Post-Gated Era: Towards Integrated Urban Communities in China

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Post-Gated Era: Towards Integrated Urban Communities in China

By

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Abstract

Gated communities, which typically refer to residential compounds that have strict boundaries with entrances guarded by securities and other technology appliances for surveillance, are the most common developments in Chinese cities over the past few decades. These enclosures of isolated city blocks have caused heated discussion since The CPC (Central Committee and State Council) published a guideline in 2016 to prohibit the construction of Gated communities in Chinese cities. For unique historical and social-cultural reasons, “Gated” has been deeply embedded in Chinese traditional dwelling ideology for a long time, and it is still widely accepted by the vast majority as a symbol of security as well as proprietorship, driven by the real estate market to date. However, contemporary China is now entering a more complex phase of privatization, and the previous living pattern is hardly meeting the needs of different hierarchies and is becoming one of the causal factors triggering a series of urban issues in people’s ever-changing lives, such as traffic, the environment, and social well-being. Practices towards an integrated urban community are starting to appear by following western patterns, but merely copying these patterns will very easily lead to contextual failures. This paper will discuss a new framework for designing a future integrated urban community in cities of China and provide a design proposal for an integrated community based on a site in Beijing. By developing the prototype, this paper will attempt to establish the tone for sustainable community practice in a bigger realm, in particular, the concern of social sustainability and resiliency. Several outstanding urban projects are taken as precedents, e.g., POTSDAMER PLATZ, LINKED HYBRID, BARBICAN center, Coop Housing at River Spreefeld, which are evaluated mainly from the perspectives of their design strategy and implementation. The final design proposal aims to advocate physical interaction in a walkable, bikeable community without eliminating the sense of security, and to enhance people's sense of community.
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6. Appendix
1. Introduction

1.1. Current Housing Situation and Facing Issues in China

In China, Gated or walled is not only a physical pattern of dwelling, but the enclosed form itself corresponds to people’s psychological requirements for safety, a sense of ownership and belonging and is deeply rooted in Chinese living culture, which can be traced back to feudal monarchy. The current model of Gated communities in Chinese urban areas is heavily influenced by the lifestyle during the collective planning period in the 1960s, and the private gated residential development accelerated after the 1980s due to housing reform and then peaked in the 1990s with economic globalization. “It was the reform towards the commodity housing system, and fundamentally, the de facto neo-liberal governance, that decisively gave birth to China’s gated community in an era of rapid urbanisation.”

Figure 1. Chinese Neighborhood Transformation

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1 Xu, Miao, *Gated Communities in China: Urban Design Concerns*, (Cardiff University, 2009), 86.
After 2005, building a “harmonious society” was instated by Hu Jintao as a new slogan and agenda, contemporary China stepped into a brand new stage of modernization. In Cressica, Fan, and Tat’s view, a ‘harmonious society’ is a reaction to the weakening of institutionalization...due to differences in subjectivity and dynamism, this factor may lead to two distinct outcomes: the formation of closed xiaoqu (residential gated community), or the formation of completely open xiaoqu.”2 As urbanization accelerated in the early 21st century, more and more workers began to pour into the cities, while the scale of the cities also expanded. The differentiation of China’s social classes keeps growing, and the contradictions between different hierarchies are becoming more apparent. However, China's urban planning and urban design were entering the most chaotic period, the private Gated residential community had taken over most of China's cities, and the urban space had lost its diversity. The Gated community, as an old housing pattern serving the collective societal structure, was no longer working for this comprehensive era, and it was destroying the legibility of the urban fabric, especially when there is a transition towards privatization.

Figure 2. Urban Population (Source: The World Bank 2018 version)

2 Brazier, Cressica, Fan Ling, Tat Lam, From Big to Small to Mega-zone: Reading Large-scale Development of Chinese Cities. (Shanghai, Tongji School of Architecture, 2009), 10.
This paper will analyze the causes of the formation of the existing “Gated” pattern in China, associated with its causal issues, and discuss the possibility and necessity of eliminating the physical “border”, which is considered a means of protection and segregation during the transition era, to design a future sustainable community in a more integrated way. This paper, from a social sustainable point of view, aims to explore the feasible implements of designing open, dynamic, sustainable communities in China. The research will start with a retrospective assessment of the historical prototype of Chinese communities and discuss the relationship between the existing gated community and the Chinese traditional courtyard house, the Soviet Union collective compound (Work-Unit) and their current variant. Then, integrated urban community cases that have succeeded in their developed area will be examined, which can provide inspirations for Chinese urban community design from different perspectives. Additionally, this research will be conducted within an urban design scope, and the final design proposal will focus on urban spatial practice to achieve a clear outcome. The acknowledgement of a comprehensive design system might involve policy, infrastructure, civilization, planning, crime, and a series of other variables in reality.
1.2. Sustainable Community and Social Sustainability

Social sustainability has garnered considerably less attention in public dialogue than economic and environmental sustainability, but it is considered a critical component of addressing Chinese urban issues in this paper.

According to the diagram of "A systems view of community", it can be seen that natural resources are the prerequisite for the development of a healthy society and economy, while society and economy are interdependent, and each of them is indispensable to achieve a holistic sustainability.

![Diagram of A systems view of community](source: Guide to Sustainable Community by Maureen Hart, 1999)

According to Rogers et al., to achieve social sustainability means to meet people's well-being needs, which enables people to live in a stable state without destroying its inherent social structure. Therefore, to achieve holistic sustainability, it must include the definition of "meeting human physical, emotional and social needs."

In the same article, they describes the relationship between sustainability and well-being, as shown in Figure 4. The relationship between a healthy ecosystem and well-being is a cause-and-effect relationship, and the two are interdependent and mutually reinforcing, while a benign social environment is the driving force promoting this cycle.

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Communities, as the local scale of society\(^4\), can effectively provide a platform for the realization of social sustainability. To investigate Sustainable Community Development (SCD), first we need to use systematic and scientific methods to evaluate their utilization and the integration of community

resources. To further assess the advantages of sustainable community development, in the study of Roseland and Spiliotopoulou, they set up a "community capital" framework to analyze community capital in several categories including natural, physical, economic, human, social and cultural aspects\(^5\).

