answers allowed)	Sport	36	**34.3%**	16.2%	10	**22.7%**	11.1%
	Outdoor fitness facilities	18	17.1%	8.1%	2	4.5%	2.2%
	Playground	6	5.7%	2.7%	2	4.5%	2.2%
	Walk the Dog	18	17.1%	8.1%	2	4.5%	2.2%
	Other	3	2.9%	1.4%	5	11.4%	5.6%
	Meet friends	18	17.1%	8.1%	10	**22.7%**	11.1%
	Sit outside	14	13.3%	6.3%	11	**25.0%**	12.2%
	Go for a Walk	67	**63.8%**	30.2%	24	**54.5%**	26.7%
	Eat	5	4.8%	2.3%	2	4.5%	2.2%
	Watch other people	3	2.9%	1.4%	6	13.6%	6.7%
	Domestic Tasks	0	0%	0.0%	7	15.9%	7.8%
	Spend time with kids	34	**32.4%**	15.3%	6	13.6%	6.7%
	Drink	0	0%	0%	3	6.8%	3.3%

Table 5.
Activities performed in the directly accessible open space according to place of residence.
As multiple answers were allowed, both the share of interviewees who stated the single category and the share of the single category of the total answers is stated. The three most common answers are bold, noteworthy differences between the comparison groups are framed in red.

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The two activities *domestic tasks* and *to drink*, for example, occur only in the lilong streets – this result coincides with the pedestrian observation. Furthermore, within the gated community, the most popular activities are *to walk (64%), to do sport (34%), to spend time with the kids (33%), to use outdoor fitness facilities, walk the dog* and *meet friends (17% each).* Those activities are mainly related to fitness, recreation, and socialising, all of which can be subsumed under the category *leisure-related activities*. In the lilong, the most common activities among the interviewees are *to walk (55%), to sit (25%), to do sport* and *to meet friends (23% each)*, and *to fulfil domestic tasks (16%).* Here, a slightly more diverse field of activities becomes evident. Again, a relation to fitness and to socialising is shown but also to housework and to an activity, namely *to sit,* that is difficult to classify as the underlying motifs are unknown.

One outstanding activity for lilong residents in the open space is *to watch other people*; they further engage in *other activities*, which mostly are not further specified. The gated community residents use the open spaces more often to *spend time with their children*, *walk their dog* and *use the outdoor facilities*. Furthermore, they do not use the open space *to perform domestic tasks* nor *to drink.* Lilong residents, on the other hand, put little emphasis on playgrounds or outdoor fitness facilities as there are hardly any facilities in their direct living environment. The related tables can be found in chapter 9.4.7.

In Wuzhou Road, two interviewees even added handwritten complaints on the questionnaire, deploring the *lack of drying facilities,* such as clotheslines on the specific street space. Two further interviewees in Wuzhou Road noted that *there is no public space nearby* (Own questionnaire 2018, question 3.2).

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Demands and requirements regarding the usage of exterior streets

As for their usage of exterior street spaces, people consider different aspects as important. Some aspects seem to be universally important, regardless of the place of residence. One of those is *the proximity to home* and factors contributing to a pleasant ambience, such as *greenery* or a *calm atmosphere*. In both comparison groups *proximity to home* is ranked highest, and therefore, the most crucial factor for the usage or non-usage of street spaces. The demands towards public streets, however, vary according to the place of residence (Own questionnaire 2018, question 8). Here also, multiple answers were allowed. The share of the interviewees was used for the analysis (column *% of interviewees*), not the share of the single category of the total responses (column *% of total responses)*.

The results of the multiple response set are significant (Chi² test after Pearson, $p<0.05$); therefore, a significant association between the importance attached to a certain characteristic of public streets and the place of residence has been discovered. Besides concordances, there are cases in which the preferences of lilong and gated community residents differ significantly – the respective aspects are highlighted in the table below (table 6). For lilong residents, both passive social engagement *(high frequency of people)* and active engagement *(interactions with other people)* are significantly more important, as is the *availability of public toilets*. Gated community residents, on the other hand, attach significantly greater importance to the *safety* of the exterior street (ensured by equipment such as sidewalks) and the availability of *facilities for kids.* The detailed tables are in the appendix 9.4.8.

		Place of residence					
		Gated Community			Lilong		
		Count	% of interviewees (base: count)	% of total responses (base: responses)	Count	% of interviewees (base: count)	% of total responses (base: responses)
Important factors for the usage of exterior streets (multiple answers)	Safety	66	**57,4%**	15,3%	15	30,6%	9,5%
	Sitting	19	16,5%	4,4%	7	14,3%	4,4%
	Shops/Services	34	29,6%	7,9%	16	**32,7%**	10,1%
	Greenery	66	**57,4%**	15,3%	22	**44,9%**	13,9%
	Diverse street space	18	15,7%	4,2%	6	12,2%	3,8%
	Open space for activities	44	38,3%	10,2%	14	28,6%	8,9%
	Other	0	0,0%	0,0%	0	0,0%	0,0%
	Proximity to home	72	**62,6%**	16,7%	26	**53,1%**	16,5%
	Calm atmosphere	54	47,0%	12,5%	16	**32,7%**	10,1%
	High frequency of people	9	7,8%	2,1%	10	20,4%	6,3%
	Interaction with other people	10	8,7%	2,3%	11	22,4%	7,0%
	Facilities for kids	30	26,1%	6,9%	5	10,2%	3,2%
	Public Toilets	10	8,7%	2,3%	10	20,4%	6,3%

Table 6.
Important factors for the usage of exterior streets according to the place of residence.
As multiple answers were allowed, both the share of interviewees who stated the single category and the share of the single category of the total answers is stated. The three most common answers are bold, significant differences between the comparison groups are framed in red

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Residents' relation to the adjacent streets

According to the residents' relation towards the street space (Own questionnaire 2018, question 7), the two versions of the questionnaire differ. The lilong residents were asked about their relation towards the exact street space where they received the questionnaire (either Wuzhou Road, Liaoning Road or Jiaxing Road). The residents of the gated community were presented a simple graphic of their compound and were asked about their relation to the four surrounding street spaces. In both cases the interviewees were to rate their relation to the street space from 1 to 5 (see table 7). This classification is gradual, meaning that the classification builds upon itself. A higher phase means the phases below are met as well. If a street is associated with *joy*, it is also associated with *transit, safety* and *comfort*. Obviously, this is a simplification, but it still provides an insight in the residents' relation to the street. In the questionnaire the five levels of relation were explained with a short statement (Column *Statement in the questionnaire*, table 7). The interviewees had to choose the statement that presented their relation towards the street space best. This classification rests on the pedestrian-need hierarchy; *equity* and *identity* are subsumed in one category, however (see chapter 2.5).

Statement in the questionnaire	Rank	Phase of pedestrian-need hierarchy
The street is only used to get from A to B.	1	Transit
The street is used to get from A to B and is further considered a safe road. You feel protected on this street.	2	Safety
The street is suitable for a comfortable walk, you do not only walk but also enjoy the path.	3	Comfort
You enjoy walking the path. Further the street is not boring, it is an exciting path.	4	Joy
You feel like this is your street and it belongs to you. You feel at home.	5	Belonging

Table 7.
Categories for the residents' relation to the street space

As the lilong residents only rated one street space, but the gated community residents rated four, the statistical comparability is reduced. Neither comparing the lilong streets with the highest ranked arithmetic mean of the gated community streets (Haila'er Road), nor with the lowest ranked one (Zhoujiazui Road) reveals any results. Consequently, in order to assess the data, a basic analysis is applied. Little difference between the street spaces is revealed with the exception of Liaoning Road.

The following boxplot graph shows both the median and the arithmetic mean of all seven rated streets (graph 11). All four streets surrounding the gated community have an arithmetic mean of around 2 (n=94). None of the streets exceeds the level of *safety* for the collective of the interviewees, the streets are primarily functionally defined. It is remarkable that the classification of the streets barely differs, although the street spaces vary in their design, traffic volume, accessibility, and the presence of shops and services. Furthermore, it is surprising that Haila'er was ranked highest, although there is no access gate linking this street with the gated community. Nevertheless, most shops and services are located on this road; hence, daily errands can be run there. The lowest ranked Zhoujiazui Road is a four-lane, axial street which prioritises motorised traffic. Although those two roads clearly vary in their design, their ranking differs only slightly.

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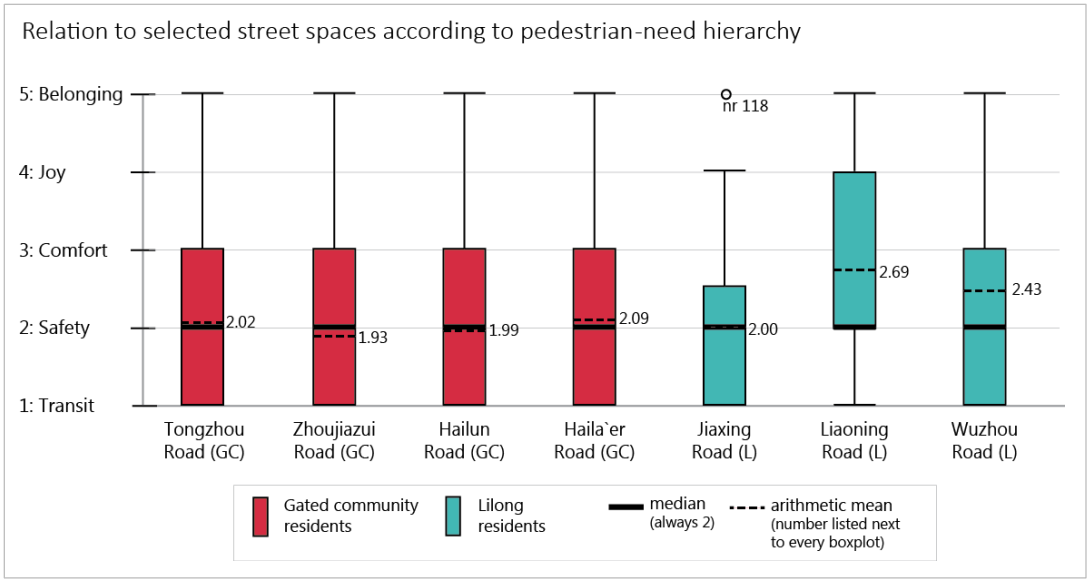

Graph 11. Boxplot on the relation to streets according to the place of residence

As for the lilong streets as a whole (n=49), the arithmetic mean is 2.37, hence, exceeding the pure level of *safety* but still being somewhat far from level 3, *comfort.* Furthermore, the standard deviation is also highest in the lilong streets (1.44), meaning the result is not undisputed: some interviewees have a looser, others a stronger relation towards the street space. When subdividing the *lilong streets* into the three single streets, a more diverse result becomes apparent: the residents of Jiaxing Road have the overall lowest level of attachment, the mean is 2. The classification of 5, *sense of belonging*, is already an outlier in this case. The range of the 25-75% quantile is 1 – 2.5, not even reaching 3. The ranking of Wuzhou Road is similar to the roads around the gated community. Two interviewees in Wuzhou Road, who gave the lowest ranking *(1, transit),* were especially unsatisfied. They added a handwritten note on the questionnaire, noting that the street is *a dirty mess* or *the condition of the streets is in a complete mess.* Liaoning Road, on the other hand, shows the highest level of attachment: the mean is 2 – again, but the range of the 25-75% quantile is 2-4, ranging from *safety* to *joy*. This is the only street space where the classification of the street as *transit* space is a whisker. Furthermore, it is the only street, where all interviewees provided a valid answer.

The share of the residents' rating from 1 to 5 reveals further insight. As graph 12 shows, there is little variance in the classification of the four perimeter streets of the gated community, which all display the same tendency. Shifting the focus to the lilong streets, more variation becomes apparent: In Jiaxing Road, 47% of the interviewees (n= 15) stated that the road means primarily *transit* to them, in Liaoning Road (n=13) the result is more dichotomous: both 23% indicate that their relation to the street is based on *transit*, whereas the same percentage of interviewees claim they have a *feeling of belonging* towards the streets. In Wuzhou Road (n=21), *transit* is considered the primary function for 35%, followed by the street being perceived as a *comfortable* place, suitable for an enjoyable walk (22%).

Regarding the variance in the classification of the lilong streets, it seems that the given dataset is not sufficient to deduct any general conclusion towards gated community or lilong living and the residents' relation towards the street spaces. So far, the single street spaces seem to have a strong impact on the relation of the inhabitants towards the street as shows the different classification of Liaoning Road and Jiaxing Road: Hence, the results differ according to the selected lilong street. Drawing general conclusion on the basis of the given dataset seems to be daring. Nevertheless, the examined lilong street spaces have a higher share of inhabitants who have a *feeling of belonging* towards their street.

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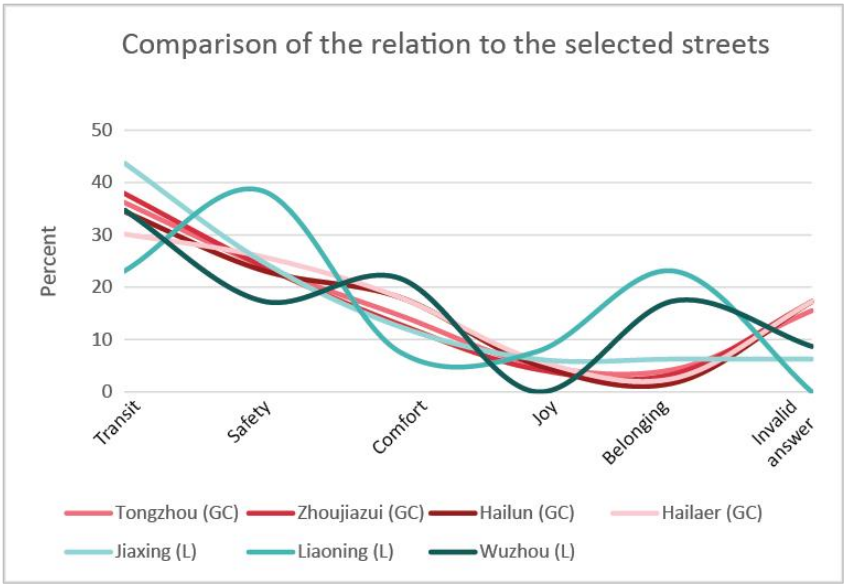

Graph 12.
Comparison of the relation to the street

Half of the interviewed gated community residents, who give a valid answer to this question (n=49), give the exact same rating to all four street spaces. They might have little relation towards the surrounding street spaces, and hence, hardly differentiate between the four street spaces. Since the interior of the gated community is a high-quality, nuanced open space, little attention is paid to the surrounding exterior streets. This assumption is supported by the evident preference of gated community residents for the open space within the gated community over any neighbouring streets (Own questionnaire, question 4, Gated community version). Hence, it becomes valid to compare the mean of any gated community resident's rating of the four street spaces around the gated community with the single rating of the lilong residents. In this way, a significant association between the type of housing and the rating of the street space is revealed (Fisher's exact test, significance of $p<0.01$), which is mainly due to the combination of lilong housing and the classification of 5, *sense of belonging.* In this case, the standardised residuals are 2.7, which means that the feeling of belonging is much stronger among lilong residents than an equal distribution would suggest. The association is medium (Cramer's V 0.43). A feeling of belonging towards the street space is more pronounced among the interviewed residents of the lilong neighbourhoods (see the statistical analysis in detail in chapter 9.4.9).

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Satisfaction with selected aspects of the living environment

The interviewees were asked to rate the following aspects of their living environment on a scale from 1, *very satisfied*, to 6, *very unsatisfied* (Own questionnaire, question 9):

- Sense of community
- Privacy
- Vivid street life
- Child-friendliness
- Pleasant for elderly
- Physical layout of the streets

In some cases, ratings are characterised by having a tendency towards the centre, which is not observable in the given case though. At least two thirds of the gated community residents rate any of the six aspects as being rather positive (from *1, very satisfied* to *3, rather satisfied*); as for this group, it can be argued that there is a tendency towards the positive. On the other hand, a tendency towards extreme positions is observable in the lilong group. As for the level of satisfaction with regard to *sense of community,* for example, lilong residents are in disagreement; 27% are *very satisfied,* whereas another 27% are *very unsatisfied*. In the other five cases, the tendency is clearly towards the negative extreme: the majority of the lilong residents is *very unsatisfied* with the living environment. Graph 13 shows an overview of all ratings; the chapters 9.4.10-9.4.16 present the statistical analysis.