Sarkissian, et al. proposed the importance of community participation in sustainable community building. First, participation is an important embodiment of a democratic society. People must exercise their rights by participating in the community. Second, through community participation, community members can acquire a more comprehensive understanding of sustainability. Community participation can also help improve efficiency by developing microscale policy approaches and building local accountability\(^6\). Additionally, from the perspectives of researchers and decision makers, vertical community engagement is the main approach being taken\(^7\). In Stuart’s view, vertical community engagement is usually top-down engagement that is “particularly associated with consultation and planning”. In this case, issuance by the Chinese government of a housing policy to ban the Gated development will be one example; architects and city planner making design decisions also represent vertical engagement. Considering the community as a system, no single actor can be excluded from pursuing social equity, and ultimately, they will need to cooperate with each other as a whole to meet the needs of the community: physical well-being, economic security, governance, and social well-being\(^8\).

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\(^6\) Sarkissian, Community Engagement: *A Pathway to Sustainability*. Kitchen Table Sustainability, 2009, 49.


\(^8\) Hallsmith, G, *Perceiving the community as a whole system, The Key to Sustainable Cities*, 2003, 27-47.
Social Life have developed a framework for social sustainability which has four dimensions: amenities and infrastructure, social and cultural life, voice and influence, and space to grow. Nobel Laureate Amartya Sen describes the following dimensions for social sustainability: Equity, Diversity, Quality of life, Democracy and governance, Maturity. These concepts will be further discussed and incorporated into developing design strategies in later chapters.

In summary, a sustainable community needs to be adaptable to the ever-changing social situation and different local contexts. It can be said that the complexity of sustainable development comes from the complexity of human society. Simultaneously, the concept of sustainability rejects a single standard. Therefore, it is necessary to study it in a systematic way and to implement engagement carefully.

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1.3. Terminology

**Traditional Residential Gated Communities**

Gated communities typically refer to the residential compound that has strict physical boundaries with entrances guarded by securities and/or other technological appliances for surveillance. The Gated community, as an old housing pattern, usually occupies a single city block, with less public access (secondary road, lane or walkway) breaking the bulk, and has green space and amenities that are only shared among the residents who live in the community. Blandly et al. provided a more comprehensive definition that incorporated social and legal aspects with the exclusive physical form: Gated communities... and usually characterized by legal agreements (tenancy or leasehold) that tie the residents to a common code of conduct.¹⁰

Mixed-use Development

Mixed-use development is a type of urban development that blends residential, commercial, cultural, institutional, or industrial uses, in which those functions are physically and functionally integrated, and provides pedestrian connections. The term may also be used to describe a mixed-use real estate development project—a building, complex of buildings, or district of a town or city that is developed for multiple functions by a developer, governmental agency, or a combination.

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Figure 6. Mixed-use Development - Shanghai Greenland Center / Nikken Sekkei
(Source: https://www.archdaily.com/905876/shanghai-greenland-center-nikken-sekkei)
Urban Complex Community/ Super-block/ Mega-block

The Urban Complex Community is a new type of construction in China based on the Western mixed use community form, and it has its prototype called HOPSCA, which is based on the building compound, the integration of commercial retail, business offices, hotel catering, apartments, and the integrated entertainment five core functions of the "city within the city". In terms of function, the Urban Complex Community often represents a mixture; in terms of scale, the Urban Complex Community is often developed under a 16-acre super-block or 160-acre mega-block. Examples such as the Linked Hybrid will be discussed in detail in the next chapter. These communities in dense urban realms should have certain degrees of openness to the public.

Figure 7. Isolated Block Size (Source: “Block, Superblock and Megablock, A short history.”)

Cohousing

Cohousing is an intentional community of private homes clustered around shared space. Each attached or single family home has traditional amenities, including a private kitchen. Shared spaces typically feature a common house, which may include a large kitchen and dining area, laundry, and recreational spaces. Shared outdoor space may include parking, walkways, open space, and gardens. Neighbors also share resources and values. Cohousing is promoting a living style of “Self-management”14. In a Cohousing community, neighbors commit to being part of a community for everyone’s mutual benefit. Cohousing cultivates a culture of sharing and caring. Design features and neighborhood size promote frequent interactions and close relationships. Cohousing neighborhoods are designed to balance the privacy and community by choosing their own level of engagement. Decision making is participatory and often based on consensus. Self-management empowers residents, builds community, and saves money. Cohousing communities also support residents in actualizing shared values.

Figure 8. Cohousing Project
(Source: https://www.architectsjournal.co.uk/news/co-housing-were-all-in-this-together/10028797.article)

14Cohousing, What is Cohousing? https://www.cohousing.org/what_is_cohousing
**Integrated “Open” Urban Community**

Redefining the “Open” Community in an urban context is critical while discussing sustainable community design in modern China. This will be used in the later design proposal to describe a new sustainable community model. Its most distinct characteristics are as follows: nongated, pedestrian friendly, residential-oriented, sustainable lifestyle. All these characteristics will be detailed according to a specific urban context, and some of them are not necessarily contradictory to those previously defined in other community types. For example, an Integrative open community can also consist of multifunctional services, such as retails and cultural facilities, to meet people’s need, in this case, an Integrative urban community is also a Mixed-use development. Additionally, an Integrative urban community should also encourage people to share resources and values, as well as, most importantly, public responsibility. Thus, the Integrative “Open” Urban Community is a comprehensive concept based on a fundamental form with less of a physical border, with all the elements designed under the principle of supporting positive social interactions for people living a quality life and achieving well-being.
2. Literature Review

The literature review include, first, a historical review of the transformation of urban community typologies in China. Second, it discusses the existing research data with respect to residents’ concerns. The last section will briefly introduce some sustainable rating systems. These three parts will work as a whole to provide a comprehensive understanding of the transformation of Chinese residential communities associated with the current statue, and support selections of feasible design approaches and formulation of the design framework in the next chapter, which contribute to the final design proposal.

A historical review is valuable for understanding the local context, vernacular, and carrying out contextual research. Henri Lefebvre insists that space, in its socially constructed form, is shaped by history, politics, and ideology. Therefore, this retrospective examination of the design history is not only about spatial forms but also the political-economic background of the time. In essence, the contradiction of space originates from the contradiction of social relations, and Lefebvre believes the reproduction of social relations of production within space to inevitably follow two trends: on the one hand, the dissolution of old relations; on the other hand, the emergence of new relationships. “The abstract space contains the seed of the new space, which is a differential space.” Since ancient times, China has been through countless contradictions and conflicts, with great influences on Chinese living space. This section is periodically divided into two parts: ancient China before 1949 and P.R China after 1949.

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2.1. Historical Origin and transformation of Gated Communities in China

2.1.1 Ancient China before 1949

In China, a Gated or walled housing form can be traced back to feudal monarchy. Two ideologies dominating the design principles of traditional city planning in ancient China are widely recognized. One is the Daoist viewpoint about how to deal with the relationship between human and nature. This ideology and the derived general principles for settlement were shown in the Chinese courtyard (Siheyuan) prototype. The other ideology is the Confucian ritual, which was codified and treated as an all-embracing system of norms, prescribing the appropriate hierarchy of social behavior and spatial arrangement necessary to achieve an ideal social order. The Confucian classic writings called Zhou Li, especially the last section named Kaogongji (written in the Spring and Autumn Period, 722 ~ 482 BC)\(^{16}\), elucidated for the first principles about the design of the imperial city or capital city of a dynasty, which can still be seen from the heritage of the Forbidden City since Qing dynasty and Xi’an’s old town layout.

In particular, in "the state of the craftsman camp", "the state of the craftsman camp, square nine li, next three gates. The country in nine by nine latitude, by tu nine track, left is ancestor and right is society, face after the city, city towards yifu ". The so-called "ying guo" is to build a city. It is popularly explained as follows: the capital is nine square miles, with three gates on each side, nine roads in length and width, nine tracks in width on the north and south roads, the ancestral temple in the east, the altar of Sheji in the west, the imperial palace in front, and the market and residential area behind. These feature reflect the layout and capital design system of the early Chinese imperial city.\(^{17}\) These planning theories and methods have been influencing the construction of ancient Chinese cities. Many large cities, especially political cities, were built according to this theory. The most typical cases are Chang 'an and Beijing in the Tang dynasty (yuan and Ming and Qing dynasties). The clear neighborhood structure and straight streets, as well as the city walls and gates, all reflect the idea of "li"(Manners) in the book of Zhou li kegong.

\(^{16}\) Xu, Miao, *Gated Communities in China: Urban Design Concerns*, 70.

\(^{17}\) Ibid., 71.
Figure 9. Ancient Beijing City Map, “Khanbaliq”, 1267-1368 Yuan dynasty

(Source: http://blog.sina.com.cn/s/blog_490a9b4c0100036k.html)
Another important point of view, “unity of man and nature”, proposed by Laozi, held that man was a part of nature and that he should conform to nature. This concept may also influence the settlement of the building site selection, general layout, indoor and outdoor environment design and decoration, and materials and construction technology in all aspects. The Chinese tradition dwelling house, the Siheyuan, for example, is built according to the concept of Yin and Yang. The

\[\text{Figure 10. Forbidden City Map, 2003} \]

(Source: http://teachingadventuresinkorea.blogspot.com/2013/09/beijing-day-4-forbidden-city-temple-of.html)

\[\text{18 Beijing courtyard and the ideology of the 'unity of man and nature,} \]

http://blog.sina.com.cn/s/blog_643327f50100g8gf.html
architectural external space is Yang, inside is Yin, high is Yang, low and flat is Yin, house is Yang, and yard is Yin. In the interior design of the house, the courtyard receives the essence of sunshine, rain, and dew by receiving the air and ventilation, and it has the function of "connecting the sky and the earth". The courtyard and interior are connected by the hall and foyer. Because of the advantages of the wooden frame system, the wall does not bear the pressure of the upper structure, so the Windows can be opened arbitrarily. Especially in the south, the side leading to the courtyard is often filled with a row of French Windows. The dense living condition successfully coordinates the relationship between humans and nature and reasonably solves the problems of sun exposure, ventilation, heat preservation, heat insulation, reflection and noise prevention.

Figure 11. Beijing traditional courtyard (Siheyuan)
(Source: http://tkrt.com/process/schoolhousel)
2.1.2 P.R. China after 1949

The current Gated communities are more closely influenced by the collective lifestyle since the 1960s, inherited from the Work Unit (Danwei), and they also transformed after the 1980s during the housing reform. It was the reform towards commodity housing system, and fundamentally, the \textit{de facto} neo-liberal governance, that decisively gave birth to China’s gated community in an era of rapid urbanization.\textsuperscript{19}

After the People’s Republic of China was founded in 1949, the urbanization process was dominated by a socialist political framework until 1978, when the new agenda of reform towards a market-oriented economy was established. After a four-year recovery from severe war damage, the first Five-Year Plan (1953-1957) was deployed for a full-scale industrial modernization following the Soviet system\textsuperscript{20}. At the time when China's economic situation is in transition, China's urban construction is about to catch up with the pace of the Soviet Union. Zhao Shu, a folklorist who in 2004 was compiling the "complete Chinese folklore, Beijing volume," said that Danwei (Work unit) culture had replaced hutong culture as the mainstream of the city. According to statistics, by the end of 1980s, there were more than 25,000 Danwei (Work-unit) in Beijing\textsuperscript{21}.

Each Work-unit is a small, functional, self-sufficient society. The auditorium, playground, bathroom, swimming pool, club, shop, even hospital, post office, savings office, kindergarten, primary school, affiliated middle school... everything is available. All the residents can access the resources they need to live and work without leaving the community.

\textsuperscript{19} Xu, Miao, \textit{Gated Communities in China: Urban Design Concerns}, 86.
\textsuperscript{20} Ibid., 87.
\textsuperscript{21} Xiao, Ting, \textit{From Hutong Beiping to Dayuan (Work unit) Beijing}, (National History, 2009), 60.
Figure 12. A typical Danwei with multi-entrance, Xi’an

(Source: http://news.ifeng.com/a/20160320/48000017_0.shtml)
Due to the ten years of depression in construction during the Cultural Revolution, there was an overwhelming housing shortage and poor living conditions in China at the end of the 1970s. The rigid housing welfare system, in which urban housing was offered at nominal rent by Work units and municipal housing bureaus, became a heavy financial burden and an institutional constraint on the governmental capacity to improve housing conditions. Therefore, since 1980 when the economic reforms towards a market-orient economy were announced by Deng, the Chinese government launched a series of housing reform programs to tackle this pressing housing deficiency. A major change in housing reform was that housing benefits would be provided in cash wages rather than in kind, leading to a full-scale national boom in commodity housing markets in the following decades. In 2000, Chinese Government Document No. 23 defined the term “Community” with a clear historical clue: the social collective of people who live in a specific territorially bounded area, which fully illustrated how a world of “Gated” came to its peak.