Graph 13.
Overview of the level of satisfaction of the two groups with selected aspects of their living environment

Generally, it can be said that lilong residents are – in every aspect that was rated – less satisfied with their living environment than the other group, the residents of the gated community. As for the lilong residents, the rating *very unsatisfied* is disproportionally high in any aspect, reaching at least 20% in any case. The overall attitude of lilong residents can probably be best recapitulated in a handwritten remark of one of the interviewees in Wuzhou Road concerning the living environment: *everything is very unsatisfactory.*

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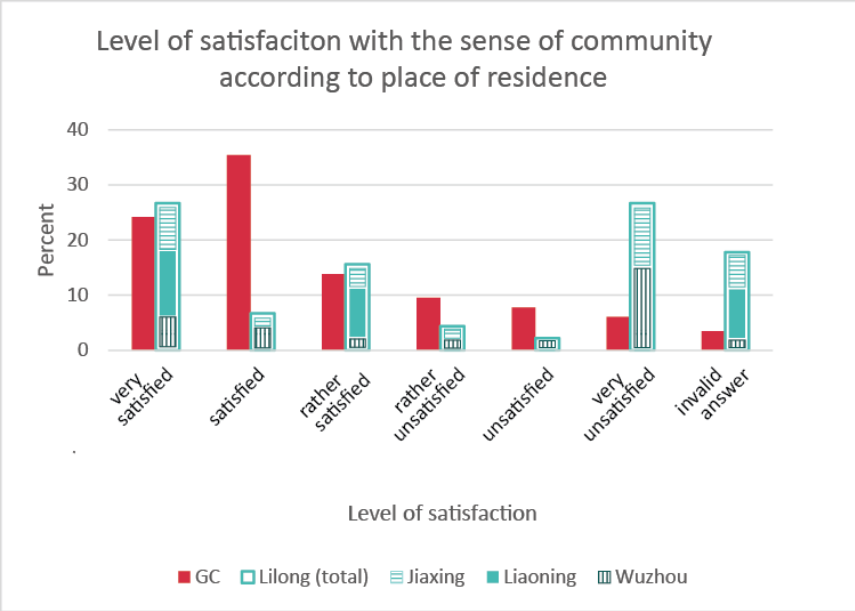
Sense of community.

Fisher's exact test shows a significant association between the place of residence and the satisfaction with the *sense of community* in one's living environment (p<0.000). The association between the two variables is medium (Cramer's V 0.413). The high percentage of *very unsatisfied* individuals in the lilong (32.4%, z = 3.4 at a significance of p < 0.001) and the low percentage of *satisfied* lilong residents (8.1%, z = -2.4, significant at p<0.05) mainly drive the overall lower level of satisfaction among the lilong residents with the sense of community in their living environment.

The subdivision of the results of the lilong community into the three single street sections reveals a surprising result (see graph 14). The residents of Liaoning Road are either *very satisfied* or *rather satisfied*, no negative remark about the sense of community is made at all. At the same time, 30% of the interviewees in Liaoning Road did not answer this question. The severe level of dissatisfaction is apparent in Jiaxing Road and Wuzhou Road. On average, lilong residents are significantly less satisfied with the sense of community in their neighbourhood; though, this varies strongly depending on the site where the lilong residents live.



Graph 14. Satisfaction with the sense of community according to place of residence – differentiation according to the single lilong streets

Privacy.

Fisher's exact test shows a significant association between the place of residence and the level of satisfaction with the privacy of the living environment. The association is medium but highly significant according to Cramer's V (0.458). Lilong residents significantly more frequently select *very unsatisfied* (z = 4.0, which is a significance of p<0.001) than a normal distribution would allow, hence driving the overall association. This is confirmed by the distribution of percentages: 40.5% of lilong residents are very unsatisfied with the privacy of their living environment, whereas 6.4% of the residents of the gated community are. As a result, lilong residents are significantly more unsatisfied with the level of privacy in their living environment.

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Vivid street life.

According to Fisher's exact test, a significant association can be identified between the place of residence and the satisfaction with the vividness of the street life. Cramer's V further indicates a medium association (0.458) that is highly significant. The rating *very unsatisfied* effects the overall outcome: in the case of gated community, $z = -2.0$, meaning that significantly ($p<0.05$) fewer people are *very unsatisfied*; on the contrary, in the case of lilong residents, $z = 3.4$, which expresses that significantly more ($p<0.001$) people are *very unsatisfied* than expected. Additionally, significantly fewer ($z = -2.2$, $p<0.05$) lilong residents are *rather satisfied* with the level of vividness of the streets. As a result, lilong residents are less satisfied with the vivid street life.

Child-friendliness.

Fisher's exact test reveals a significant association, Cramer's V additionally states that the association is medium (0.411). Again, the influencing factor is the option *very unsatisfied*: the interviewed lilong residents are significantly more often ($z = 3.4$, $p<0.001$) *very unsatisfied* than expected, which contributes to the overall lower level of satisfaction with the child-friendliness of their direct living environment. The lilong residents are subsequently differentiated according to whether or not their household includes children, this fact though does not impact on their assessment of the child-friendliness of the living environment. Generally, lilong residents are significantly less satisfied with the child-friendliness of their living environment.

Elderly-friendliness.

Also for this category, Fisher's exact test reveals an association between the level of satisfaction and the type of residence. It is a medium association according to Cramer's V (0.322), which is further significant. The association is once again shaped by the column *very unsatisfied*. More residents of the lilong (2.8, $p<0.01$) are *very unsatisfied* than an equal distribution would allow; hence, the overall satisfaction level in the lilongs is lower than in the gated community.

Physical layout of the street.

Fisher's exact test shows another significant association between the level of satisfaction and the type of residence. Cramer's V indicates a medium association (0.369). This result is mainly due to a high number of *very unsatisfied* lilong residents ($z = 2.9$, $p<0.01$) and a lower number of *satisfied* lilong residents ($z = -2.3$, $p<0.05$) than possible in an equal distribution. Hence, lilong residents are less satisfied with the physical layout of the streets of their living environment than the residents of the gated community.

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Recapitulation

Firstly, the results of the questionnaire concerning the socio-economic data are presented: A clear difference between the socio-demographic data of the interviewed lilong residents and the gated community residents becomes apparent: the gated community residents are significantly younger and wealthier; households more often include children. The lilong residents earn significantly less and are considerably older. Additionally, an uneven distribution of sex becomes particularly noticeable: in the lilong neighbourhood, almost two thirds of the interviewed residents are male, in the gated community almost two thirds of the interviewees are female. This division is significant to the type of housing.

The questioned lilong residents are significantly more likely to spend their leisure time *rather inside a building* and they use the direct accessible open spaces significantly less. Asking the question as to whether they prefer the *space inside their house* or the *open spaces in the neighbourhood streets,* they choose the open spaces though. Hence, although the lilong residents are not being in favour of using the directly accessible open spaces, when the interviewed lilong residents are forced to choose either to use the open street spaces or their private homes, they opt for the street spaces. Among the interviewed residents, no significant difference in household sizes between lilong and gated community residents is determined.

The interviewed gated community residents generally keep a balanced relationship between spending their leisure time indoors and outdoors. Furthermore, three quarters of the residents of the gated community use the interior open space of their community. Notably, this space is only accessible for local residents and their guests. When being asked to choose between an exterior space (*open spaces in the neighbourhood streets*) and the exclusive space of the gated community, 80% prefer the exclusive interior space. In terms of open space usage, a retreat towards the collective space is indicated by the available data. The questioned gated community residents make use of the open spaces but clearly prefer the interior space within the gated community.

According to the activities pursued in the most accessible open spaces, two of the three most common activities in the gated community and the lilong overlap, namely t*o go for a walk* and *to do sport*, which are highly popular activities. Apart from similarities, some differences are striking: especially gated community interior is used *to spend time with one's children,* but also *to use outdoor fitness facilities,* or *to walk the dog*. In the lilong, *watching others* and generally *other activities* are more common.

In terms of their demands that the design of exterior streets has to fulfil in order to make the streets usable for sojourn activities, both comparison groups share some commonalities. *Proximity to home* is ranked highest by both of the groups. *Safety* and the availability of *facilities for kids* are significantly more important for gated community residents. Lilong residents attach significantly more importance to *a high frequency of people, interaction with other people,* and the availability of *public toilets*.

The analysis of the residents' relation to the street rests on the pedestrian-need hierarchy. The rating of the four exterior streets around the gated community is similar and follows the same distribution. To gated community residents, the surrounding streets are primarily associated with *transit* and a *safe* walking environment. Some further refer to them as *comfortable* paths. In the case of lilong residents, the rating differs vastly according to the street in question. Jiaxing Road is associated with *transit* by almost half of the interviewees, whereas Liaoning Road is as much associated with *transit* as with *sense of belonging*, each aspect complying with a quarter of the residents. Furthermore, half of the gated community residents give the exact same rating for all four surrounding streets. Thus, it can be assumed that they do not differentiate between the single street spaces. Consequently, the mean of every gated community residents' rating is contrasted with the lilong ratings. A significantly higher emotional

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connection to the exterior street space is evident among the lilong residents: they more often feel a sense of belonging to the given street than gated community residents do.

The lilong residents are significantly less satisfied with all six aspects of their living environment than the gated community residents. Only in terms of the satisfaction with the *sense of community,* lilong residents as well give positive ratings – nevertheless, their level of dissatisfaction is significantly higher. All the other five aspects are rated predominantly negatively by the majority of lilong residents.

No significant difference between the statements of lilong and gated community residents is identified in several aspects. Thus, there is no association between the mode of transport for distances within the wider neighbourhood (1km radius) and the place of residence (Own questionnaire, question 5). In both cases, more than half of the interviewees state to walk, followed by using the e-bike and bicycle. The assumption was that within the lilong, the share of non-motorised means of transport would be higher since the neighbourhoods are characterised by a higher mix of functions, which in turn decreases some of the everyday travel distances. Furthermore, the mode of transport influences how the wider neighbourhood is experienced. When walking or cycling, the neighbourhood is perceived more intensely: one hears people talk, smells the food in restaurants, and might even recognise one or another familiar face. People moving in cars are more isolated and sealed off from their surroundings, and needless to say, move faster. As there is limited data available for this research, no such correlation between the place of residence and the mode of transport could be found. Nevertheless, larger studies on that subject revealed significant associations (Pan et al. 2009. Chen et al. 2017). Lilong neighbourhoods are characterised by the most satisfying walking environment; (Chen et al. 2017, 2294). Being compared to other neighbourhood types, the lilong has the highest share of non-motorised travel (Pan et al. 2009, 288).

Finally, no association can be identified between the type of residence and whether time is spent in the wider neighbourhood or not (Own questionnaire, question 6), nor between the type of residence and the frequency of the usage of the most immediate open spaces (Own questionnaire, question 3.1).

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6 Discussion

The results presented in the preceding chapter are discussed and interpreted in the following (chapter 6.1). In addition, the findings are contrasted with the research outline and applied to test the hypothesis to finally answer the research question (chapter 6.2). Conclusions are drawn in the subsequent section (6.3), and ultimately, design suggestions are derived from the results of the field study (chapter 6.4).

6.1 Interpretation of the results

This section discusses both the findings of the pedestrian observation and the questionnaire survey which were conducted in Shanghai in June 2018. The findings of the two comparison groups – gated community and lilong residents – differ significantly with regards to both their socio-demographic features but also in terms of their relation to and utilisation of open spaces.

As the overall socio-demographic composition of the single building blocks is unknown, it is unclear whether the difference between gated community and lilong residents is due to a selective survey that focuses on people present on the open space, or whether this data is representative for the entire building block. The sample size, however, indicates a certain representativity for the basic population.

The gated community residents are significantly wealthier: almost 60% percent of the interviewed residents belong to the highest income class mentioned on the questionnaire, whereas only one of the interviewed lilong residents does. The lower income level of the lilong residents might be an explanatory reason for their more intense street usage. Poverty is mirrored in the housing conditions of a lilong: overcrowding, narrowness, and poor equipment are not only characteristic of the flats but the entire neighbourhood. Again, the question remains in how far the use of open space is determined by choice or other deficiencies that are seen as push-factors for the residents' utilisation of the streets. In this context, further research on comparing the income level of the residents of building blocks prior to and after the redevelopment and the utilisation of the street space would be intriguing. This could further clarify the question as to whether redevelopment is accompanied by socio-demographic restructuring and how individual wealth influences the usage of open space.

The questioned lilong residents are significantly older – almost 40% are older than 60 years. However, this resembles the average age distribution of the district (Shanghai Statistical Yearbook, 2018, Chapter 2.6). Furthermore, the observation reveals that there is a more balanced representation of different age groups in the lilong streets. The lilong streets, in particular Liaoning Road, mirror the district wide age dispersion in Hongkou the closest. On the other hand, Pujiang Mingdi is especially popular among young users – almost a third of the observed people are children. In the interviewed cases, significantly fewer lilong households have children, namely only one out of four. Nevertheless, the observation reveals that the share of children among the users of lilong streets is almost 10% on average – which reflects their share in the district wide age distribution. Hence, although few of the questioned lilong households include children, they are not underrepresented in the lilong streets.

Among the interviewed residents, no significant difference in household sizes between lilong and gated community residents can be identified. This is surprising, since literature sources underline the crowded housing conditions and the lack of private space in lilongs (Citterio & Pasquale 2015, 40-42. Chow 2014, 16-19. Schoon 2007, 43). Flat size would have represented another explanatory factor, yet this factor was not included in the questionnaire. In an approximation of the average living space per capita in chapter 5.1, a considerable difference is noticeable. The average living space per capita in the gated community is several times higher than in the lilong.

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As for the pedestrian observation, no data on the sex distribution was collected. For the questionnaire, a balanced division of sex in both sample groups was assumed, especially since everyone present in the open spaces was asked to participate in the survey. The results though indicate a significantly uneven distribution of sex in the given spaces. In the lilong neighbourhood, almost two thirds of the interviewed residents are male; in the gated community, the numbers are the complete opposite. One possible reason for this result is that within lilongs men are more willing to participate in surveys, whereas in gated communities women are more likely. However, a more reasonable conclusion is that the sex imbalance implies a dominance of a certain group in open space: men seem to dominate the lilong streets, as opposed to women who are more present in the open space of the gated community. This phenomenon seems at least to be apparent in the present study. In conclusion, no information about potential reasons for the given sex imbalance can be provided though – further studies would be needed to examine this matter in more detail.

Investigating the utilisation of open space, both comparison groups rather prefer spending their leisure time inside a building over sojourning outside in open spaces. The preference towards indoor space is significantly evident in the sample group of lilong residents (Own questionnaire 2018, question 2). When the lilong residents are to choose between staying in one's home or the surrounding streets, no significant difference in preference is noticeable (Own questionnaire 2018, question 4, lilong version). The results only indicate a slight tendency towards the streets – which also might be due to chance. It can be concluded that lilong residents generally prefer indoor spaces, not necessarily their own private home though. This set of preferences might be due to a dissatisfaction of the residents with unpleasant housing conditions.

As for lilong residents, streets both within and around the lilong are the most directly accessible open spaces for the residents. The questioned lilong residents utilise this open space not as intensively as the comparison group; only every second interviewed lilong resident claims to actually use the streets. At the same time, a higher number of people were observed sojourning in the average lilong street than within the gated community. Assuming that the number of inhabitants is fairly similar in both neighbourhoods, the result of the survey does not exactly match the observation. This result though might be strongly influenced by long-term activities which are especially prevalent in lilong streets. For instance, if somebody spends the entire day on the lilong street, this person is counted anew in each counting session. Furthermore, the users of the street do not necessarily live in the adjacent typology.

As for the interviewed gated community residents, the relationship between spending their leisure time indoors and outdoors appears to be more balanced. This is a general statement and does not consider any information regarding the accessibility of those spaces. Indoor spaces can be public, such as libraries, but also exclusive, for instance malls. The same is true for open spaces; certain parks, for example, demand entrance fees and are therefore exclusive. Moreover, three quarters of the residents of the gated community use the interior open space of their compound, which is their most directly accessible open space. Interestingly, this space is only accessible for the residents and their guests. The interviewed gated community residents further express a clear preference for the exclusive open space within their gated community (80%) over any exterior street spaces in their surrounding neighbourhoods (20%). This might be due to convenience reasons, and the variety as well as high-quality design of the open spaces. Also, it might be related to the exclusiveness of the given spaces. As is stated in the mentioned literature sources, *being amongst equals* is an important selling point for gated communities; the design of gated communities reinforces the mistrust of outsiders, which in turn strengthens the demand for a sealed off community (chapter 4.2). In terms of open space usage, a retreat towards the collective space can be identified with the help of the collected data – this is specified in detail in chapter 6.2. To conclude, the questioned gated community residents make use of the open spaces, preferably of the interior space within their compound.

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Although residents of the gated community clearly express that they prefer the open space within their compound, the number of sojourn activities counted on Tongzhou Road equals the number of activities within Pujiang Mingdi. However, the users of Tongzhou Road are not necessarily residents of the adjacent gated community. Given that the gated community residents prefer open spaces within their compound, they become less likely to sojourn on Tongzhou Road. Customers and workforce of the service companies in the north of the street section are possible street users. Furthermore, several taxi drivers waiting for potential passengers are observed sojourning in front of the entrance of the gated communities. This suggests that some of the users of Tongzhou Road primarily use the street for conducting business. Sojourning on the street seems marginal. Also, Tongzhou Road is almost exclusively used by adults. Both children and elderly people are hardly present on this street. The dominant group in the given open space are of working age. The sojourn activities on this street are usually temporary and short-time – other than in lilong streets where people spend time on the street during the entire day.

As already mentioned, the specific street activities in the open spaces were studied via a pedestrian observation and questionnaire survey. As for both applied methods, there was a difference as to how activities were classified and what activities were included. Regarding the questionnaire, questions concerning certain features of the built space could be included, such as on the usage of *playgrounds* and *outdoor fitness facilities* – as for the observation, this would have been too place-specific; hence, such activities were simply classified as *sport*. Certain activities further depended on a specific equipment of the open space: *to cook* requires outdoor cooking facilities, *to sell* or *to buy* depends on mobile vendors or storefronts facing the sidewalk where people can shop while standing on the street. As the necessary equipment was only provided on the lilong streets, questions regarding the mentioned activities were not included in the questionnaire. Some activities were recorded via both methods, others just via one – graph 15 serves to provide more details. This legend of results according to the two given research methods requires a brief explanation: firstly, the solid colours refer to the share of each single activity of the total responses; secondly, since the questionnaire allowed multiple answers, the hatched bars show the share of the interviewees who pursue a given activity. All calculations are based on the second option.

The included activities differ according to the respective survey method. For once, some activities that can be observed in everyday open spaces are too trivial to be considered real *activities***.** Examples are *to stand, to lean* or *to be on the phone*. People perform these activities – as is shown in the pedestrian observation – but when completing the questionnaire, they would most likely not regard these as *activities* they deliberately pursue in the street space, which is why such activities were not included in the questionnaire. These activities are often performed unintentionally, intuitively, and occasionally function as activities to kill time. *To stand* is a widely observed activity (24% of residents in gated communities, 20% in lilongs). Standing might be the activity that can be observed, however, the main reasons why individuals perform this activity remains unknown for the observer. The observed person might wait for someone, observes something, or is lost in thoughts – but most likely not simply *stands*. The case is similar for *being on the phone*. Pursuing this activity is probably not the reason why a person comes to the open space in the first place, but it is the current activity that can be observed. Furthermore, there are also differences related to the respective sample groups of each of the research methods. For instance, whereas all individuals present in the open space were the target group of the observation, the questionnaire specifically addressed local residents. This might as well account for some of the differences in terms of activities.

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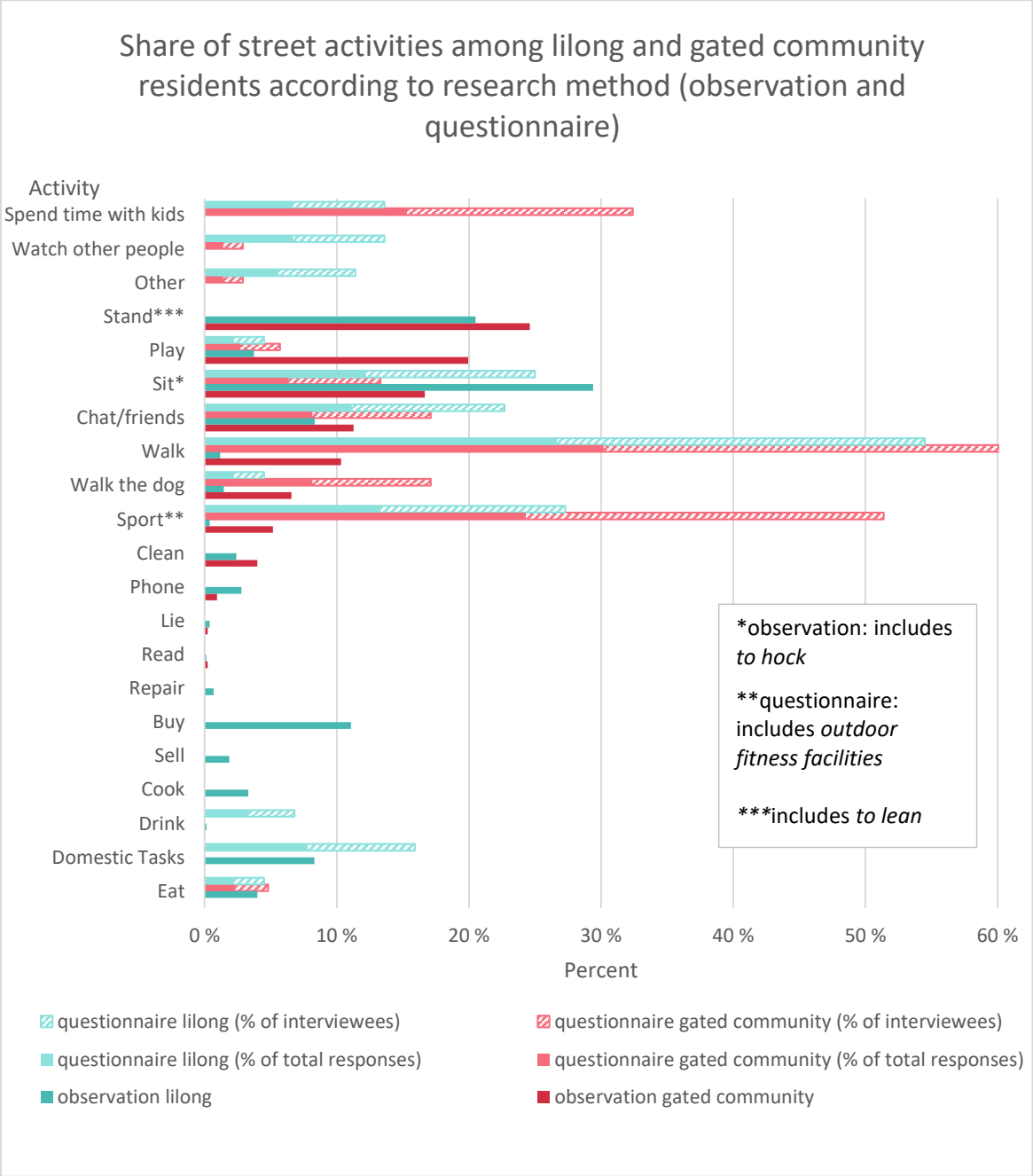
The questionnaire survey method provides more insights into the underlying intentions of the participants – which would be impossible to identify by merely conducting observations. For instance, participants can explicitly state that they intentionally perform the activity *to watch other people* on the questionnaire; in an observation, however, it would not be possible to identify whether a person actually performs this activity, or does so unintentionally. Due to the public place studies of William H. Whyte, it is known that this is a beloved activity among people in public space. Two activities that allow insights into the underlying intentions receive noteworthy diverging results among the two comparison groups: *Watching others* comprises 14% of the activities mentioned by the interviewed lilong residents. This activity is strikingly more prevalent among lilong residents. However, due to the small sample size, no significance can be deduced. *Watching others* reminds of busy urban spaces but as much evokes the notion of nosy neighbours.



Graph 15.
Comparison of selected street activities according to place of residence and research method

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The activity *to spend time with one's children* bears additional information as well: whether or not a person intentionally performs this activity in the open space can only be elicited via the questionnaire survey, but not the observation. 32% of the interviewed gated community residents pursue this activity, while only 14% of the lilong residents do. The activity is considerably more prevalent in the gated community, the small sample size though does not allow any statements about a potential significance. Furthermore, the interviewees of the questionnaire are adults, whereas the observation includes all street users, also children. More than two thirds of the overall counted children belong to the gated community. Thus, *to play* is the second most frequent observed stationary activity among children in Pujiang Mingdi with a share of 20% - only *to stand* is more popular. It seems that the open spaces of the gated community are designed for certain target groups and specific uses. Compared to lilongs, the gated community is less flexible and adaptable, and space cannot be appropriated easily, which might be perceived as an uncivilised behaviour or violation of the code of conduct anyway. Furthermore, gated community residents more often use the open space *to use outdoor fitness facilities* and *to walk the dog*. This is not surprising since the analysed lilongs streets lack fitness facilities. Finally, the narrow and dense housing conditions in the lilongs do not support the keeping of dogs.

The lilong residents more frequently state to perform *other activities* in the open space than their comparison group, but they do not specify the type of activity. This comparatively high rate indicates that the activity choices stated in the questionnaire are not perfectly suitable for the lilong context. The complementary second method, namely the pedestrian observation, provides valuable information on this matter though. Even though *to buy* or *to cook* were not included in the questionnaire, they account for up to respectively 20% or 7% of the total activities in certain lilong streets.

Domestic tasks, for example, are certainly prevalent in the lilongs but not in the open space of the gated community. Both the pedestrian observation and the questionnaire survey highlight this result. The absence of this activity in gated communities is most likely due to the availability of more spacious, well-equipped flats, where any task related to housework can be performed inside. Lilong housing is narrow and lacks certain equipment, which is why collective amenities used by the collective neighbourhood are not uncommon. Additionally, activities such as *to cook, to sell* and *to drink* are only existent in the lilong streets. These are again related to the typical lilong lifestyle, the design and equipment of lilong houses, as well as the mixed-use urban pattern.

To eat was – with one exception on Tongzhou Road – exclusively observed in lilong streets. Restaurants are located on two of the observed lilong streets, all having outside sitting areas. Hence, it is not uncommon for customers to dine outside on the exterior street. Also, people can be observed eating in front of residential houses. It can be assumed that they represent local residents who eat their home-cooked meal on the street. Other than in gated communities, the exterior street is easily accessible to the locals. The given activity can be interpreted as a stimulation of the street, but the reason why residents eat outside on the streets could also be due to poor housing standards.

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Drawing a conclusion from the pedestrian observation, lilong streets are used for a greater variety of activities. All age groups engage in a greater variety of sojourning activities in the lilong streets. Adults appear to be the dominant user group, but their share is smaller than in the compared gated community or the perimeter street. The reasons for the more intense and diverse utilisation of the lilong streets remains unknown. It might be the case that pull-factors play an important role, which attract people to use the street – such as an accessible, pleasant street space that is adaptable to the needs of different groups. At the same time, strong push-factors might prompt people to use the street space because of pure necessity and a lack of other options. A high occupation density of flats, a lack of amenities within the flats, or a lack of other open spaces might be such push-factors, for instance. It has also be considered that anyone using the given spaces was observed, not only local residents. While pull-factors would apply to anyone, push-factors would predominantly be relevant for local residents.

Both comparison groups share similarities in their perception of important features of exterior streets that make them attractive for sojourning. The *proximity to one's home* and a *pleasant atmosphere* are regarded as important by both groups. *Proximity to home* is even ranked highest by both resident groups. Considering this preference, it can be assumed that local residents represent a fair share of the number of users of any street. Thus, it is not unlikely that local residents constitute a reasonable percentage of the street users counted during the observation. *Safety* and the availability of *facilities for kids* are significantly crucial for gated community residents. This again resembles a desire to assign a certain function to a certain place – which is commonly reflected in the design of open spaces in gated communities. Children need a dedicated space, otherwise the given street is not suitable for their usage. As already mentioned, the development of gated communities was accompanied by vehicle-oriented traffic planning, the forms and impacts of which are present in chapter 4.3. For this reason, and not surprisingly, safety represents a precondition for gated community residents' use of streets. Lilong residents attach significantly more importance to *a high frequency of people, interaction with other people* and the availability of *public toilets*. This priority emphasises the social value of the street and evokes the image of an open urban space for which the presence of people is paramount. On the other hand, the emphasis on public sanitation might be an expression of the everyday reality of lilong residents and their deprived living conditions.

The emotional relationship to the street space is more developed in the lilongs; yet, the ratings differ according to the respective streets. Notably, interviewees in Jiaxing Road have a less developed relationship to the street than the gated community residents to the perimeter streets of their compound. Nevertheless, since half of the gated community residents state that they have the same relation to all four surrounding streets, it can be argued that a vast share of the interviewed residents does not differentiate between the single streets. Hence, the mean of the gated community residents' ranking of the street spaces can be calculated and used for a statistical comparison with the lilong streets. This reveals that the questioned lilong residents significantly more frequently express a *feeling of belonging* concerning *their* street than gated community residents. This represents an indicator for a higher level of attachment to the streets of lilong housing residents. As mentioned, this attachment is strongly dependent on individual street sections though. The highest number of people relating to the street by expressing a sense of belonging is reached in Liaoning Road. Also the highest total number of sojourning activities was recorded on this street.

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Regarding the level of satisfaction with selected aspects of one's living environment (*sense of community, privacy, vivid street life, child-friendliness, pleasant for elderly, physical layout of streets*), the lilong residents are significantly less satisfied with any of the mentioned aspects. As for *sense of community,* this seems especially unexpected. By investigating this case more closely, two things become apparent. Firstly, the lilong residents are divided into two groups of the same size that are either very *satisfied or very unsatisfied* with the sense of community. Secondly, the results differ according to the specific lilong street: in Liaoning Road, the interviewed residents are either *very satisfied* or *rather satisfied* – there is no negative rating. However, more negative ratings are made in the other two lilong streets. This reveals that certain aspects are site-specific and indicates that in some cases further data is necessary to draw conclusions for the entire sample group.

On the basis of other sources, not only a higher level of satisfaction of the lilong residents with the *sense of community* but also with the *vivid street life* of their living environment was expected. The outcome concerning the *vividness of the street life* is interesting insofar as the pedestrian observation illustrates that more stationary activities are performed along lilong streets. These streets are vivid and typical of a greater variety of street life. Seemingly, the lilong residents do not appreciate this bustle. There might be different individual definitions of *vivid street life* available, a qualitative interview could reveal further insight into this matter.

On the other hand, the low level of satisfaction of lilong residents with the level of *privacy* is in accordance with other sources. Many sources highlight the poor living conditions, noisy or nosy neighbours, and a lack of space for retreat in lilongs. In terms of *child-* and *elderly-friendliness*, no assumption was made since both neighbourhoods have certain advantages for these age groups. The same applies to the satisfaction with the *physical layout of streets*. An overall high level of dissatisfaction with any of the presented aspects becomes evident in the group of lilong residents.

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6.2 Comparison of the results with the research outline

The results of the two methods – pedestrian observation and questionnaire survey – and the already presented literature are used to test the hypotheses. Subsequently, the research question is answered.

> H1: Residents have a different relation to and demands for the surrounding open street space according to their type of housing.

As stated in several studies, the lilong alleyway lifestyle that is typical of intense open space appropriation is related to the narrow, overcrowded living conditions in lilongs and a lack of facilities within the single housing units (Bracken 2013, 94. Arkaraprasertkul 2009, 20-21. Zhao 2004, 72). The deprivations in their own homes, and the lack of space and certain facilities cause lilong residents to use the surrounding open spaces. The applied methods reveal additional differences between the two comparison groups and their relation to the street space.

In China streets were traditionally perceived as a non-space (see chapter 3.5). Nevertheless, this understanding is in a process of transformation. Especially people can alter the meaning of a place through their usage. Therefore, they might even develop a relation to the traditional non-space of the street. This became particular evident, as streets gradually became more accessible and an integral part of the day-to-day life in the era of the Colonial City. Still, the role of streets in the Chinese society seems to be unsettled: on the one hand, ever since the Post-Reform Era and the emergence of gated communities, people have demanded more private spaces. Simultaneously, streets are no longer only defined by their transit function but are starting to be recognised as a valuable social space as well.

Within the gated community, both the observed and the stated activities in the questionnaire are mainly related to leisure and fitness. The interior open space is designed to support these activities. As the interior space of the gated community is predestined for selected activities due to its equipment, one can imagine that the residents' requirements towards the equipment of an exterior street space are different from the demands of lilong residents who have no access to any other open space but the streets. As for the results of the questionnaire survey, some aspects or features are considered equally important by both comparison groups for their usage of exterior streets, such as the *proximity to home*, a pleasant ambience (*greenery* and *calm atmosphere*) but also the *flexibility in the usage of the space* so that it can be appropriated for temporal activities such as evening dances.

Regarding the demands of the questioned gated community residents for exterior streets, *safety* appears to be a significantly important factor, as is the availability of *facilities for children*. The most direct living environment of gated community residents is shaped by a division of functions, certain spaces are assigned to fulfil certain purposes. Playgrounds are meant for children to play, outdoor fitness facilities are meant for physical exercise for grown-ups, and benches are meant to sit. As stated in the description of a prototypical gated community (chapter 4.2), hardly any undetermined spaces are available within gated communities. It seems that gated community residents have internalised this separation of functions and in return demand a determination of the uses on exterior streets.

The open spaces within the lilong are predominantly streets and lanes that were originally intended for transit. Since these are the only open spaces available, they have gradually been appropriated for a multitude of different uses. As these streets are not assigned particular roles, they are adaptable to a wide range of utilisation. The interviewed lilong residents attach significant importance to *a high frequency of people, interaction with other people,* and the *availability of public toilets*. Emphasis is put on both the physical design of the street as on its potential to facilitate social encounter. Lilong residents are used to a diverse utilisation of spaces shaped by temporality and negotiation, and thus, the

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possibility for social interaction is an important aspect of streets. At the same time, this statement can be interpreted as an expression of the downsides of lilong housing: lilong residents are dependent on streets as they provide basic facilities that are not existent in their private domain.

Not only do the demands of the two comparison groups differ, but also their relation towards the street space. The bond between the gated community residents and the perimeter streets of the gated community is rather basic, the relation towards the street space is rather a functional one. The streets are primarily associated with *transit* and *safety*. As is investigated more closely on the following page (see hypothesis 2), the lilong residents have a significantly higher *sense of belonging* towards the street space than the gated community residents. This though still differs vastly according to the specific street – the highest level of place attachment is apparent on Liaoning Road.

Furthermore, *sense of community* provides information about the social cohesion in a neighbourhood. Generally, residents of the gated community are significantly more satisfied with the sense of community in their living environment; almost 75% of the respondents rate this variable as positive. The sense of community relates to the interior of the gated community, not the perimeter street. The answers of the lilong residents reveal two opposing positions: about a quarter of the interviewees is *very satisfied*, while another quarter is *very unsatisfied* with the sense of community in their living environment. When reviewing the responses of lilong residents for each of the three streets, the results for Liaoning Road become particularly outstanding: none of the ratings appears to be negative; the majority of respondents is *very satisfied* with the sense of community, followed by *rather satisfied* residents. Thus again, the assessment appears to be site-specific.