22Fong, P. K. W., Housing reforms in China. (Habitat Internationala, 1989), 29-41.
In Alexandra and Qingyang’s view, gated communities in China are either defined as a symptom of an upper class perception of social and moral superiority over the lower classes, or as a continuation of a deep-rooted collectivist culture, including that culture’s social control\textsuperscript{24}. Since Chinese urban living is merging fast and more and more people are able to afford a considerable living cost, Gated communities are developing and spreading to accommodate people throughout different classes; American cities are usually different cases. Of prominent significance, in America, Gated communities are typically developed in suburban areas and usually consist of single-family houses or townhouses, serving middle to upper class “exclusive” living amenities, which correspond to Edward and Mary’s view. “Gated communities remained rarities until the advent of the master-planned retirement developments of the late 1960s and 1970s. Retirement developments such as Leisure World were the first places where average Americans could wall themselves off. Gates soon spread to resorts and country club developments, and then to middle-class suburban subdivisions. In the 1980s, upscale real estate speculation and the trend to

conspicuous consumption saw the proliferation of gated communities around golf courses that were designed for exclusivity, prestige, and leisure." 25 Today, we can still see Gated communities in Californian/Miami/Texas suburban areas with quite different settlement realms in comparison to Gated communities in Chinese cities, and serving a much smaller number of people.

Figure 15. Gated Community in Florida, USA (Source: https://www.visitcapecoral.de/gated-community/)

From the late 1990s to the early part of this century, Jinsong street in Beijing learned from the management model of Dalian, which dismantled walls between various communities, allowed communities to connect to each other, and unified the management of landscape construction. The model of regional management has promoted the development of an open street system, but it has left a hidden danger to public security. As several communities are close to subway and bus hubs, the mobility flow is huge. Unlicensed street vendors and illegal taxis also take advantage of the community's complicity by traveling through the community, as do criminals. From 2009 to 2010, according to statistics, there were more than 18,000 cases due to community collusion. In April 2011, the legal Evening News (*The Mirror*) reported the following: the reporter walked into the building road, where many residents in the community have the original iron fence security doors

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replaced with steel plate security doors. Residents generally say they can feel secure only if the fence is rebuilt.

Growing attentions is being paid to strengthen the gated management of the community, especially the increasing number of elderly people living alone in the old neighborhood.

The report shows that this model of massive community wall removal has not been implemented in Dalian, mainly because there are too many community management problems after small communities are merged into large communities. These problems include responsibility and unclear property right division, resulting in mutual blame from both government agencies and the community. According to Jiang Hong, a professor at Shanghai Jiaotong University, as quoted by the Xinhua news agency, many issues related to the definition of property rights, administrative authorities and sources of funds are involved in the process of opening up the community.

However, there are some positive results in another case. Sichuan province has recently stopped building gated residential communities, as represented by Chengdu.

By 2016, Chengdu piloted the concept of "small blocks" in nine demonstration areas, gradually implemented the practice of "public roads within residential communities" and achieved some success. At present, Chengdu has completed the compilation of small blocks in demonstration areas, such as the Jinjiang and Wenjia areas, representing 25 square kilometers in total. According to functional requirements, the sizes of these block units should not exceed 200 meters by 200 meters, and the block unit size is approximately 8 acres². The width of the road should not be greater than 25 meters, of which the width of the sidewalk should not be less than 3 meters and the width of the motor vehicle lane may be 3 meters.

²⁶Bian, Yizu, *These places have long been open gated communities, the effect is like this...*, Sep 12, 2018. Retrieved from http://news.ifeng.com/a/20160223/47553470_0.shtml
Figure 16. Chengdu Shaocheng District

Figure 17. Chengdu “Small Blocks” (http://scnews.newssc.org/system/20160521/000675686.html)
Liu Peng, deputy director of the detailed planning department of Chengdu planning bureau, stated the following: “opening up roads in the community will not lead to congestion, as the roads should give priority to people who choose to walk or ride bicycles. For example, some big buildings now occupy several blocks. Two places that are close to each other in a straight line may be within 10 minutes' walk. However, because enclosed communities can take up to 40 minutes to walk, residents have to rely on driving around. If the roads in this community are opened up and citizens have the opportunity to walk or ride a bike instead of driving, it will also reduce the burden on the roads.” In Chengdu's Shaocheng district, residential buildings on one side of the street have no enclosure, and unit gates are directly adjacent to the street. The space between the two buildings is lined with ping-pong tables and fitness equipment.

By far the main stream of Western research, gated communities have been regarded as a spatial reflection that corresponds to the post-industrial social changes. They are believed by scholars to represent the deep penetration in society of the ideologies of fear and security. For many researchers, the gated community is a place of seclusion and homogeneous enclaves that lead to increased segregation. The view that gated communities help reduce crime also raises arguments and has been partially shown in the previous practice in Beijing. Proponents claim that the

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27 Xu, Miao, Gated Communities in China: Urban Design Concerns, 102.
reduction or exclusion of people makes "nonlocal" much more recognizable and eliminates potential crime dangers. Others view this as unrealistic since increases in traffic offer more surveillance than decreases in the number of people inside the community.

However, examining the Chinese gated community cases by indiscriminately referring to Western urban patterns will lead to fragmented conclusions. For example, Gating has its own local history in different regions, as we discussed previously. Although gated communities appear to be a universal phenomenon\textsuperscript{29}, their characteristics and identification in its trajectory of development are not uniform. The exclusive compound is developed according to local political, legal, and architectural traditions\textsuperscript{30}. Adapting the gated concept to culturally and geographically varied places therefore necessitates cautious. Fundamental investigations of gated communities within the distinctive social, cultural, historical and institutional contexts of contemporary China are preconditions for reaching objective conclusions and practical guidelines for future development.

![Figure 19. Urban Population % of total (Source: The World Bank 2018 version)](image)

\textsuperscript{29}Xu, Miao, \textit{Gated Communities in China: Urban Design Concerns}.

\textsuperscript{30}Glasze, Frantz and Webster 2002, Glasze 2005
Regarding the gated community, physical boundaries can be both barriers, harming the use and visual quality of the immediate public spaces, or if properly arranged, active components of benign public spaces, taking full account of the local economic, cultural, and physical context.\footnote{Xu, Miao, \textit{Gated Communities in China: Urban Design Concerns}.}

From Miao’s research, some existing communities with a combination of small businesses at the street level and examples in Chengdu, show that the boundaries created by commercial buildings facing the street can actively contribute to the prosperity of street life and the local economy. However, boundaries consisting of high blank walls often discourage the presence of locals and social activities in the streets along the walls. In addition to boundaries, the size of the enclosure, land-use arrangement in both horizontal and vertical dimensions, space-building relationship, etc., can give different, sometimes even entirely opposite, physiological and psychological meanings to users, consequently triggering diverse social-spatial interaction processes. Thus, the physical dimension endows gated communities with possibilities and capacities to modify their impact on the local urban neighborhood.
2.2. Previous Surveys on Residents’ Satisfaction in China

This part integrates several previous surveys of community satisfaction from different cities, and the survey questions focus on the comparison and opinions of residents regarding the traditional Gated Community and the Open (Non-Gated) Community. Survey methods are mainly from questionnaire surveys, associated with observations and some interviews. The purpose of analyzing these survey data is to understand current living conditions in a Chinese city from the resident perspective, to understand residents' acknowledgement and acceptance of the open community, as well as the advantages and disadvantages of promoting an open community, and to summarize the common concerns in urban communities that need to be considered in further design processes. The final summary aims to draw a general conclusion to examine the necessary and possible paths for the design of open communities in China.
2.2.1 Gated vs. Open - A Survey of the Open Community and Its Results

(Data source: Research team from Communication University of China -- Open Community, “Who Supported It? - The Results of the Open Community Survey.” 2018.)

This survey is divided into online and offline parts. The respondents of the online questionnaire are residents living in Non-Gated and traditional Gated communities nation-wide. The respondents of the offline questionnaire were Chengdu residents living in Non-Gated communities.

(i) Online questionnaire data analysis

1. Basic information of the respondents.

The majority of respondents in the online survey are young people under 25 years old, accounting for 80.95% of the total, followed by people aged 46-60 years old, accounting for 14.29% (Figure 20). Among the respondents, more than half (51.19%) now live in gated communities (Figure 21).

![Figure 20. Age](image1)

![Figure 21. Are you living in a Gated Community?](image2)

2. Neighborhood communication needs to be enhanced, which most people think has nothing to do with the Gated structure.

When asked "what do you think of communication between neighbors?", 45.24% of respondents think it is ok, 45.24% think it is too less, and only 9.52% think it is a lot
(Figure 23). It can be seen that nearly half of the respondents think that communication between neighbors is not sufficient and communication needs to be strengthened.

![Figure 22. What do you think of communication between neighbors?](image)

When asked, "do you think the Gated/closed pattern obstructs communication between different groups of people in society", only 35.71% of the respondents answered "yes", and more people thought the influence was not significant (48.81%) or not obstructive (15.48%) (Figure 23). This result indicates that the interviewees believe the layout of the residential space does not affect communication between neighbors.

![Figure 23. Do you think the Gated/closed pattern obstructs communication between different groups of people in society?](image)
3. Respondents do not have a good understanding of the concept and policies of the "Open Community"

Regarding the concept of the "Open Community", only 3.57% of respondents know about it, half have a general understanding (51.19%), and 45.24% do not know about it (Figure 24).

![Figure 24. Do you know about the Open Community?](image)

Regarding the policy of the "open community" proposed in 2016, nearly 80% of respondents said they do not know (76.19%). Based on the above data, respondents have a poor understanding of the concept and policies of the "open community", and the concept of the "open community" remains at the management level but does not deeply permeate at the public level.

4. Respondents believe that the primary advantage of the open community is to alleviate traffic congestion, while the primary disadvantage is security.

When asked, "what do you think are the advantages of an open community?", the top rated answer is "Remission of traffic congestion, making commuting more convenient", with an average composite score of 3.20, and the second is "to promote communication between urban residents", with a comprehensive score of 2.40 on average, followed in turn by
"saving land, intensive utilization facilities" (2.35), "good for the overall urban planning" (1.80) and "other" (0.25) (Figure 25).

Figure 25. What do you think are the advantages of an open community?

When asked "What do you think are the disadvantages of an open community?", the first answer is "security, children and other vulnerable groups will be under threat", with an average comprehensive score of 5.10, followed by "the noise, comfort", with an average score of 4.15, "public space problems, such as parking, green area" (2.45), "sanitation problem" (1.75) and "property management fee" (0.90) (Figure 26).

Figure 26. What do you think are the disadvantages of an open community?
Based on the above data, people’s views on the advantages of the open area are more dispersed, with the top three advantages demonstrating a small gap between average scores. In comparison, their views on the disadvantages of an open area are relatively concentrated, focused on security, greater concern about noise and living quality, and such life experiences.

5. More respondents do not support open communities and will not actively choose them

When asked about their attitudes towards the open community, only a quarter of respondents state they support it, with 40% saying they do not, and 35% state that they do not care (Figure 27).

![Figure 27. What is your attitudes towards the open community?](image)

When asked whether they would take the initiative to choose an open community, 45% of respondents answer "no", 45% say "Gated/Open will not be used as a selection criterion", and only 10% respond "yes" (Figure 28).
Concomitantly, we can combine the results of these two problems. Among the respondents who supported the open community, no one chose the option NO of not choosing the open community voluntarily. It can be seen from the above data that the online interviewees do not hold a positive attitude towards the open community, and most of them have doubts or wait-and-see attitude towards the open community.

6. Security is the most anticipated problem for respondents

When asked "what do you think needs to be strengthened if the open/block system is implemented", "police force" and "monitoring" are considered the two most important aspects, with an average composite score of 3.85 and 3.6, respectively. These answers are followed by the construction of service facilities (3.3) and green space (0.75) (figure 14). These results show that more people believe that security is the weaker aspect of the open community, and it is also the most concerning aspect of residents.
(ii) Offline questionnaire data analysis

1. Basic information of the respondents.

In the offline survey, most respondents are female, accounting for 80% (figure 15). In terms of the age structure, half of the interviewees are between 25 and 40 years old, 45% are under 25 years old, and only 5% are between 40 and 60 years old.

2. Convenient transportation is the main reason most people choose open communities

When asked about the main reasons for choosing an open housing estate, more than half of respondents say it is because of more convenient internal and external transportation (70%), followed by more complete supporting facilities (20%), greater interaction between residents (20%), and lower housing prices (10%). This result shows that the traffic convenience of the open community is more attractive than other aspects.
3. Respondents have different opinions on the satisfaction and dissatisfaction of the open community but overall are satisfied.