One can further assume that the residents' feelings towards the sense of community differ according to the place of residence. In the lilong neighbourhood, the literature underlines a high degree of neighbourly behaviour, the sharing of resources, and direct social interaction which contribute to a sense of community (Liu & He 2017, 2. Bhatia 2008,). In the gated community, the neighbourhood attachment is spatially defined and is influenced by the satisfaction of the residents with the neighbourhood services or by the image and reputation of the neighbourhood, for example (Münch 2004, 47). However, one study confirms a considerably high degree of social interaction among neighbours in gated communities (Lu et al. 2018, 144. 150). Thus, the level of attachment of residents in different neighbourhoods is undetermined in the literature.

As streets are an integral part of lilong living, the sense of community is assumed to be also noticeable on the street space. Gated communities, on the other hand, increasingly seal themselves off from the surrounding streets. Thus, a strong sense of community will assumingly change the ambience within the compound but will not affect the atmosphere of the perimeter streets. The impact of the sense of community on the streets is so far a presumption that still needs further analysis.

The methods reveal that both resident groups agree on certain features that make an exterior street space more attractive for being used. At the same time, there are significant differences that might relate to the specific lifestyles linked to the two housing typologies. For lilong residents, streets are significantly more attractive if they are characterised by a high frequency of people and allow potential social interaction. Gated community residents rather stress the physical design of the street. Furthermore, the sense of belonging is significantly stronger in the lilong streets, which implies a high degree of emotional attachment to these places. However, the sense of community cannot be interpreted yet, since further research has to be conducted on this matter. Generally, the satisfaction with the sense of community is significantly higher in the examined gated community, but the impact of this high sense of community on the perimeter street is questionable. In conclusion, the relation to and the demands for the exterior street differ according to the place of residence.

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H2: Streets around gated communities are primarily used for transit, whereas streets around lilongs additionally possess a social value.

This hypothesis is supported by secondary literature: the lack of human presence on perimeter streets of gated communities was already emphasised by Miao in 2003, who refers to these streets as *deserted streets.* A decade later, Arkaraprasertkul drew a similar conclusion: islands of gated communities and the accompanying segregated way of life might cause the death of liveable streets (2012b, 147). Lilong streets are often described as places of social interaction and community life; although the term *social value* has never been mentioned in this context (Citterio & Pasquale 2015, 44. Li 2015, 141. Arkaraprasertkul 2010, 28. Arkaraprasertkul 2009, 21. Bhatia 2008, 70. Miao 2003, 56).

The gated community residents were questioned about their relation to the perimeter streets of their compound; the pedestrian observation was conducted on only one of these streets, namely Tongzhou Road. This street was selected as an exemplary perimeter road since 1) it had a direct access gate to Pujiang Mingdi, and 2) it was assumed to be the most pedestrian-friendly of the three roads that have an access gate to the gated community. This is confirmed by the responses of the gated community residents in the questionnaire regarding their relation to the surrounding street spaces, although the variance of the ratings of the four streets is subtle.

The lowest number of stationary activities was observed within the gated community Pujiang Mingdi and the access road, Tongzhou Road. The number of activities observed in both sites was roughly the same, and noteworthy, lower than in any of the lilong streets. The users within Pujiang Mingdi are most likely residents, yet this is not the case for Tongzhou Road – anyone can sojourn there. Additionally, the disparity between pedestrian flow and stationary activities is by far highest on Tongzhou Road with a ratio of 4.5:1. Only 20% of all individuals present on this site engage in stationary activities, the rest only passes through. Pedestrians mainly utilise this street for transit; the remaining users are almost exclusively adults. Both children and the elderly are hardly present in this space, implying that the street space is not inclusive, or that other adjacent open spaces are more appropriate to their needs.

The pedestrian observation primarily indicates the use value of the lilong neighbourhoods. On an average day, lilong streets are more intensely used for sojourning. The ratio between pedestrian flow and sojourn activities is more balanced, the users are more diverse and there is a greater variety of activities. However, this does not allow to draw any conclusions about the social value of the street. Apart from the activity *to chat,* none of the observed activities necessarily involves the interaction with other people.

Nevertheless, *watching other people* is a notable activity more often performed by the interviewed lilong residents in their directly accessible open space, which is the street. Additionally, lilong residents attach significant importance to *a high frequency of people* and *interaction with other people*, which are both crucial prerequisites for them to spend time on an exterior street. Lilong residents seek to socialise on streets. This does not generally mean that lilong streets are characterised by a higher degree of interaction between people. Nevertheless, since 53% of the lilong residents consider the *proximity to one's home*, 22% the *interaction with other people,* and 20% *a high frequency of people* important factors for their usage of exterior streets, it can be argued that lilong streets are more often used for socialising purposes by lilong residents.

The interviewed gated community residents hardly differentiate between the surrounding street spaces when classifying them according to the pedestrian-need hierarchy. All perimeter streets are mainly associated with the second phase of the hierarchy, meaning the streets are considered both useful for movement (*transit, phase 1*) and safe for walking as a pedestrian (*safety, phase 2*). Some are even associated with comfortability *(phase 3).* These streets are mostly defined by their primary function,

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namely mobility; other functions a street might provide, such as use value or social value, are hardly considered. Half of the interviewed gated community residents give the exact same ratings to all of the perimeter streets – which vary vastly in their pedestrian-friendly design: on Hailun Road, a tunnel impedes the movement; in Zhoujiazui Road, a four-lane axial road functions as a barrier; also, Haila'er Road provides the residents with shops and services. Rating all these spaces similarly indicates that the surrounding streets are indifferent to a significant part of the residents.

On average, the lilong residents express a closer relationship towards the street space than the gated community residents. This relationship is strongest in Liaoning Road, where people either refer to a sense of *safety (phase 2 of pedestrian-need hierarchy), comfort (phase 3)* or *joy (phase 4)* when classifying the street. A low number of the interviewed gated community residents states a *sense of belonging (phase 5)* towards one of the surrounding street spaces – on Tongzhou Road, this value is highest and still does not even apply to 5% of all respondents. On the other hand, in Wuzhou Road 17% of the interviewed residents feel a sense of belonging towards their street space, in Liaoning Road it is even one quarter of the respondents. This shows that the rating is site-specific. Nevertheless, the fact that half of the gated community residents appear to be indifferent towards the four streets further justifies a comparison between the mean of the four gated community streets and the lilong streets. In this context a significantly stronger *sense of belonging* among lilong residents becomes apparent.

The lilong residents' high level of dissatisfaction with the level of privacy caused by their living environment further reveals an unpleasant nuance of lilong living: social interaction does not necessarily have an exclusively positive connotation for the local residents. If encounter with others is unavoidable and not voluntary, it might as well be perceived as a burden and nuisance. A high level of forced social interaction along with a dense living environment without any possibilities for retreat are not unlikely to be accompanied by social control and surveillance.

As noted, there might be a shift in the approach towards street design. The Shanghai street design guideline, which was issued in 2016, focuses on human-oriented street design and considers pedestrians and vehicle traffic equally important: whether this will affect the transit-oriented design of ordinary perimeter streets of gated communities remains to be seen.

The majority of the interviewed gated community residents associate all four gated community roads with transit and safety – both attributions are functional. Furthermore, most people on Tongzhou Road use the street for transit and not sojourning. Lilong residents attach more importance to social interaction and express a greater sense of belonging. On the selected lilong streets a greater diversity of people and usage can be observed, which contributes to the bustling street life of lilongs. Within the neighbourhood this might also cause certain downsides, such as conformity and social pressure. Generally this indicates a greater social use value within the lilong – which also means that lilong streets fulfil a multitude of different functions that are typical of lilong living. To verify this notion, additional qualitative methods, such as interviews, could be useful for gaining further insights. The hypothesis is partly supported for the case study: Streets around gated community are primarily functionally defined. There are indications that lilong streets possess a higher social value than gated community streets, but again, further research needs to be conducted to gain a better understanding regarding this issue.

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H3: There is a shift from the exterior to the collective open space: Residents of gated communities prefer the open space within the gated community over any open space around the gated community.

Generally, gated communities and the respective street design origin from a time when motorised traffic was prioritised over any other mode of transport. Furthermore, zoning and a separation of functions were common practice. China experienced a growing motorisation – also on an individual level – and hence, streets were primarily designed for mobility purposes and cars. Today, streets are transit-oriented and not very appealing to pedestrians. Gated communities are mainly related to the residential and recreational sphere, they offer a wide range of different open spaces in a safe environment. Hence, by simply comparing the design features of the street with the interior of the gated community, it is not surprising that residents prefer the more diverse, attractive and safe space within their compounds.

The results of both the observation as well as the questionnaire survey provide insights into the open space preference of gated community residents: The average number of stationary activities performed in the interior open spaces of Pujiang Mingdi are not significantly higher than on Tongzhou Road. The ratio between pedestrian flow and stationary activities in Pujiang Mingdi is balanced though (1:1), while on the access road the pedestrian flow clearly outnumbers the stationary activities (4.5:1). Also, the open space of Pujiang Mingdi is utilised by different age groups: especially children are present in these spaces. The elderly, on the other side, are hardly represented. On Tongzhou Road, almost exclusively adults are observed that sojourn on the street.

The findings of the pedestrian observation are further supported by the results of the questionnaire survey: 75% of the interviewed residents of the gated community make use of the interior open space of the gated community; 80% prefer the open space within Pujiang Mingdi over any neighbouring streets. The gated community residents express a clear preference for the exclusive, more diverse open space within their compound. Whether this set of preference is due to the physical features of the open space or the socio-economic features of the potential users remains unclear. In this context, it is again worth referring to a statement of the existing literature: gated community residents attach more and more importance to *being among equals* in the gated community (Pow & Kong 2007, 141), which implies people's indifference towards interacting with strangers. There is also an emerging discourse of fear concerning outsiders, such as inner-Chinese migrants, from which the residents of a gated community try to distance themselves (Pow 2007b, 1553). Moreover, gated communities allow their residents to retreat from unnecessary social interactions (Wu 2005, 251). If people do not wish to share the compound with people of different socio-economic backgrounds, then why would they choose to spend their leisure time among those?

The results of the questionnaire and findings of the literature underline a clear preference for the collective open space among gated community residents. Hypothesis 3 assumes a *shift* from the exterior to the collective space – according to the literature review, however, this term does not apply to describe the usage of open spaces. In Ancient China, interior walled space was always the preferred space for people to spend their time. The surrounding, exterior streets were rather associated with disorder and chaos; the usage of which was considered an unpleasant necessity. This perception of space is deeply rooted in Chinese history and still influences urban patterns today: The practice of sealing off a living quarter is not a western habit that was adopted in handbooks of urban planning in modern China but is in accordance with the traditional Chinese way of living and corresponds to the Chinese perception of a harmonious spatial allocation of society (Münch 2004, 47).

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Traditionally, the usage of public street space was never considered desirable. Nevertheless, in the course of the 19th and 20th century, different ways of living were tested in China. Lilongs were initially designed to grant a spacious living environment; however, due to a massive increase of the population in Shanghai, housing became scare and lilong neighbourhoods became increasingly overpopulated. As a consequence, many activities that had originally been performed inside had to be done in the street space, either on the lanes within the lilong or the street surrounding the lilong. The short intermezzo of danwei living (1950s until 1970s) strongly opposed the traditional scepticism towards public spaces: as society was defined by being a collective, great importance was attached towards the collective and the public usage of spaces, private spaces were reduced to a minimum. Ever since the market reforms, the allocation of spaces was renegotiated in favour of private spaces.

Thus, referring to the reorientation of gated community residents towards exclusive spaces as a *shift* does not withstand a historical inspection. Therefore, the general hypothesis is true: the interviewed gated community residents prefer the collective open spaces within their community, but this can be seen as more of a *return towards the exclusionary realm* than a *shift*.

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The analysis of the hypotheses leads back to the initial research question, which focuses on the different uses of the exterior street spaces around lilong neighbourhoods and gated communities.

How does the street space around gated communities differ from street space around lilong neighbourhoods in terms of the variety, diversity, and intensity of its usage?

As expressed in hypothesis 1, the residents of the two different housing typologies have different demands to the street space and use it in different ways. Both the literature research and the on-site study indicate that this is related to the different designs and equipment of individual flats as well as of the compound in general. Also, the socio-demographic criteria of the inhabitants cause potential differences. The exact relation between single influencing aspects and an individual's relation to and use of streets still needs further analysis and is complicated through a multitude of potential parameters. The present study shows a connection between the residential typology and the usage of and relation to the street but no conclusions can be drawn about the decisive factors that cause these differences between residents of the two housing typologies.

On an average day, a greater variety of stationary activities is apparent on the lilong streets than on the perimeter street of the gated community, Tongzhou Road. The number of activities is multiple times higher in the lilong than in the gated community, both in terms of the range of different activities as well as the amount of people pursuing a single activity. In addition, the variety of users is more balanced in the lilong streets, and resembles the overall age distribution of the district. Tongzhou Road is almost exclusively used by adults for sojourn activities. Generally, sojourn activities are underrepresented on this road, given the vast share of pedestrian flow. Hence, the lilong streets and the gated community road differ in all three aspects. As stated in hypothesis 2, Tongzhou Road is barely used by the residents of the gated community and primarily associated with functionality: It is perceived as a safe path mainly utilised for transit. The lilong residents attach great importance on human presence on exterior streets and on potential interaction. They significantly more frequently relate to the street with a sense of belonging than the comparison group. This indicates that lilong streets are not only defined by transit but also by a use value and a social value.

The literature research confirms that collective space is a crucial spatial category in Chinese society. This collective space affects the use and perception of exterior streets. The perimeter streets of gated communities can hardly compete with the differentiated open space within the adjacent gated communities. Thus, the open space within a specific gated community, namely Pujiang Mingdi, was included in the analysis. Still, the lilong streets are characterised by a wider range of different stationary activities and a higher intensity of usage than the interior space of the compared gated community. The collective open spaces of the gated community are popular among children as well as among adults, the share of elderly is rather low. Hence, also the diversity of the users is more pronounced in the lilong streets. Additionally, both literature research and the on-site study highlight the possibilities of retreat of the gated community residents from the exterior street space. They prefer the interior open space of their community, hence, again reinforcing the absence of human presence on the perimeter streets.

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6.3 Conclusion

The two selected residential typologies and their residents relate differently to street spaces. Gated communities offer a modern living standard, but their design contributes to an alienation of the residents from the perimeter streets. On the other hand, appropriating the alleys is an inherit part of the lilong way of life but also an expression of the deprivations of the living standards associated with this typology. Besides attributions from outside parties, above all the needs and demands of the local residents need to be considered.

The case study leads to the conclusion that both lilong and gated community residents want to use open spaces. Some uses of the open space might be due to a lack of other options, but residents certainly utilise this space intentionally and for pleasure. Lilong streets are utilised in more varied, diverse and intense ways than the compared gated community open spaces – both the perimeter street and the interior open space. There are indications that besides a high use value, lilong streets have a certain social value as well. In order to verify this statement, further research on this matter needs to be conducted. Lilong residents attach high importance to both the physical and the social dimension of exterior street spaces. They express a more pronounced sense of belonging towards the street.

Lilong neighbourhoods are characterised by a special relation to the open space. Their usage is shaped by fluidity, temporality, and negotiation. Space is not function-determined but open for different usages. The lilong alleys and streets allow the inhabitants to adapt the space according to their needs, and therefore, allow a certain level of appropriation. People move private furniture to the streets and decorate the direct open space with greenery and pot plants. Even if this usage of open space is temporary, it still fosters place attachment and establishes a sense of identity. Thus, lilong streets resemble the Chinese approach towards open spaces.

Gated communities, on the other hand, represent the western modernist approach towards open spaces: they are characterised by a division and a strict determination of functions. The usage of space is less fluid and less adaptable to different needs. Rigid boundaries are established, both within the open spaces of gated communities as well as towards the perimeter streets. Privacy appears to be the supreme good and shall not be intruded upon. Besides an understandable desire to protect the private sphere, one might wonder whether the exclusive construction of gated communities comes at the loss of a specific Chinese approach to open space.

The on-site analysis reveals that perimeter streets around gated communities are primarily designed and used as a safe space for transit. The residents preferably utilise the interior open spaces of their community and have therefore fewer demands for the design of exterior streets – they are less dependent on the usage of which. The gated community residents increasingly retreat from the exterior streets. At the same time, they show a significantly higher level of satisfaction with all aspects of their living environment, including the sense of community, than the lilong residents. Thus, this indicates that they are satisfied with the more private, socially segregated way of life of the gated community.

Both the literature research and the case study emphasise that there is a greater use of the street space and bond between residents and the streets in the lilong neighbourhood. The case study is part of a wide range of studies on lilong and gated community housing in Shanghai. Nevertheless, there are limitations concerning the meaning of the present study: for instance, it is unclear whether the results are significant for the entire urban landscape of Shanghai. Further research needs to be done in order to be able to draw general conclusions about the relation of lilong and gated community housing regarding the street space that is valid for the entire city.

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In general, whether the liveliness of street space is supported or impeded depends on a set of values. An important question arises in this context: Are streets perceived as valuable spaces that foster social encounters or is the fragmentation of society in isolated cells of gated living the preferred vision for the future city? Current publications on traffic planning in Shanghai indicate a return to a human-centred approach. Streets are no longer designed to prioritise motorised vehicles over people, especially not in residential areas. Thus, also the lilong streets and their captivating street life might be redefined as a sign of urban liveability. They can be reinvented as a valuable asset of Shanghai which are unique to this city.

Certain aspects of the prototypical lilong certainly contribute to a specific urban atmosphere: small building blocks, a mix-use urban pattern, a proximity to local suppliers of everyday goods, a walkable street design, and an overall human-oriented focus. Undoubtedly, the standards of living in lilong neighbourhoods are poor, substandard, and in some cases even harmful to the residents' health. There is no doubt that there has to be a renewal of certain lilong structures. It might be a question of time to contemplate a way to modernise the living standards of lilongs without altering the typology and the urban pattern of the entire building block.

The regulation for opening gated communities to the public bears the potential to strengthen the use value and the social value of their open spaces and transform them into genuine public spaces. This though requires the involvement of the local gated community residents and an intensive discussion on the prevalent fear of outsiders. Besides, an opening of the gated communities to pedestrians will improve the connectivity and walkability of the urban pattern of Shanghai.

Active, bustling street spaces vastly contribute to urban liveability and the image of a city. Restating one of Jane Jacobs' observations, it is the streets that make a city look interesting; if the streets are dull, the entire city appears dull (Jacobs 1961, 29). Shanghai is known for some of the most liveable streets in the world, it would be unfortunate if they vanish. Especially now, as the city has successfully accomplished to transform itself into a contemporary metropolis of global importance, the time might have come for a more careful and considerate way of urban renewal.

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6.4 Recommendations for the urban design derived from the results of the field study

Design recommendations cannot be separated from the individual creator and her or his socialization. Despite cultural differences between Austria and China, I believe that the following aspects shape my perspective as a researcher, influence my design suggestions and are therefore worth noting:

Austria is one of the world's safest countries and is shaped by a period of stable development ever since the mid 1950s. Thus I might not fully relate to the urge to secure one's living environment with physical barriers and entrance control. Despite the fact that Shanghai's rate of crime might be comparably low, there is an intensifying discourse of fear of outsiders prevalent – which is unknown in Austria. What is more, China experienced a mayor change in its economic system that continues to have an effect up until today. The economic reform shapes present day urban life and lifestyle in China.

I further received most of my scientific education in Vienna – a city strongly influenced by the so-called period of the Red Vienna in the 1920s, a time when a wide range of socio-political reforms were implemented. A prominent urban measure of that time were large-scale social housing projects that were – at times – deliberately located within traditionally bourgeois-characterised districts. This measure was meant to counter social segregation within society: the spatial blend of classes was considered crucial to achieve a more equal society. This conviction concerning socially-mixed housing shapes the urban planning faculty of Vienna up until today.

Stating my own position as a researcher and considering the results of the field-study, a brief outlook on potential design solutions is presented. The core aspiration is the improvement of living conditions of the inhabitants and the reintegration of the street in urban living, utilizing the streets potential as a used space and a social space. Lilong is an urban form that is existent in contemporary Shanghai but is unlikely to be built anew. A rigid museumisation of the remaining lilong due to nostalgia does not improve living conditions for the inhabitants. Further, urban planning has a responsibility to identify successful aspects of existing structures, such as in lilong living, and to integrate them into modern forms of urban living, in this case the gated community. Hence the design suggestions focus on how to integrate successful aspects of the lilong-street-relation in the high-rise structure of gated communities.

- **Incentives, not compulsion**
  Lilong housing needs to be renewed to meet modern living standards. Basic amenities such as kitchens, sanitary facilities, electricity, heating etc. need to become standard facilities. Several flats can be combined into one unit to offer a decent living space per capita. The lilong residents have a right to privacy and a right to a place of retreat. The enforced sociability – due to a lack of private living space and a lack of amenities – is to be replaced with a voluntary sociability. Renewing the lilong without fundamentally changing the lilong lifestyle is a challenge, attention should be given to the preservation of the traditional Chinese perception of space as fluid, temporary and negotiable. A potential determination of the open space is advised to be minimized.

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- Accessibility

The directive to open up gated communities to the public (Wang & Pojani 2019) possesses great potential to increase the walkability of the urban grid. Especially in Eastern European countries and the former Soviet Union high-rise residential towers arranged within a park-like environment are present – on the contrary to Chinese Gated Communities, this urban typology is usually not gated. It could be an interesting approach to imagine Shanghai without any walls or fences surrounding gated communities. Shorter distances are not only efficient but might as well add serendipity and surprise to the urban pattern which further strengthens walkability. At the same time, lilong residents could then access high-quality green spaces in greater proximity to their home. This might further contribute to a social mix of classes, which is perceived essential to public spaces from a western point of view[ii][44]. In order to encourage non-residents to enter the former *gated* community, essential services and functions could deliberately be located within the gated communities, such as kindergartens or community services. Further long-time sojourn activities should be supported by providing public toilets for example – which at the same time is also a gender issue. The lack of public toilets primarily affects women and limits their presence in public space.

- Perception of the street

As Krusche (n.d.) outlines, peoples' relation to and perception of the street might be altered through activities and the possibility for temporal appropriation. According to the case study, gated community residents seem to be indifferent to the perimeter street spaces surrounding their compound. Thus making the street accessible – opening the gates or removing the surrounding physical barriers at all – is a first step to enable potential appropriation. Appropriation and personalisation of the adjacent street space contributes to the street life. In cities from London to Kyoto people are in the habit of putting their personal potted plants on the streets. Allowing citizens to shape their immediate living environment might open up new opportunities for place attachment and possesses potential to strengthen the sojourn quality of the streets.

- Bustling ground floor

Ground floors that are equipped with shops, services, restaurants etc. contribute to the perceived urbanity of a given area. This is true for both the ground floor of high-rise residential towers and for buildings that form the edge of the open street. What is more, a mixed-use urban pattern that offers the necessities of daily life decreases daily travel time and travel distance and thus reduces traffic. It also contributes to a crisis-proof city. As the ongoing COVID-19 crisis has showed, certain circumstances might limit traditional mobility patterns; thus a local supply of goods within walking distance is crucial.

[44] This counters the traditional Chinese perspective of segregation as an important criterion for a successful compound which helps to maintain harmony, to keep the compound in order and free of conflict (Münch 2004, 47).

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- Multi-functionality

  According to the case study, the open space of gated communities is mainly utilized for leisure or fitness related activities. By opening the gated community to the public, a broader range of shops and services can be offered, as the number of potential customers increases. This further leads to bustling open spaces and a greater number of potential activities in the open space. Urban quarters that bustle with a variety of activities – as counterpart to monofunctional residential quarters – might further contribute to personal feelings of safety and comfort since the streets are kept busy for long hours. Implementing multi-functionality carelessly, might though result in conflicting schedules and demands.

- Undetermined open spaces

  The open spaces of the lilong are not characterized by a sophisticated design or a variety of different spaces. Most open spaces within gated communities on the other hand have an assigned function which limits the flexibility of their usage. In order to increase activities, spaces need to enable and encourage a variety of usages. Thus, a high complexity of a given space allows a higher number of people to appropriate and temporary shape it according to their ideas (Kärrholm 2012, 18-19). Speaking of accessible, undetermined open spaces, one could further consider limiting the possibility for vehicle-parking on the street space of gated communities, copying the reality of the lilong, where narrow paths limit the number of parked cars. Parking could be verticalised or relocated underground, although large-scale underground parking facilities might be a challenge for engineering since Shanghai has a very low altitude. Nevertheless, in relocating vehicle parking, less open space would be blocked but instead turned into a potential used space.

- Collective space

  Collective space has an important meaning in Chinese society and should be considered as well. If the open spaces are accessible to anyone, one could consider implementing additional collective spaces in the interior of single high-rise building towers. This could be collective spaces within but also greened terraces and rooftops, accessible only to the inhabitants of the tower. At the same time, research has shown (Kärrholm 2012) that even if open space is accessible to anyone, certain groups might dominate over space. Thus, although the interior open space of the gated community is available, only certain groups might sojourn there for long time activities – most likely the inhabitants.

One needs to be aware of the limitations of urban design solutions. Social issues such as poverty, inequality and the different life perspectives related to the household registration system cannot be solved through design. As long as a free market dictates the price for urban housing, housing affordability is accompanied by social segregation. At the same time, social questions are value-based and therefore people's perception on that issues differ vastly.

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8 List of illustrations

8.1 List of figures

Figure 1. Periods of city development in Shanghai (Heng 2008, 80. Pow 2007, 813) 18
Figure 2. Classification of selected perceptions of space according to the material, social and subject-related dimension (Drasdo 2018, 109) 29
Figure 3. Illustration relational space, inspired by Drasdo 2018, 94 29
Figure 4. Illustration phenomenological space, inspired by Drasdo 2018, 97 29
Figure 5. Illustration geo-political space, inspired by Drasdo 2018, 95 30
Figure 6. Illustration social space, inspired by Drasdo 2018, 95 30
Figure 7. Illustration absolute social space, inspired by Drasdo 2018, 102 30
Figure 8. Pedestrian-need hierarchy (Mateo-Babiano & Ieda 2007, 1921) 31
Figure 9. Schematic illustration of superblock grid (Calthorpe Associates 2012, 50) 32
Figure 10. Schematic illustration of urban grid (Calthorpe Associates 2012, 50) 32
Figure 11. Period of urbanisation in China: the Ancient Chinese City (Heng 2008, 80. Pow 2007, 813) 43
Figure 12. Periods of urbanisation in Shanghai since 1840 (Heng 2008, 80. Pow 2007, 813) 46
Figure 13. Schematic illustration of a lilong (Arkaraprasertkul 2010, 28. Citterio & Pasquale 2015, 45. Claramunt 2017) 59
Figure 14. City development of Shanghai (Citterio & Pasquale 2015, 37) 61
Figure 15. Open space in lilong (Arkaraprasertkul 2010, 28. Citterio & Pasquale 2015, 45) 64
Figure 16. Gated Community. Schematic illustration 68
Figure 17. Open space of a gated community. Schematic illustration 72
Figure 18. Location of the area of research within Shanghai (ArcGIS 2017. mapz 2020) 88
Figure 19. Urban Renewal in Hongkou (own picture, spring 2018). Background: High-rise towers of a gated community. Front: Demolished lilong 89
Figure 20. Urban Renewal in southwest Hongkou since 2000 90
Figure 21. Ortho-image of the site of research. Google Earth, May 29th, 2020 91
Figure 22. Map of site of research 91
Figure 23. Site where the research was conducted (pedestrian observation and questionnaire) 92
Figure 24. Shanghai Music Valley (Gonzalez Martinez 2017, 9) 93
Figure 25. Outdoor kitchen of a restaurant on Wuzhou Road (own picture, spring 2018). 94
Figure 26. Map of Wuzhou Road and impressions of the street (own pictures, spring 2018). 95
Figure 27. Lilong houses on Liaoning Road (own picture, spring 2018). 96
Figure 28. Map of Liaoning Road and impressions of the street (own pictures, spring 2018). 97
Figure 29. A sign of appropriation of exterior street space on Jiaxing Road (own picture, spring 2018). 98
Figure 30. Map of Jiaxing Road and impressions of the street (own pictures, spring 2018). 99
Figure 31. Perimeter fence between Pujiang Mingdi and Tongzhou Road (own picture, spring 2018). 100
Figure 32. Map of Tongzhou Road and impressions of the street (own pictures, spring 2018). 101
Figure 33. High-rise residential tower in Pujiang Mingdi (own picture, spring 2018). 102
Figure 34. Map of Pujiang Mingdi and impressions of the compound (own pictures, spring 2018). 103
Figure 35. Entities of the 6th National Census (2010) 104
Figure 36. Comparison of statistical data of a gated community (Pujiang Mingdi) and a lilong (Ruiqing lilong). 105
Figure 37. Liaoning Road, map of stationary activities of pedestrians (weekend and weekday) 118
Figure 38. Wuzhou Road, map of stationary activities of pedestrians (weekend and weekday) 119
Figure 39. Jiaxing Road, map of stationary activities of pedestrians (weekend and weekday) 120
Figure 40. Pujiang Mingdi, map of stationary activities of pedestrians (weekend and weekday) 121
Figure 41. Tongzhou Road, map of stationary activities of pedestrians (weekend and weekday) 122

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8.2 List of graphs

Graph 1. Total number of pedestrian flow and stationary activity on five sites on a weekday and a day of the weekend 112
Graph 2. Average pedestrian flow and stationary activities during the course of a day 113
Graph 3. Total number of stationary activities according to site 114
Graph 4. Age composition of stationary activities in the five areas of research (average of the weekday and the day of the weekend) 123
Graph 5. Average division of stationary activities of children according to type of space (in percent and in total) 124
Graph 6. Average division of stationary activities of adults according to type of space (in percent and in total) 125
Graph 7. Average division of stationary activities of the elderly according to type of space (in percent and in total) 126
Graph 8. Monthly income (RMB) of the survey participants according to place of residence 130
Graph 9. Distribution of age of the survey participants according to place of residence 131
Graph 10. Households with children according to place of residence 132
Graph 11. Boxplot on the relation to streets according to the place of residence 138
Graph 12. Comparison of the relation to the street 139
Graph 13. Overview of the level of satisfaction of the two groups with selected aspects of their living environment 140
Graph 14. Satisfaction with the sense of community according to place of residence – differentiated according to the single lilong streets 141
Graph 15. Comparison of selected street activities according to place of residence and research method 148

8.3 List of tables

Table 1. List of stationary activities 108
Table 2. General conditions of the pedestrian observation 109
Table 3. Stationary activities per site: Lilong-only activities in red frame. 115
Table 4. Socio-demographic data of the interviewees (June 2018) 129
Table 5. Activities performed in the directly accessible open space according to place of residence.. 134
Table 6. Important factors for the usage of exterior streets according to the place of residence 136
Table 7. Categories for the residents' relation to the street space 137

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9 Appendix

9.1 Questionnaire Lilong

Mandarin version

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虹口区小型传统宿舍楼居民问卷调查

亲爱的居民们，

我是来自同济大学和奥地利维也纳工业大学的一名学生，现正为我的毕业论文进行一项调查研究。论文聚焦于与上海虹口区涌现的高楼小区有关的街道空间转型。我想了解将街道使用者（即您）对此的看法。比如，什么样的开放空间是小区居民会使用的，什么因素又是缺失的？

本论文的目的是研究如何将街道空间设计得更方便行人通行和居民生活。因此，您的意见非常重要！所有的调查信息将以匿名形式收集，并仅用于科学研究。

第一部分：居住环境和街道

1. 您是否居住在此小区？
   ☐ 是　☐ 无可奉告
   ☐ 否

2. 您在闲暇时间喜欢待在室外还是室内？
   ☐ 基本在室外　☐ 大部分时间在室外
   ☐ 大部分时间在室内　☐ 基本在室内
   ☐ 室内室外时间差不多

3. 您在此小区的公共开放空间活动吗？（如果肯定请继续回答问题 3.1 和 3.2，如果否定请回答问题 4）
   ☐ 使用　☐ 不知道
   ☐ 不使用　☐ 无可奉告

   3.1. 您多久来此小区的公共开放空间活动？
   ☐ 每天好几次　☐ 每周几次　☐ 每月一次
   ☐ 每天一次　☐ 每周一次　☐ 少于每月一次

   3.2. 您通常在此公共开放空间中做什么？（多项选择）
   ○ 运动　○ 见朋友　○ 观察他人
   ○ 户外健身设施　○ 坐在外面　○ 干家务活（晒衣服）
   ○ 用操场　○ 散步　○ 与您的孩子玩耍
   ○ 遛狗　○ 吃东西　○ 喝酒
   ○ 其他：_____

4. 您更喜欢哪种开放空间？
   ☐ 处于小区内部　☐ 不知道
   ☐ 临近街道的开放空间　☐ 都不喜欢

第二部分：居民街道

5. 您如果到达周围 1 公里范围内的小区开放空间，你喜欢什么样的交通方式？
   ☐ 步行　☐ 共享单车　☐ 小汽车　☐ 其他：_____
   ☐ 单车　☐ 公交车　☐ 网约车（滴滴）

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6. 您是否会在该临近街道的开放空间上逗留？
   ☐ 是　☐ 不知道
   ☐ 否　☐ 无可奉告

7. 如图所示，请分别街道进行评价。
   ☐ 该条街道仅用于通行
   ☐ 该条街道可用于通行，并且很安全
   ☐ 该条街道可用于散步，并且您还很享受
   ☐ 您不仅享受在此通行，并且感觉这条街道非常有趣
   ☐ 您觉得这条街道与您的气质非常契合，感觉在自己家里一样

8. 哪些因素会影响您在街道公共开放空间上的逗留时间？（多项选择）
   ○ 安全感　○ 离家近
   ○ 座位设施　○ 安静的氛围
   ○ 购物店　○ 热闹
   ○ 绿化　○ 与他人的互动
   ○ 街道空间多样　○ 儿童设施
   ○ 活动场地充足　○ 公共厕所
   ○ 其他：_____

9. 请在下面几个方面给您的居住环境打分（1-非常满意，6-非常不满意）

	1	2	3	4	5	6
归属感	☐	☐	☐	☐	☐	☐
私密性	☐	☐	☐	☐	☐	☐
街道生活	☐	☐	☐	☐	☐	☐
儿童友好	☐	☐	☐	☐	☐	☐
老人友好	☐	☐	☐	☐	☐	☐
街道的空间布局	☐	☐	☐	☐	☐	☐
其他：_____	☐	☐	☐	☐	☐	☐

第三部分：人口信息

10. 性别
   ☐ 女
   ☐ 男

11. 月收入
   ☐ < 2000 元　☐ 4001 – 8000 元
   ☐ 2001 – 4000 元　☐ > 8001 元

12. 年龄
   ☐ < 20　☐ 41 – 60
   ☐ 21 – 40　☐ > 61

13. 家庭居住人数（包括您）：_____

14. 0-18 岁未成年人数量：_____

非常感谢您的参与！

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English version

TU WIEN 同濟大學 TONGJI UNIVERSITY

Questionnaire for
the inhabitants of the small traditional quarters in Hongkou

Dear inhabitants,
I am a student at Tongji University and TU Vienna, Austria and currently conduct research for my final thesis. The focus of the thesis is the transformation of street space in relation to the emergence of gated, high-rise compounds in Hongkou, Shanghai. I want to include the perception of the possible street users (you): what open spaces do you use? What spaces are missing?