According to the survey, for respondents living in the open community, their relatively satisfactory and unsatisfactory aspects focus on safety issues, property management, the surrounding environment and supporting facilities, indicating that some people think these aspects are good while others hold the opposite opinion. It can be seen that interviewees have different opinions and views on various aspects of the open community. The standard deviation of the selected times of each option in the satisfaction aspect is 2.38, and the standard deviation of the selected times of each option in the dissatisfaction aspect is 2.92, indicating that people have more diverse views on the satisfaction aspect and more concentrated views on the dissatisfaction aspect.

However, on the whole, respondents are satisfied with the nongated communities in which they live, and 70% of them are very or relatively satisfied.

4. Supermarkets and convenient stores are the most common service facilities in open housing estates

When asked, "is the open community you currently live equipped with the following facilities", the "supermarket, convenient store" accounts for the majority (three quarters), followed by chess and card rooms, cultural facilities (65%), parking lots (55%), gyms (55%), restaurants (50%), and medical centers and clinic (25%).

In these service facilities, each respondent choose 3.25 options on average. The proportion of service facilities in the open community is relatively large, and the types are also relatively rich. Simultaneously, those with two or more types account for 85%.

5. Most interviewees are willing to live in open communities.

Concerning whether they approve of the policy proposed by China that the "block system should be promoted in new residential communities, and gated communities should not be built in principle", three quarters of the interviewees are strongly supportive and relatively supportive, with a high approval rate. This result shows that the interviewees approve of the open system.
When asked whether they would like to live in an open community, 65% of the respondents state yes, indicating that the open housing estate has a certain attraction for residents.

6. Strengthening management is considered to be the most needed guarantee to promote the open community

For the question, "what other guarantees and conditions do you think are needed to promote the open community?", "strengthen management" is considered as the most needed, with 90% choosing this option, followed by urban planning (45%), legal support (30%), and more publicity and knowledge popularization (10%).
2.2.2 Opinion on sharing open space and facilities with the public


(i) Analysis of residents' views on the opening of urban communities

1. Basic information of respondents.

In this survey, a total of 200 valid questionnaires were collected from residents through field and online surveys, among which 96 were male, accounting for 48%. There were 104 women, representing 52 percent. In terms of age, 2 people were aged 18 or less, accounting for 2%; 80 people were 18-35 years old, accounting for 40%; 83 people were 36-50 years old, accounting for 41.5%; 26 people were 51-65 years old, accounting for 13%; and nine were more than 65 years old, accounting for 4.5 percent. In terms of occupation, there are 80 employees in government and public institutions, accounting for 40%; 64 enterprise employees, accounting for 32%; and 21 privately owned and commercial households, accounting for 10.5%. There were 13 migrant workers in cities, accounting for 6.5%. There were 22 other personnel, accounting for 11%. Sixty-nine percent of respondents were living in gated communities with walls and access controls, 25.5 percent were in communities without walls, and another 5.5 percent were living in other communities.

Figure 30. Community Types
2. Low attention and poor understanding of the community opening policy. Although the central policy has caused hot debate, Yiyang citizen attention to this policy is not high. Five percent say they know the policy well, 51.5% say they are concerned and read some news reports to learn about relevant policies, 27.5% only know about the introduction of relevant policies and do not pay attention or understand and 16 percent have not paid any attention to this policy until answering the questionnaire.

3. Most respondents believe that the advantages of gated communities outweigh the disadvantages.

4. The opposition rate to the opening policy of the residential area is slightly higher than the support rate, and residents' willingness to share public resources in the residential area is not high. In terms of the attitude towards the "open policy of urban communities", 36 percent of the surveyed residents support it, 37.5 percent oppose it and 26.5 percent think it does not matter.

\[\text{Figure 31. Opinion on opening the community}\]

The opening of the community may involve the opening of major roads, public Spaces and public facilities in the common area. When asked whether the major roads, public Spaces and public facilities in the residential area should be moderately opened, 15% think it is very necessary,
37.5% think it is necessary to some extent, 33.5% think it is not necessary, and 14% say it does not matter.

When asked if they would like to share the facilities and landscape with nearby residents, 16 percent of respondents say they would, 31% say they would, 28% say they would not, and 25% say they would not mind.

Factors affecting residents' attitudes towards the open community:

1) **Residents in open residential communities are more willing to accept the policy of community opening and more willing to share resources with the city.** According to the survey, among 138 residents of gated communities, the proportion of support and opposition to the open policy of urban communities is 36% and 65%, respectively. Sixty-two residents of open housing estates and nonhousing estates supported and opposed the policy, respectively, by 36 percent and 10 percent. To further analyze the influence of living background on residents' willingness to open up, the research group selected a fully closed community (sunshine city in North America) and an open community (Yixintai employees' family area) for a key investigation and comparative analysis.
Table 1: Comparison of basic information for the community

<table>
<thead>
<tr>
<th></th>
<th>Gated Community</th>
<th>Open (Non-Gated) Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community name</td>
<td>Sunshine city in North America</td>
<td>Yixintai employees' family area</td>
</tr>
<tr>
<td>Area</td>
<td>56,000 square meters</td>
<td>180,000 square meters</td>
</tr>
<tr>
<td>Buildings</td>
<td>9</td>
<td>80</td>
</tr>
<tr>
<td>household</td>
<td>1098</td>
<td>3100</td>
</tr>
<tr>
<td>Road system and its degree of sharing with the city</td>
<td>Located between Longzhou road and Datao road, the main road of the city. There are entrances and exits on both sides, which are completely closed</td>
<td>Located between Yiyang avenue and Xiufeng middle road, the main road in the city; it is open and greatly contributes to easing traffic congestion around the residential area</td>
</tr>
<tr>
<td>Public service facilities and openness</td>
<td>There is a swimming pool, basketball court, fitness center, garden, etc., that are open only to the owners of the residential area</td>
<td>Has a school, recreational square, athletic field, worker hospital, all open to the outside world</td>
</tr>
</tbody>
</table>

2) There is a large difference in residents’ support rate for the opening of urban communities. Among the 30 respondents of “Sunshine City in North America”, the approval rate of opening up to the community is only 16.7%, and the disapproval rate reaches up to 66.6%, with 16.7% indifferent. The results showed that 50% of the respondents are not willing to share the facilities and landscape with the nearby residents, and 66.7% do not think it necessary to open the main roads, public Spaces and public facilities in the community. Among the 30 respondents among Yixintai's staff and family area, the support rate for the policy reaches as high as 83.3%, the opposition rate is only 3.4%, and 13.3% are indifferent. Since the settlements were built, they have
always been open, and resident acceptance of sharing the public service facilities is clearly greater than that of gated communities, where 70% of respondents are willing, or more willing, to share with nearby residents living in facilities and landscapes in this area; 76.7% think the openness of the main roads, public space, and public facilities is very or somewhat necessary.