The aim of the thesis is to discover, how we can design more pedestrian-friendly and liveable street spaces. Therefore, your personal opinion is essential! All data is anonymous and used for scientific purpose only.

[1. Part – Living Environment & Street]

1. Do you live in this street?
   ☐ Yes ☐ No answer
   ☐ No

2. What is the ratio of your leisure time spend inside a building and outside (street, park, etc.)?
   ☐ Mostly inside a building ☐ Rather outside
   ☐ Rather inside a building ☐ Mostly outside
   ☐ Balanced

3. Do you use the open space on the street? (If YES, continue with 3.1 and 3.2. If NO, continue with 4.)
   ☐ Yes ☐ Don't know
   ☐ No ☐ No answer

   3.1. If yes, how often do you use the open space within the compound?
   ☐ Several times a day ☐ Once a week ☐ Once a month
   ☐ Daily ☐ Several times a week ☐ Less than once a month

   3.2. If yes, how do you use the open space within the compound? (Multiple answer allowed)
   O Sports (Tai Ji, etc.) O Meet friends O Watch other people
   O Outdoor fitness facilities O Sit outside O Domestic tasks (hang clothes)
   O Playground O Go for a walk O Spend time with your children
   O Walk the dog O Eat O Drink
   O Other: _____

4. Which space do you prefer:
   ☐ Space inside your house ☐ Don't know
   ☐ Open spaces in the neighbouring streets ☐ None

[2. Part – Neighbourhood Streets]

5. What mode of transport do you usually use when you move in the wider neighbourhood (1 km radius)?
   ☐ Walk ☐ E-Bike ☐ Car ☐ Other: _____
   ☐ Bicycle ☐ Bus ☐ Didi

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6. Do you spend time in the streets of the wider neighbourhood (1 km radius)?
   ☐ Yes ☐ Don't know
   ☐ No ☐ No answer

7. How do you perceive this street we are standing at as a pedestrian? Please read the following categories and classify the walkability of the street.
   ☐ The street is only used to get from A to B.
   ☐ The street is used to get from A to B and a safe road. You feel protected on this street.
   ☐ The street is suitable for a comfortable walk, you do not only walk but enjoy the path
   ☐ You enjoy walking the path. Further the street is not boring, it is an exciting path.
   ☐ You feel like this is your street and it belongs to you. You feel at home.

8. What factors are important for you to spend time in a public street? (Multiple answer allowed)
   O Safety (sidewalks, etc.) O Proximity to home
   O Sitting facilities O Calm atmosphere (no traffic noise, construction sites)
   O Shops/services O High frequency of people
   O Greenery O Interaction with other people
   O Diverse street space O Facilities for children (playground, etc.)
   O Open spaces for activities (dancing...) O Public Toilets
   O Other: _____

9. Please rate the following aspects of your living environment. (1 – very satisfactory. 6 – very UNsatisfactory)

	1	2	3	4	5	6
Sense of community	☐	☐	☐	☐	☐	☐
Privacy	☐	☐	☐	☐	☐	☐
Vivid street life	☐	☐	☐	☐	☐	☐
Child friendly	☐	☐	☐	☐	☐	☐
Pleasant for elderly	☐	☐	☐	☐	☐	☐
Physical layout of streets	☐	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐	☐

[3. Part – Demographic Data]

10. Sex:
    ☐ Female
    ☐ Male

11. Monthly income:
    ☐ < 2000 RMB ☐ 4001 – 8000 RMB
    ☐ 2001 – 4000 RMB ☐ > 8001 RMB

12. Age:
    ☐ < 20 ☐ 41 – 60
    ☐ 21 – 40 ☐ > 61

13. In your household live ___ (number) of persons excluding yourself, of which are ___ (number) children younger than 18 years.

Thank you so much for your participation!

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9.2 Questionnaire Gated Community

Mandarin version

TU WIEN 同济大学 TONGJI UNIVERSITY

虹口区海伦路 88 号浦江名邸小区居民问卷调查

亲爱的居民们，

我是来自同济大学和奥地利维也纳工业大学的一名学生，现正为我的毕业论文进行一项调查研究。论文聚焦于与上海虹口区涌现的高楼小区有关的街道空间转型。我想了解将街道使用者（即您）对此的看法。比如，什么样的开放空间是小区居民会使用的，什么因素又是缺失的？

本论文的目的是研究如何将街道空间设计得更方便行人通行和居民生活。因此，您的意见非常重要！所有的调查信息将以匿名形式收集，并仅用于科学研究。

第一部分：浦江名邸小区

1. 您选择此小区的主要原因是什么？（可多选）
   ☐私密性好 ☐ 开发商/小区声誉好 ☐ 公寓条件（大小、价格）
   ☐安全性好 ☐交通便利 ☐ 其他：_____

2. 您在闲暇时间喜欢待在室外还是室内？
   ☐ 基本在室外 ☐ 大部分时间在室外
   ☐ 大部分时间在室内 ☐ 基本在室内
   ☐ 室内室外时间差不多

3. 您在此小区的公共开放空间活动吗？（如果肯定请继续回答问题 3.1 和 3.2，如果否定请回答问题 4）
   ☐ 使用 ☐ 不知道
   ☐ 不使用 ☐ 无可奉告

   3.1. 您多久来此小区的公共开放空间活动？
   ☐ 每天好几次 ☐ 每周几次 ☐ 每月一次
   ☐ 每天一次 ☐ 每周一次 ☐ 少于每月一次

   3.2. 您通常在此公共开放空间中做什么？（多项选择）
   O 运动 O 见朋友 O 观察他人
   O 户外健身设施 O 坐在外面 O 干家务活（晒衣服）
   O 用操场 O 散步 O 与您的孩子玩耍
   O 遛狗 O 吃东西 O 喝酒
   O 其他：_____

4. 您更喜欢哪种开放空间？
   ☐ 处于小区内部 ☐ 不知道
   ☐ 临近街道的开放空间 ☐ 都不喜欢

第二部分：邻近街道

5. 您如果到达周围 1 公里范围内的小区开放空间，你喜欢什么样的交通方式？
   ☐ 步行 ☐ 共享单车 ☐ 小汽车 ☐ 其他：_____
   ☐ 单车 ☐ 公交车 ☐ 网约车（滴滴）

6. 您是否会在该临近街道的开放空间上逗留？
   ☐ 是 ☐ 不知道
   ☐ 否 ☐ 无可奉告

TU WIEN 同济大学 TONGJI UNIVERSITY

7. 作为行人，您如何看待小区周围的街道？请阅读以下区域分类，并区分小区周围街道的可行走性

A) 该条街道仅用于通行
B) 该条街道可用于通行，并且很安全
C) 该条街道可用于散步，并且您还很享受
D) 您不仅享受在此通行，并且感觉这条街道非常有趣
E) 您觉得这条街道与您的气质非常契合，感觉在自己家里一样

① ___
② ___
③ ___
④ ___

8. 哪些因素会影响您在街道公共开放空间上的逗留时间？（多项选择）
   O 安全感 O 离家近
   O 座位设施 O 安静的氛围
   O 购物店 O 热闹
   O 绿化 O 与他人的互动
   O 街道空间多样 O 儿童设施
   O 活动场地充足 O 公共厕所
   O 其他：_____

9. 请在下面几个方面给您的居住环境打分（1-非常满意，6-非常不满意）

	1	2	3	4	5	6
归属感	☐	☐	☐	☐	☐	☐
私密性	☐	☐	☐	☐	☐	☐
街道生活	☐	☐	☐	☐	☐	☐
儿童友好	☐	☐	☐	☐	☐	☐
老人友好	☐	☐	☐	☐	☐	☐
街道的空间布局	☐	☐	☐	☐	☐	☐
其他：_____	☐	☐	☐	☐	☐	☐

[3. Part – Demographic Data] 第三部分：人口信息

10. 性别
    ☐ 女
    ☐ 男

11. 月收入
    ☐ < 2000 元 ☐ 4001 – 8000 元
    ☐ 2001 – 4000 元 ☐ > 8001 元

12. 年龄
    ☐ < 20 ☐ 41 – 60
    ☐ 21 – 40 ☐ > 61

13. 家庭居住人数（包括您）：_____

14. 0-18 岁未成年人数量：_____

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English version

TU WIEN 同濟大學 TONGJI UNIVERSITY

Questionnaire for
the inhabitants of the Compound in Hailun Road 88, Hongkou

Dear inhabitants,
I am a student at Tongji University and TU Vienna, Austria and currently conduct research for my final thesis. The focus of the thesis is the transformation of street space in relation to the emergence of gated, high-rise compounds in Hongkou, Shanghai. I want to include the perception of the possible street users (you): what open spaces do inhabitants of compounds use? What spaces are missing?

The aim of the thesis is to discover, how we can design more pedestrian-friendly and liveable street spaces. Therefore, your personal opinion is essential! All data is anonymous and used for scientific purpose only.

[1. Part - Compound]

1. What was the main reason for you to move to this compound?
   ☐ Privacy ☐ Reputation of the compound/Developer ☐ Flat features (size, price)
   ☐ Safety ☐ Location ☐ Other: _____

2. What is the ratio of your leisure time spend inside a building and outside (on a street, park, nature)?
   ☐ Mostly inside a building ☐ Rather outside
   ☐ Rather inside a building ☐ Mostly outside
   ☐ Balanced

3. Do you use the open space within the compound? (If YES, continue with 3.1 and 3.2. If NO, continue with 4.)
   ☐ Yes ☐ Don't know
   ☐ No ☐ No answer

   3.1. If yes, how often do you use the open space within the compound?
   ☐ Several times a day ☐ Once a week ☐ Once a month
   ☐ Daily ☐ Several times a week ☐ Less than once a month

   3.2. If yes, how do you use the open space within the compound? (Multiple answer allowed)
   O Sports (Tai Ji, etc.) O Meet friends O Watch other people
   O Outdoor fitness facilities O Sit outside O Domestic tasks (hang clothes)
   O Playground O Go for a walk O Spend time with your children
   O Walk the dog O Eat O Drink
   O Other: _____

4. Which open space do you prefer:
   ☐ Open Spaces inside the compound ☐ Don't know
   ☐ Open spaces in the neighbouring streets ☐ None

[2. Part – Neighbourhood Streets]

5. What mode of transport do you usually use when you move in the wider neighbourhood (1 km radius)?
   ☐ Walk ☐ E-Bike ☐ Car ☐ Other: _____
   ☐ Bicycle ☐ Bus ☐ Didi

6. Do you spend time in the streets of the wider neighbourhood (1 km radius)?
   ☐ Yes ☐ Don't know
   ☐ No ☐ No answer

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7. How do you perceive the streets around your compound as a pedestrian? Please read the following categories and classify the walkability of the streets surrounding the compound:

A) The street is only used to get from A to B.

B) The street is used to get from A to B and considered a safe road. You feel protected on this street.

C) The street is suitable for a comfortable walk, you do not only walk but enjoy the path

D) You enjoy walking the path. Further the street is not boring, it is an exciting path.

E) You feel like this is your street and it belongs to you. You feel at home.

① ___ ③ ___
② ___ ④ ___

8. What factors are important for you to spend time in a public street? (Multiple answer allowed)
   O Safety (sidewalks, etc.) O Proximity to home
   O Sitting facilities O Calm atmosphere (no traffic noise, construction sites)
   O Shops/services O High frequency of people
   O Greenery O Interaction with other people
   O Diverse street space O Facilities for children (playground, etc.)
   O Open spaces for activities (dancing...) O Public Toilets
   O Other: _____

9. Please rate the following aspects of your living environment. (1 – very satisfactory. 6 – very UNsatisfactory)

	1	2	3	4	5	6
Sense of community	☐	☐	☐	☐	☐	☐
Privacy	☐	☐	☐	☐	☐	☐
Vivid street life	☐	☐	☐	☐	☐	☐
Child friendly	☐	☐	☐	☐	☐	☐
Pleasant for elderly	☐	☐	☐	☐	☐	☐
Physical layout of streets	☐	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐	☐

[3. Part – Demographic Data]

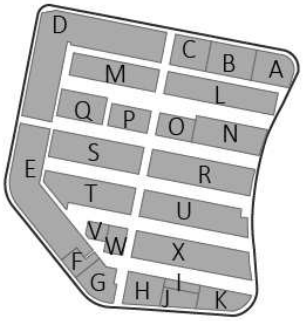
10. Sex:
    ☐ Female
    ☐ Male

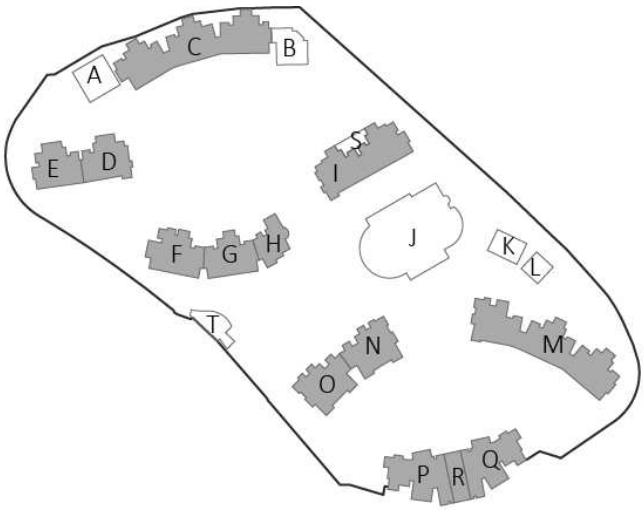
11. Monthly income:
    ☐ < 2000 RMB ☐ 4001 – 8000 RMB
    ☐ 2001 – 4000 RMB ☐ > 8001 RMB

12. Age:
    ☐ < 20 ☐ 41 – 60
    ☐ 21 – 40 ☐ > 61

13. In your household live ___ (number) of persons excluding yourself, of which are ___ (number) children (younger than 18 years).

9.3 Urban parameters





Ruiqing Lilong

Building	Floor area (Ground floor)	Building Height	Net Floor Area
A	195 m²	2	390 m²
B	233 m²	3	699 m²
C	184 m²	2	368 m²
D	1,025 m²	2	2,050 m²
E	728 m²	2	1,456 m²
F	87 m²	2	174 m²
G	184 m²	2	368 m²
H	187 m²	2	374 m²
I	51 m²	2	102 m²
J	101 m²	2	202 m²
K	160 m²	2	320 m²
L	410 m²	4	1,640 m²
M	321 m²	4	1,284 m²
N	311 m²	2	622 m²
O	134 m²	4	536 m²
P	147 m²	4	588 m²
Q	206 m²	2	412 m²
R	459 m²	2	918 m²
S	408 m²	2	816 m²
T	388 m²	2	776 m²
U	463 m²	3	1,389 m²
V	57 m²	2	114 m²
W	85 m²	2	170 m²
X	519 m²	3	1,557 m²
	7,043 m²		**17,325 m²**

Plot Area	*11,000 m²*
of which, m² is occupied by buildings	*7,043 m²*
Building Coverage Ratio (BCR)	***64%***
Ratio open space: buildings	***1 : 1.6***

Plot Area	*11,000 m²*
Net Floor Area	*17,325 m²*
Floor Area Ratio (FAR)	***1.58***

Buildings	*64%*	***7,043 m²***
Open Space	*36%*	***3,957 m²***
Green Space	*0%*	*0 m²*
Sealed Space	*100%*	*3,957 m²*

Net Floor Area	*17,325 m²*
*Inhabitants**	*1755*
Floor Area/Inhabitant	***10 m²***
Open space/inhabitant	***2 m²***
Green space/inhabitant	***0 m²***

Source: own measurements.
*6th National Census, 2010.

Pujiang Mingdi

Building	Floor area (Ground floor)	Building Height	Net Floor Area
A**	199 m²	1	-
B**	180 m²	6	-
C	869 m²	31	26,939 m²
D	292 m²	31	9,052 m²
E	289 m²	23	6,647 m²
F	332 m²	15	4,980 m²
G	296 m²	21	6,216 m²
H	185 m²	12	2,220 m²
I	560 m²	24	13,440 m²
J**	1,082 m²	2	-
K**	122 m²	1	-
L**	82 m²	2	-
M	873 m²	30	26,190 m²
N	336 m²	21	7,056 m²
O	336 m²	27	9,072 m²
P	398 m²	32	12,736 m²
Q	401 m²	32	12,832 m²
R	138 m²	32	4,416 m²
S**	71 m²	24	-
T**	134 m²	1	-
	7,175 m²		**141,796 m²**

**no residential building, therefore excluded from the calculation of the net floor area

Plot Area	*32,000 m²*
of which, m² is occupied by buildings	*7,175 m²*
Building Coverage Ratio (BCR)	***22%***
Ratio open space: buildings	***4.5 : 1***

Plot Area	*32,000 m²*
Net Floor Area	*141,796 m²*
Floor Area Ratio (FAR)	***4.43***

Buildings	*22%*	***7,175 m²***
Open Space	*78%*	***24,825 m²***
Green Space	*62%*	*15,463 m²*
Sealed Space	*38%*	*9,362 m²*

Gross Floor Area	*141,796 m²*
- 25% (walls, elevators, staircase, etc.)	*35,449 m²*
Net Floor Area	*106,347 m²*
*Inhabitants**	*1761*
Floor Area/Inhabitant	***60 m²***
Open space/inhabitant	***14 m²***
Green space/inhabitant	***9 m²***

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9.4 Statistical evaluation

9.4.1 Sex & place of residence

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Sex * Place of residence	156	92.9%	12	7.1%	168	100.0%

Sex * Place of residence Crosstabulation

			Place of residence		
			Gated Community	Lilong	Total
Sex	female	Count	70	16	86
		Expected Count	62.3	23.7	86.0
		% within Sex	81.4%	18.6%	100.0%
		% within Place of residence	61.9%	37.2%	55.1%
		Standardized Residual	1.0	-1.6	
	male	Count	43	27	70
		Expected Count	50.7	19.3	70.0
		% within Sex	61.4%	38.6%	100.0%
		% within Place of residence	38.1%	62.8%	44.9%
		Standardized Residual	-1.1	1.8	
Total		Count	113	43	156
		Expected Count	113.0	43.0	156.0
		% within Sex	72.4%	27.6%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.705[a]	1	.006	.007	.005	
Continuity Correction[b]	6.738	1	.009			
Likelihood Ratio	7.716	1	.005	.007	.005	
Fisher's Exact Test				.007	.005	
Linear-by-Linear Association	7.656[c]	1	.006	.007	.005	0.003
N of Valid Cases	156					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.29.
b. Computed only for a 2x2 table
c. The standardized statistic is 2.767.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.222	.006	.007
	Cramer's V	.222	.006	.007
N of Valid Cases		156		

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9.4.2 Income & place of residence

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Income * Place of residence	150	89.3%	18	10.7%	168	100.0%

Income * Place of residence Crosstabulation

			Place of residence		
			GC	Lilong	Total
Income	< 2000 RMB	Count	3	6	9
		Expected Count	6.5	2.5	9.0
		% within Income	33.3%	66.7%	100.0%
		% within Place of residence	2.8%	14.3%	6.0%
		Standardized Residual	-1.4	2.2	
	2001-4000 RMB	Count	7	17	24
		Expected Count	17.3	6.7	24.0
		% within Income	29.2%	70.8%	100.0%
		% within Place of residence	6.5%	40.5%	16.0%
		Standardized Residual	-2.5	4.0	
	4001-8000 RMB	Count	36	18	54
		Expected Count	38.9	15.1	54.0
		% within Income	66.7%	33.3%	100.0%
		% within Place of residence	33.3%	42.9%	36.0%
		Standardized Residual	-.5	.7	
	> 8000 RMB	Count	62	1	63
		Expected Count	45.4	17.6	63.0
		% within Income	98.4%	1.6%	100.0%
		% within Place of residence	57.4%	2.4%	42.0%
		Standardized Residual	2.5	-4.0	
Total		Count	108	42	150
		Expected Count	108.0	42.0	150.0
		% within Income	72.0%	28.0%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	51.079[a]	3	.000	.000		
Likelihood Ratio	58.440	3	.000	.000		
Fisher's Exact Test	56.362			.000		
Linear-by-Linear Association	47.108[b]	1	.000	.000	.000	.000
N of Valid Cases	150					

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 2.52.
b. The standardized statistic is -6.864.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.584	.000	.000
	Cramer's V	.584	.000	.000
N of Valid Cases		150		

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9.4.3 Age & place of residence

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Age * Place of residence	152	90.5%	16	9.5%	168	100.0%

Age * Place of residence Crosstabulation

			Place of residence		
			GC	Lilong	Total
Age	<20	Count	7	0	7
		Expected Count	5.1	1.9	7.0
		% within Age	100.0%	0.0%	100.0%
		% within Place of residence	6.3%	0.0%	4.6%
		Standardized Residual	.8	-1.4	
	21-40	Count	66	13	79
		Expected Count	57.7	21.3	79.0
		% within Age	83.5%	16.5%	100.0%
		% within Place of residence	59.5%	31.7%	52.0%
		Standardized Residual	1.1	-1.8	
	41-60	Count	28	13	41
		Expected Count	29.9	11.1	41.0
		% within Age	68.3%	31.7%	100.0%
		% within Place of residence	25.2%	31.7%	27.0%
		Standardized Residual	-.4	.6	
	>60	Count	10	15	25
		Expected Count	18.3	6.7	25.0
		% within Age	40.0%	60.0%	100.0%
		% within Place of residence	9.0%	36.6%	16.4%
		Standardized Residual	-1.9	3.2	
Total		Count	111	41	152
		Expected Count	111.0	41.0	152.0
		% within Age	73.0%	27.0%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	21.332[a]	3	.000	.000		
Likelihood Ratio	21.710	3	.000	.000		
Fisher's Exact Test	19.528			.000		
Linear-by-Linear Association	20.545[b]	1	.000	.000	.000	.000
N of Valid Cases	152					

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 1.89.
b. The standardized statistic is 4.533.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.375	.000	.000
	Cramer's V	.375	.000	.000
N of Valid Cases		152		

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9.4.4 Children & place of residence

Case Processing Summary

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
Amount of Kids in Household * Place of residence	137	81.5%	31	18.5%	168	100.0%

Amount of Kids in Household * Place of residence Crosstabulation

			Place of residence GC	Lilong	Total
Amount of Kids in Household	0	Count	39	28	67
		Expected Count	48.4	18.6	67.0
		% within Amount of Kids in Household	58.2%	41.8%	100.0%
		% within Place of residence	39.4%	73.7%	48.9%
		Standardized Residual	-1.4	2.2	
	1	Count	41	7	48
		Expected Count	34.7	13.3	48.0
		% within Amount of Kids in Household	85.4%	14.6%	100.0%
		% within Place of residence	41.4%	18.4%	35.0%
		Standardized Residual	1.1	-1.7	
	2	Count	19	2	21
		Expected Count	15.2	5.8	21.0
		% within Amount of Kids in Household	90.5%	9.5%	100.0%
		% within Place of residence	19.2%	5.3%	15.3%
		Standardized Residual	1.0	-1.6	
	3	Count	0	1	1
		Expected Count	.7	.3	1.0
		% within Amount of Kids in Household	0.0%	100.0%	100.0%
		% within Place of residence	0.0%	2.6%	0.7%
		Standardized Residual	-.9	1.4	
Total		Count	99	38	137
		Expected Count	99.0	38.0	137.0
		% within Amount of Kids in Household	72.3%	27.7%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	16.827[a]	3	.001	.000		
Likelihood Ratio	17.629	3	.001	.000		
Fisher's Exact Test	16.383			.000		
Linear-by-Linear Association	8.850[b]	1	.003	.003	.001	.001
N of Valid Cases	137					

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 0.28.
b. The standardized statistic is -2.975.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.350	.001	.000
	Cramer's V	.350	.001	.000
N of Valid Cases		137		

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9.4.5 Ratio of leisure time spent indoors and outdoors & place of residence

Case Processing Summary

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
Ratio leisure time spent inside building or outside * Place of residence	157	93.5%	11	6.5%	168	100.0%

Ratio leisure time spent inside building or outside * Place of residence Crosstabulation

			Place of residence GC	Lilong	Total
Ratio leisure time spent inside building or outside	Mostly inside building	Count	7	10	17
		Expected Count	12.2	4.8	17.0
		% within Ratio leisure time spent inside building or outside	41.2%	58.8%	100.0%
		% within Place of residence	6.2%	22.7%	10.8%
		Standardized Residual	-1.5	2.4	
	Rather inside building	Count	34	16	50
		Expected Count	36.0	14.0	50.0
		% within Ratio leisure time spent inside building or outside	68.0%	32.0%	100.0%
		% within Place of residence	30.1%	36.4%	31.8%
		Standardized Residual	-.3	.5	
	balanced	Count	43	3	46
		Expected Count	33.1	12.9	46.0
		% within Ratio leisure time spent inside building or outside	93.5%	6.5%	100.0%
		% within Place of residence	38.1%	6.8%	29.3%
		Standardized Residual	1.7	-2.8	
	Rather outside	Count	14	9	23
		Expected Count	16.6	6.4	23.0
		% within Ratio leisure time spent inside building or outside	60.9%	39.1%	100.0%
		% within Place of residence	12.4%	20.5%	14.6%
		Standardized Residual	-.6	1.0	
	Mostly outside	Count	15	6	21
		Expected Count	15.1	5.9	21.0
		% within Ratio leisure time spent inside building or outside	71.4%	28.6%	100.0%
		% within Place of residence	13.3%	13.6%	13.4%
		Standardized Residual	.0	.0	
Total		Count	113	44	157
		Expected Count	113.0	44.0	157.0
		% within Ratio leisure time spent inside building or outside	72.0%	28.0%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

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Chi-Quadrat-Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	20.340[a]	4	.000	.000		
Likelihood Ratio	22.445	4	.000	.000		
Fisher's Exact Test	21.833			.000		
Linear-by-Linear Association	2.071[b]	1	.150	.158	.086	.021
N of Valid Cases	157					

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 4.76.
b. The standardized statistic is -1.439.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.360	.000	.000
	Cramer's V	.360	.000	.000
N of Valid Cases		157		

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9.4.6 Usage of most immediate open space & place of residence

Case Processing Summary

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
Usage of most immediate open space * Place of residence	134	79.8%	34	20.2%	168	100.0%

Usage of most immediate open space * Place of residence Crosstabulation

			Place of residence GC	Lilong	Total
Usage of most immediate open space	No	Count	26	17	43
		Expected Count	31.1	11.9	43.0
		% within Usage of most immediate open space	60.5%	39.5%	100.0%
		% within Place of residence	26.8%	45.9%	32.1%
		% of Total	19.4%	12.7%	32.1%
		Standardized Residual	-.9	1.5	
	Yes	Count	71	20	91
		Expected Count	65.9	25.1	91.0
		% within Usage of most immediate open space	78.0%	22.0%	100.0%
		% within Place of residence	73.2%	54.1%	67.9%
		% of Total	53.0%	14.9%	67.9%
		Standardized Residual	.6	-1.0	
total		Count	97	37	134
		Expected Count	97.0	37.0	134.0
		% within Usage of most immediate open space	72.4%	27.6%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%
		% of Total	72.4%	27.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.503[a]	1	.034	.040	.029	
Continuity Correction[b]	3.668	1	.055			
Likelihood Ratio	4.360	1	.037	.040	.029	
Fisher's Exact Test				.040	.029	
Linear-by-Linear Association	4.470[c]	1	.035	.040	.029	.018
N of Valid Cases	134					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.87.
b. Computed only for 2x2 table
c. The standardized statistic is -2.114.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	-.183	.034	.040
	Cramer's V	.183	.034	.040
N of Valid Cases		134		

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9.4.7 Usage of most direct accessible open space & place of residence

		Place of Residence Gated Community			Lilong		
		Count	Column Response % (Base: Count)	Column Count % (Base: Responses)	Count	Column Response % (Base: Count)	Column Count % (Base: Responses)
Usage of open space	Sport	36	34.3%	16.2%	10	22.7%	11.1%
	Outdoor fitness facilities	18	17.1%	8.1%	2	4.5%	2.2%
	Playground	6	5.7%	2.7%	2	4.5%	2.2%
	Walk the Dog	18	17.1%	8.1%	2	4.5%	2.2%
	Other	3	2.9%	1.4%	5	11.4%	5.6%
	Meet friends	18	17.1%	8.1%	10	22.7%	11.1%
	Sit outside	14	13.3%	6.3%	11	25.0%	12.2%
	Go for a Walk	67	63.8%	30.2%	24	54.5%	26.7%
	Eat	5	4.8%	2.3%	2	4.5%	2.2%
	Watch other people	3	2.9%	1.4%	6	13.6%	6.7%
	Domestic Tasks	0	0.0%	0.0%	7	15.9%	7.8%
	Spend time with kids	34	32.4%	15.3%	6	13.6%	6.7%
	Drink	0	0.0%	0.0%	3	6.8%	3.3%

Pearson Chi-Square Tests

		Place of Residence
Usage of open space	Chi-Quadrat	56.417
	df	13
	Sig.	.000*.[b,c]

Results are based on nonempty rows and columns in each innermost subtable.
*. The Chi-square statistic is significant at the .05 level.
b. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.
c. The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.

Comparisons of Column Proportions[b]

		Place of Residence Gated Community (A)	Lilong (B)
Usage of open space	Sport		
	Outdoor fitness facilities	B(.040)	
	Playground		
	Walk the Dog	B(.040)	
	Other		A(.036)
	Meet friends		
	Sit outside		
	Go for a Walk		
	Eat		
	Watch other people		A(.012)
	Domestic Tasks	.[a]	
	Spend time with kids	B(.019)	
	Drink	.[a]	

Results are based on two-sided tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion.
Significance level for upper case letters (A, B, C): .05
a. This category is not used in comparisons because its column proportion is equal to zero or one.
b. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

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9.4.8 Important factors for the usage of public streets & place of residence

		Place of Residence Gated Community			Lilong		
		Count	Column Response % (Base: Count)	Column Count % (Base: Responses)	Count	Column Response % (Base: Count)	Column Count % (Base: Responses)
Important factors for the use of streets	Safety	66	57.4%	15.3%	15	30.6%	9.5%
	Sitting	19	16.5%	4.4%	7	14.3%	4.4%
	Shops/Services	34	29.6%	7.9%	16	32.7%	10.1%
	Greenery	66	57.4%	15.3%	22	44.9%	13.9%
	Diverse street space	18	15.7%	4.2%	6	12.2%	3.8%
	Open space for activities	44	38.3%	10.2%	14	28.6%	8.9%
	Other	0	0.0%	0.0%	0	0.0%	0.0%
	Proximity to home	72	62.6%	16.7%	26	53.1%	16.5%
	Calm atmosphere	54	47.0%	12.5%	16	32.7%	10.1%
	High frequency of people	9	7.8%	2.1%	10	20.4%	6.3%
	Interaction with other people	10	8.7%	2.3%	11	22.4%	7.0%
	Facilities for kids	30	26.1%	6.9%	5	10.2%	3.2%
	Public Toilets	10	8.7%	2.3%	10	20.4%	6.3%

Pearson Chi-Square Tests

		Place of Residence
Important factors for the use of streets	Chi-Quadrat	38.901
	df	12
	Sig.	.000*

Results are based on nonempty rows and columns in each innermost subtable.
*. The Chi-square statistic is significant at the .05 level.

Comparisons of Column Proportions[b]

		Place of Residence Gated Community (A)	Lilong (B)
Important factors for the use of streets	Safety	B(.002)	
	Sitting		
	Shops/Services		
	Greenery		
	Diverse street space		
	Open space for activities		
	Other	.a	.a
	Proximity to home		
	Calm atmosphere		
	High frequency of people		A(.021)
	Interaction with other people		A(.016)
	acilities for kids	B(.023)	
	Public Toilets		A(.036)

Results are based on two-sided tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion.
Significance level for upper case letters (A, B, C): .05
a. This category is not used in comparisons because its column proportion is equal to zero or one.
b. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

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9.4.9 Comparison perception of streets and place of residence: mean of the rating of the gated community residents of four streets and rating of lilong residents.