3) **Migrant workers have the highest degree of support for the policy, and enterprise personnel have the highest rate of opposition.** The survey shows that 53.8 percent of migrant workers support the policy, while only 27.5 percent of government and public employees support it. Respondents of all occupations oppose the policy at more than 30%, among which the highest rate is 39.1%. In terms of whether they are willing to share the facilities and landscape with nearby residents, 46.2% of migrant workers in cities are very willing to do so.

| Table 2: Attitudes of respondents from different occupations towards policies and sharing (%) |
|-----------------------------------------------|-------------------------------|------------------------------|---------------------|----------------|
| Opinion on open urban community              | Personnel of Gov.and Ins      | Enterprise staff             | Privately owned     | Migrant         |
| Agreed                                        | 27.5%                         | 42.2%                        | 42.9%               | 53.8%           |
| Disagreed                                     | 36.3%                         | 39.1%                        | 38.1%               | 38.6%           |
| Doesn’t matter                                | 36.2%                         | 18.7%                        | 19.0%               | 7.6%            |
| Opinion on sharing public space & facilities  | Strongly agreed               |                              |                     |                 |
|                                               | 17.5%                         | 12.5%                        | 28.6%               | 46.2%           |
|                                               | 33.8%                         | 34.4%                        | 28.6%               | 7.7%            |
|                                               | 28.8%                         | 28.1%                        | 4.8%                | 23.1%           |
| Disagreed                                     | 20.0%                         | 25.0%                        | 38.1%               | 23.1%           |


Figure 33. Opinion on the open urban community

Figure 34. Opinion on sharing public space & facilities
(ii) the property management personnel's view analysis

The open community is about to become the standard model of the future urban community. To understand the views of property enterprises, this survey selected the managers of 27 property companies, such as Yiyang Chuangjia property co., ltd. and the North America sunshine city property service center, to conduct a questionnaire survey.

Property managers pay more attention to and object to the policy of "urban community opening" than ordinary residents

The survey shows that property enterprises are most affected by the opening of urban communities, and the impact on the existing property management mode introduces more challenges to property enterprises. Nearly 70% of property managers are concerned about and understand the urban community opening policy, and 50% are opposed to it. Among the 27 respondents, 14.8% of the property managers surveyed are familiar with this policy; 59.3% express concern, especially in terms of reading a news reports to understand the relevant policies; 22.2% are aware of the introduction of relevant policies; and only 3.7 percent have not paid attention and re completely unaware of the relevant policies. However, 51.9 percent are opposed to the opening of urban neighborhoods, 37.0 percent support it, and 11.1 percent state it does not matter. Additionally, 48.2 percent say it is completely unnecessary to open up major roads, public Spaces and public facilities in their areas, 14.8 percent say it is necessary, 29.6 percent said it is unnecessary and 7.4 percent say it is irrelevant.
2.2.3 Beijing residents’ living environment satisfaction survey


1. Basic information of the respondents
From the perspective of the property management mode, more than half of the residential areas have realized Gated/closed management, among which the fully gated management residential communities account for 17.6%, the Semi-Gated management account for 32.9%, and the Non-Gated account for 49.5%.

![Community Types](image)

Figure 35. Community Types

2. Nearly 80 percent of citizens are generally satisfied with their living environment
Residential environment satisfaction is a comprehensive public opinion index to measure the social management level and livability of residential communities. The survey results show that the overall satisfaction of residents with the living environment is 78.6%, of which satisfaction with surrounding public services is 81.4% and satisfaction with the property management of the community is 75.8%. The satisfaction of public service around the residence is 5.7 percentage points higher than that of property management.
3. In the field of public services, the capital functional core area has obvious advantages. The survey shows that the interviewed residents are 81.4% satisfied with the public services around their residence, among which satisfaction with the convenience of transportation is highest (88.8%). Business, medical and educational resources rank second, third and fourth, with satisfaction rates exceeding 80%. The satisfaction with leisure and entertainment and supporting facilities for the elderly ranks in the last two places at 74.6% and 71.1% respectively. The degree of satisfaction with traffic convenience ranks first among the four functional areas, which indicates that measures such as adding bus lanes, opening commuter express lanes and providing public rental bikes have achieved good results.

4. High-end and fully Gated Communities have highest satisfaction in terms of property management type.

The survey shows that the overall satisfaction of the residents interviewed about the property management of the community is 75.8%, and the satisfaction of each sub-item is between 70% and 80%. From the perspective of property management, the management satisfaction of the fully gated community is highest (88.8%), followed by the semi-closed management community (84.3%). Open housing estates have the lowest satisfaction rate (65.3%) in Beijing.

![Figure 36. Satisfaction rate in different type of community management](image-url)
5. Supporting facilities for the elderly cannot meet the needs of aging

The survey results show that the satisfaction degree of the city's pension-supporting services is 71.1%, which is the lowest among the six listed public services. In recent years, the aging trend of Beijing has accelerated significantly and the demand of residents for pension facilities has increased rapidly. At present, public and nonprofit pension institutions in urban areas of our city are basically in short supply, presenting a difficult phenomenon. According to the survey on the status and needs of Beijing's urban and rural residents for elderly care conducted by the Beijing municipal bureau of statistics in 2013, 88.1% of the respondents prefer to provide for the elderly at home. Among the respondents concerning home-based care, "catering service" demand is the highest accounting for 41%, followed by "housekeeping service" accounting for 37.7%, and "emergency relief" accounting for 35.3 percent. In the same period, the survey shows that the community service projects with good conditions are the public welfare projects, such as the organization of recreational and sports activities, tourism, and health lectures. The service industries that truly need marketization intervention, such as door-to-door nursing, rehabilitation training, shopping accompanying medical treatment, and chatting to relieve boredom, are few, and the marketization supply is clearly insufficient.

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32Statistics show that from 1990 to 2014, the total number of elderly population in Beijing increased from 687,000 to 2,123 million, accounting for 9.9% of the permanent population, from 6.3%.

33Statistics show that from 1990 to 2014, the total number of senior citizens aged 80 and above in Beijing increased from 92,000 to 457,000, accounting for 21.5% of the elderly population from 17.7%.