Case Processing Summary

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
Perception of roads - mean GC and Lilong * Place of residence	145	86.3%	23	13.7%	168	100.0%

Place of residence* perception of roads - mean GC and Lilong Crosstabulation

			perception of roads - mean GC and Lilong											
			1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	4.00	5.00	Total
Place of residence	GC	Count	27	5	8	2	24	4	8	6	13	3	2	102
		Expected Count	31.7	3.5	5.6	1.4	23.2	2.8	5.6	4.2	14.1	3.5	6.3	102.0
		% within place of residence	26.5%	4.9%	7.8%	2.0%	23.5%	3.9%	7.8%	5.9%	12.7%	2.9%	2.0%	100.0%
		% within perception of roads - mean GC and Lilong	60.0%	100.0%	100.0%	100.0%	72.7%	100.0%	100.0%	100.0%	65.0%	60.0%	22.2%	70.3%
		Standardized Residual	-.8	.8	1.0	.5	.2	.7	1.0	.9	-.3	-.3	-1.7	
	Lilong	Count	18	0	0	0	9	0	0	0	7	2	7	43
		Expected Count	13.3	1.5	2.4	.6	9.8	1.2	2.4	1.8	5.9	1.5	2.7	43.0
		% within place of residence	41.9%	0.0%	0.0%	0.0%	20.9%	0.0%	0.0%	0.0%	16.3%	4.7%	16.3%	100.0%
		% within perception of roads - mean GC and Lilong	40.0%	0.0%	0.0%	0.0%	27.3%	0.0%	0.0%	0.0%	35.0%	40.0%	77.8%	29.7%
		Standardized Residual	1.3	-1.2	-1.5	-.8	-.3	-1.1	-1.5	-1.3	.4	.4	2.7	
Total		Count	45	5	8	2	33	4	8	6	20	5	9	145
		Expected Count	45.0	5.0	8.0	2.0	33.0	4.0	8.0	6.0	20.0	5.0	9.0	145.0
		% within place of residence	31.0%	3.4%	5.5%	1.4%	22.8%	2.8%	5.5%	4.1%	13.8%	3.4%	6.2%	100.0%
		% within perception of roads - mean GC and Lilong	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	26.831[a]	10	.003	.002		
Likelihood Ratio	34.889	10	.000	.000		
Fisher's Exact Test	24.003			.002		
Linear-by-Linear Association	2.753[b]	1	.097	.099	.053	.004
N of Valid Cases	145					

a. 13 cells (59.1%) have expected count less than 5. The minimum expected count is .59.
b. The standardized statistic is 1.659.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.430	.003	.002
	Cramer's V	.430	.003	.002
N of Valid Cases		145		

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9.4.10 Level of satisfaction with the sense of community & place of residence

Case Processing Summary

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
satisfaction sense of community * Place of residence	149	88.7%	19	11.3%	168	100.0%

satisfaction sense of community * Place of residence Crosstabulation

			Place of residence GC	Lilong	Total
satisfaction sense of community	very satisfactory	Count	28	12	40
		Expected Count	30.1	9.9	40.0
		% within satisfaction sense of community	70.0%	30.0%	100.0%
		% within Place of residence	25.0%	32.4%	26.8%
		Standardized Residual	-.4	.7	
	satisfactory	Count	41	3	44
		Expected Count	33.1	10.9	44.0
		% within satisfaction sense of community	93.2%	6.8%	100.0%
		% within Place of residence	36.6%	8.1%	29.5%
		Standardized Residual	1.4	-2.4	
	rather satisfactory	Count	16	7	23
		Expected Count	17.3	5.7	23.0
		% within satisfaction sense of community	69.6%	30.4%	100.0%
		% within Place of residence	14.3%	18.9%	15.4%
		Standardized Residual	-.3	.5	
	rather unsatisfactory	Count	11	2	13
		Expected Count	9.8	3.2	13.0
		% within satisfaction sense of community	84.6%	15.4%	100.0%
		% within Place of residence	9.8%	5.4%	8.7%
		Standardized Residual	.4	-.7	
	unsatisfactory	Count	9	1	10
		Expected Count	7.5	2.5	10.0
		% within satisfaction sense of community	90.0%	10.0%	100.0%
		% within Place of residence	8.0%	2.7%	6.7%
		Standardized Residual	.5	-.9	
	very unsatisfactory	Count	7	12	19
		Expected Count	14.3	4.7	19.0
		% within satisfaction sense of community	36.8%	63.2%	100.0%
		% within Place of residence	6.3%	32.4%	12.8%
		Standardized Residual	-1.9	3.4	
Total		Count	112	37	149
		Expected Count	112.0	37.0	149.0
		% within satisfaction sense of community	75.2%	24.8%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	25.360[a]	5	.000	.000		
Likelihood Ratio	25.312	5	.000	.000		
Fisher's Exact Test	23.980			.000		
Linear-by-Linear Association	5.822[b]	1	.016	.018	.010	.003
N of Valid Cases	149					

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 2.48.
b. The standardized statistic is 2.413.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.413	.000	.000
	Cramer's V	.413	.000	.000
N of Valid Cases		149		

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9.4.11 Level of satisfaction with sense of privacy & place of residence

Case Processing Summary

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
satisfaction privacy * Place of residence	147	87.5%	21	12.5%	168	100.0%

satisfaction privacy * Place of residence Crosstabulation

			Place of residence GC	Lilong	Total
satisfaction privacy	very satisfactory	Count	24	5	29
		Expected Count	21.7	7.3	29.0
		% within satisfaction privacy	82.8%	17.2%	100.0%
		% within Place of residence	21.8%	13.5%	19.7%
		Standardized Residual	.5	-.9	
	satisfactory	Count	38	5	43
		Expected Count	32.2	10.8	43.0
		% within satisfaction privacy	88.4%	11.6%	100.0%
		% within Place of residence	34.5%	13.5%	29.3%
		Standardized Residual	1.0	-1.8	
	rather satisfactory	Count	20	5	25
		Expected Count	18.7	6.3	25.0
		% within satisfaction privacy	80.0%	20.0%	100.0%
		% within Place of residence	18.2%	13.5%	17.0%
		Standardized Residual	.3	-.5	
	rather unsatisfactory	Count	13	7	20
		Expected Count	15.0	5.0	20.0
		% within satisfaction privacy	65.0%	35.0%	100.0%
		% within Place of residence	11.8%	18.9%	13.6%
		Standardized Residual	-.5	.9	
	unsatisfactory	Count	8	0	8
		Expected Count	6.0	2.0	8.0
		% within satisfaction privacy	100.0%	0.0%	100.0%
		% within Place of residence	7.3%	0.0%	5.4%
		Standardized Residual	.8	-1.4	
	very unsatisfactory	Count	7	15	22
		Expected Count	16.5	5.5	22.0
		% within satisfaction privacy	31.8%	68.2%	100.0%
		% within Place of residence	6.4%	40.5%	15.0%
		Standardized Residual	-2.3	4.0	
Total		Count	110	37	147
		Expected Count	110.0	37.0	147.0
		% within satisfaction privacy	74.8%	25.2%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	30.836[a]	5	.000	.000		
Likelihood Ratio	29.859	5	.000	.000		
Fisher's Exact Test	27.049			.000		
Linear-by-Linear Association	17.411[b]	1	.000	.000	.000	.000
N of Valid Cases	147					

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 2.01.
b. The standardized statistic is 4.173.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.458	.000	.000
	Cramer's V	.458	.000	.000
N of Valid Cases		147		

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9.4.12 Level of satisfaction with vivid street life & place of residence

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
satisfaction vivid street life * Place of residence	143	85.1%	25	14.9%	168	100.0%

satisfaction vivid street life * Place of residence Crosstabulation

			Place of residence		
			GC	Lilong	Total
satisfaction vivid street life	very satisfactory	Count	12	8	20
		Expected Count	14.8	5.2	20.0
		% within satisfaction vivid street life	60.0%	40.0%	100.0%
		% within Place of residence	11.3%	21.6%	14.0%
		Standardized Residual	-.7	1.2	
	satisfactory	Count	30	3	33
		Expected Count	24.5	8.5	33.0
		% within satisfaction vivid street life	90.9%	9.1%	100.0%
		% within Place of residence	28.3%	8.1%	23.1%
		Standardized Residual	1.1	-1.9	
	rather satisfactory	Count	31	2	33
		Expected Count	24.5	8.5	33.0
		% within satisfaction vivid street life	93.9%	6.1%	100.0%
		% within Place of residence	29.2%	5.4%	23.1%
		Standardized Residual	1.3	-2.2	
	rather unsatisfactory	Count	18	8	26
		Expected Count	19.3	6.7	26.0
		% within satisfaction vivid street life	69.2%	30.8%	100.0%
		% within Place of residence	17.0%	21.6%	18.2%
		Standardized Residual	-.3	.5	
	unsatisfactory	Count	11	6	17
		Expected Count	12.6	4.4	17.0
		% within satisfaction vivid street life	64.7%	35.3%	100.0%
		% within Place of residence	10.4%	16.2%	11.9%
		Standardized Residual	-.5	.8	
	very unsatisfactory	Count	4	10	14
		Expected Count	10.4	3.6	14.0
		% within satisfaction vivid street life	28.6%	71.4%	100.0%
		% within Place of residence	3.8%	27.0%	9.8%
		Standardized Residual	-2.0	3.4	
Total		Count	106	37	143
		Expected Count	106.0	37.0	143.0
		% within satisfaction vivid street life	74.1%	25.9%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	29.941[a]	5	.000	.000		
Likelihood Ratio	30.478	5	.000	.000		
Fisher's Exact Test	29.251			.000		
Linear-by-Linear Association	8.738[b]	1	.003	.003	.002	.001
N of Valid Cases	143					

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.62.
b. The standardized statistic is 2.956.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.458	.000	.000
	Cramer's V	.458	.000	.000
N of Valid Cases		143		

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9.4.13 Level of satisfaction with child-friendliness of the living environment & place of residence

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
satisfaction child-friendliness * Place of residence	142	84.5%	26	15.5%	168	100.0%

satisfaction child friendly * Place of residence Crosstabulation

			Place of residence		
			GC	Lilong	Total
satisfaction child-friendliness	very satisfactory	Count	25	5	30
		Expected Count	22.6	7.4	30.0
		% within satisfaction child-friendliness	83.3%	16.7%	100.0%
		% within Place of residence	23.4%	14.3%	21.1%
		Standardized Residual	.5	-.9	
	satisfactory	Count	33	4	37
		Expected Count	27.9	9.1	37.0
		% within satisfaction child-friendliness	89.2%	10.8%	100.0%
		% within Place of residence	30.8%	11.4%	26.1%
		Standardized Residual	1.0	-1.7	
	rather satisfactory	Count	20	5	25
		Expected Count	18.8	6.2	25.0
		% within satisfaction child-friendliness	80.0%	20.0%	100.0%
		% within Place of residence	18.7%	14.3%	17.6%
		Standardized Residual	.3	-.5	
	rather unsatisfactory	Count	7	5	12
		Expected Count	9.0	3.0	12.0
		% within satisfaction child-friendliness	58.3%	41.7%	100.0%
		% within Place of residence	6.5%	14.3%	8.5%
		Standardized Residual	-.7	1.2	
	unsatisfactory	Count	11	1	12
		Expected Count	9.0	3.0	12.0
		% within satisfaction child-friendliness	91.7%	8.3%	100.0%
		% within Place of residence	10.3%	2.9%	8.5%
		Standardized Residual	.7	-1.1	
	very unsatisfactory	Count	11	15	26
		Expected Count	19.6	6.4	26.0
		% within satisfaction child-friendliness	42.3%	57.7%	100.0%
		% within Place of residence	10.3%	42.9%	18.3%
		Standardized Residual	-1.9	3.4	
Total		Count	107	35	142
		Expected Count	107.0	35.0	142.0
		% within satisfaction child-friendliness	75.4%	24.6%	100.0%
		% within Place of residence	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	24.011[a]	5	.000	.000		
Likelihood Ratio	22.583	5	.000	.001		
Fisher's Exact Test	21.474			.000		
Linear-by-Linear Association	13.612[b]	1	.000	.000	.000	.000
N of Valid Cases	142					

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.96.
b. The standardized statistic is 3.689.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.411	.000	.000
	Cramer's V	.411	.000	.000
N of Valid Cases		142		

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9.4.14 Level of satisfaction with child-friendliness of the living environment & lilong residents & households with or without children

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
satisfaction child-friendliness * kids yes or no	35	77.8%	10	22.2%	45	100.0%

satisfaction child-friendliness * kids yes or no Crosstabulation

			kids yes or no		
			No	Yes	Total
satisfaction child-friendliness	very satisfactory	Count	2	3	5
		Expected Count	3.9	1.1	5.0
		% within satisfaction child-friendliness	40.0%	60.0%	100.0%
		% within kids yes or no	7.4%	37.5%	14.3%
		Standardized Residual	-.9	1.7	
	satisfactory	Count	4	0	4
		Expected Count	3.1	.9	4.0
		% within satisfaction child-friendliness	100.0%	0.0%	100.0%
		% within kids yes or no	14.8%	0.0%	11.4%
		Standardized Residual	.5	-1.0	
	rather satisfactory	Count	4	1	5
		Expected Count	3.9	1.1	5.0
		% within satisfaction child-friendliness	80.0%	20.0%	100.0%
		% within kids yes or no	14.8%	12.5%	14.3%
		Standardized Residual	.1	-.1	
	rather unsatisfactory	Count	5	0	5
		Expected Count	3.9	1.1	5.0
		% within satisfaction child-friendliness	100.0%	0.0%	100.0%
		% within kids yes or no	18.5%	0.0%	14.3%
		Standardized Residual	.6	-1.1	
	unsatisfactory	Count	1	0	1
		Expected Count	.8	.2	1.0
		% within satisfaction child-friendliness	100.0%	0.0%	100.0%
		% within kids yes or no	3.7%	0.0%	2.9%
		Standardized Residual	.3	-.5	
	very unsatisfactory	Count	11	4	15
		Expected Count	11.6	3.4	15.0
		% within satisfaction child-friendliness	73.3%	26.7%	100.0%
		% within kids yes or no	40.7%	50.0%	42.9%
		Standardized Residual	-.2	.3	
Total		Count	27	8	35
		Expected Count	27.0	8.0	35.0
		% within satisfaction child-friendliness	77.1%	22.9%	100.0%
		% within kids yes or no	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.022[a]	5	.219	.280		
Likelihood Ratio	8.497	5	.131	.219		
Fisher's Exact Test	5.807			.296		
Linear-by-Linear Association	.314[b]	1	.576	.609	.323	.068
N of Valid Cases	35					

a. 11 cells (91.7%) have expected count less than 5. The minimum expected count is .23.
b. The standardized statistic is -.560.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.448	.219	.280
	Cramer's V	.448	.219	.280
N of Valid Cases		35		

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9.4.15 Level of satisfaction with elderly-friendliness of the living environment & place of residence

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
satisfaction pleasant for elderly * Place of residence	145	86.3%	23	13.7%	168	100.0%

satisfaction pleasant for elderly * Place of residence Crosstabulation

			Place of residence		
			GC	Lilong	Total
satisfaction pleasant for elderly	very satisfactory	Count	27	9	36
		Expected Count	26.8	9.2	36.0
		% within satisfaction pleasant for elderly	75.0%	25.0%	100.0%
		% within place of residence	25.0%	24.3%	24.8%
		Standardized Residual	.0	-.1	
	satisfactory	Count	35	5	40
		Expected Count	29.8	10.2	40.0
		% within satisfaction pleasant for elderly	87.5%	12.5%	100.0%
		% within place of residence	32.4%	13.5%	27.6%
		Standardized Residual	1.0	-1.6	
	rather satisfactory	Count	15	3	18
		Expected Count	13.4	4.6	18.0
		% within satisfaction pleasant for elderly	83.3%	16.7%	100.0%
		% within place of residence	13.9%	8.1%	12.4%
		Standardized Residual	.4	-.7	
	rather unsatisfactory	Count	9	4	13
		Expected Count	9.7	3.3	13.0
		% within satisfaction pleasant for elderly	69.2%	30.8%	100.0%
		% within place of residence	8.3%	10.8%	9.0%
		Standardized Residual	-.2	.4	
	unsatisfactory	Count	11	3	14
		Expected Count	10.4	3.6	14.0
		% within satisfaction pleasant for elderly	78.6%	21.4%	100.0%
		% within place of residence	10.2%	8.1%	9.7%
		Standardized Residual	.2	-.3	
	very unsatisfactory	Count	11	13	24
		Expected Count	17.9	6.1	24.0
		% within satisfaction pleasant for elderly	45.8%	54.2%	100.0%
		% within place of residence	10.2%	35.1%	16.6%
		Standardized Residual	-1.6	2.8	
Total		Count	108	37	145
		Expected Count	108.0	37.0	145.0
		% within satisfaction pleasant for elderly	74.5%	25.5%	100.0%
		% within place of residence	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	14.990[a]	5	.010	.009		
Likelihood Ratio	14.154	5	.015	.021		
Fisher's Exact Test	13.767			.014		
Linear-by-Linear Association	7.384[b]	1	.007	.007	.004	.001
N of Valid Cases	145					

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 3.32.
b. The standardized statistic is 2.717.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.322	.010	.009
	Cramer's V	.322	.010	.009
N of Valid Cases		145		

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9.4.16 Level of satisfaction with physical street layout & place of residence

Case Processing Summary

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
satisfaction physical layout of street * Place of residence	138	82.1%	30	17.9%	168	100.0%

satisfaction physical layout of street * Place of residence Crosstabulation

			Place of residence GC	Lilong	Total
satisfaction physical layout of street	very satisfactory	Count	14	4	18
		Expected Count	13.7	4.3	18.0
		% within satisfaction physical layout of street	77.8%	22.2%	100.0%
		% within place of residence	13.3%	12.1%	13.0%
		Standardized Residual	.1	-.1	
	satisfactory	Count	28	1	29
		Expected Count	22.1	6.9	29.0
		% within satisfaction physical layout of street	96.6%	3.4%	100.0%
		% within place of residence	26.7%	3.0%	21.0%
		Standardized Residual	1.3	-2.3	
	rather satisfactory	Count	28	7	35
		Expected Count	26.6	8.4	35.0
		% within satisfaction physical layout of street	80.0%	20.0%	100.0%
		% within place of residence	26.7%	21.2%	25.4%
		Standardized Residual	.3	-.5	
	rather unsatisfactory	Count	14	7	21
		Expected Count	16.0	5.0	21.0
		% within satisfaction physical layout of street	66.7%	33.3%	100.0%
		% within place of residence	13.3%	21.2%	15.2%
		Standardized Residual	-.5	.9	
	unsatisfactory	Count	15	5	20
		Expected Count	15.2	4.8	20.0
		% within satisfaction physical layout of street	75.0%	25.0%	100.0%
		% within place of residence	14.3%	15.2%	14.5%
		Standardized Residual	-.1	.1	
	very unsatisfactory	Count	6	9	15
		Expected Count	11.4	3.6	15.0
		% within satisfaction physical layout of street	40.0%	60.0%	100.0%
		% within place of residence	5.7%	27.3%	10.9%
		Standardized Residual	-1.6	2.9	
Total		Count	105	33	138
		Expected Count	105.0	33.0	138.0
		% within satisfaction physical layout of street	76.1%	23.9%	100.0%
		% within place of residence	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	18.771[a]	5	.002	.002		
Likelihood Ratio	19.606	5	.001	.002		
Fisher's Exact Test	18.560			.001		
Linear-by-Linear Association	10.664[b]	1	.001	.001	.001	.000
N of Valid Cases	138					

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 3.59.
b. The standardized statistic is 3.266.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.369	.002	.002
	Cramer's V	.369	.002	.002
N of Valid Cases		138		

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