34Data source is the sample survey of pension service institutions conducted by the national statistical background survey team in 2014.
6. Insufficient leisure and entertainment facilities and high prices

Among the six public services listed, the satisfaction with leisure and entertainment facilities ranked second from the bottom at only 74.7%. According to the survey results of the statistical department in 2013\textsuperscript{35}, more than 20% of residents think that surrounding performance venues, sports stadiums, fitness centers and other leisure and entertainment facilities are in short supply. Satisfaction with the above facilities is below 75%.

7. Security and environmental sanitation are the management short slab

The security situation, housing facilities, equipment, environmental sanitation and greening maintenance in the community management directly affect the overall satisfaction of residents with the living environment. According to the survey, 24.2% of respondents are dissatisfied with the property management of the residential area. Among the respondents who think there are problems related to security, 47.2%, 34.9% and 30.6% respectively choose "no security patrol", "no access control, TV monitoring system and camera" and "no disorderly booth, illegal construction and random parking in the community". Among the respondents who think there are problems related to environmental sanitation, 47.5%, 42.8% and 29% choose "garbage, sewage, litter and litter", "uncivilized pet keeping" and "random post small advertisements", respectively. In addition, the main problems in greening maintenance are "less greening area" and "insufficient maintenance", with proportions of 55.9% and 37.9%, respectively. The main problems of house facilities are "old pipes, wires and elevators", "houses in disrepair" and "houses leaking and leaking", with proportions of 27.9%, 21.8% and 17.6%, respectively.

\textsuperscript{35}Data source is 2013 Beijing residents cultural consumption status and demand intention survey conducted by Beijing survey team of national bureau of statistics.
Common Findings

1. At present, most people still live in gated communities, and the penetration rate of open communities is not high. Ordinary people in China are not familiar with the concept and relevant policies of open communities, which is an important reason for the low expectations of open communities.

2. Respondents have different opinions regarding the satisfaction and dissatisfaction of the open community, but residents living in the open community are relatively satisfied with it (greater than 50%).

3. Young people and migrant workers have a higher ratio of supporting open communities and sharing community public areas.

4. The biggest advantage of the open community is the convenient transportation and easy commuting.

5. The main concern about the open community is safety, and strengthening management is considered the main solution for improvement, rather than a simple Gated/Walled approach.

6. Facilities within and around the community are important indicators of residents' living quality. Public cultural facilities and elderly service facilities are considered to be gaining importance.
2.3. Existing Sustainable Rating System

There is a long way for China's existing design practices to achieve the ultimate sustainable goals, one of the main reasons for which is the lack of an effective evaluation system. There are some widely used international rating systems on the market, and especially from the economic and environment perspective, these evaluation systematic are a good starting point for society to begin the conversation about sustainability. For example, setting up a quantitative benchmark for energy consumption or day lighting utilization can be a workable indicator that helps to save renewable resources and eventually contributes to the achievement of economic and environmental goals. However, the commercial standard have certain limitations for assessing a sustainable holistic design, considering its nature of being profit-oriented, and only a few systems have social sustainability. The introduction of some international sustainable development guidelines and evaluation systems does not necessarily mean that the outcome of a sustainable community design should follow these commercial standard or its design process, but they provide a big picture from the perspective of the market of the demand and trends.

Here, we will mainly discuss three rating systems: LEED, Well, and DGNB, focusing on how this system is interpreted based on the sustainable community and social sustainability.

![Figure 37. International Rating Systems](image-url)
LEED for Cities and Community

LEED for Cities and Communities provide cities and communities with a globally consistent way to measure and communicate performance. The programs provide a framework for planning, designing, measuring and managing the performance of social, economic and environmental conditions at a city-wide or community level, including specific plans for natural systems, energy, water, waste, transportation and many other factors that contribute to quality of life.

STAR is now a part of the LEED for Cities and Communities program at USGBC, and it is being developed to support local sustainability community development. The new program, expected to be released in early 2019, will be data-driven and performance-based, but it will include those critical best practices needed to move the needle on local sustainability conditions. The intention of STAR is to scale projects globally and support cities and communities to achieve sustainable goals.

Figure 38. STAR’s framework (Source: http://www.starcommunities.org/)

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● **Well**

The WELL Community Standard is developed by the International WELL Building Institute (IWBI). The WELL building standard is made up of 110 features within 10 concepts. The 10 concepts include Air, Water, Nourishment, Light, Fitness, Temperature, Sound, Materials, Mind and Community (Check List See Appendix). There is one precondition in each concept, while the remaining features are optimizations. Most features address the community under large outdoor environmental conditions, the presence of amenities and the geography of the project, and a small number apply rules within the buildings themselves.

It is worth noting that some indicators of the “Community” are mentioned in this standard, which are related to the social capital of designing the sustainable community\(^3\). For example, SOCIAL SPACES is described as “Flexible and accessible community spaces that can positively impact the social and public lives of community members. Design strategies improve access to shared, public and democratic social spaces to encourage diverse use and welcome diverse users to help facilitate the social cohesion and trust needed to build social capital.”

● **German DGNB**

The German sustainable building evaluation standard (DGNB) is being developed with the strong support of the German government and is based on the high quality construction industry standard in Germany. With LEED compared with the adoption of international standards, the DGNB system overcomes the first generation of green building standards focusing on ecological technology factors such as limitations, emphasizes the three basic dimensions of sustainability, ecological, economic and sociocultural, and simultaneously focuses on reducing pressure on the environment and resources\(^3\). The development of an index system for customer service orientation makes "sustainable construction standards" help better guide construction project planning and design to shape a better living environment. On the one hand, the "German sustainable building standard" reflects the European high-quality design standard represented by Germany; on the other hand, it is committed to building a certification model suitable for the system, economy, culture and climate.

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\(^3\)Green building evaluation standards inventory, [https://zhuanlan.zhihu.com/p/50409994](https://zhuanlan.zhihu.com/p/50409994)
characteristics of different regions worldwide to facilitate the promotion and internationalization of the "sustainable building standard".

The DGNB certification system is composed of 61 evaluation clauses in six aspects, including ecological quality, economic quality, social and functional quality, technical quality, process quality and site quality. Among them, ecological quality, economic quality, social and functional quality and technical quality account for 22.5% respectively, process quality for 10%, and site quality is evaluated separately. The DGNB is applicable to a wide range of evaluation objects and basically covers all types of buildings, such as office, commercial, industrial, residential, educational, and hotel buildings and urban development. In terms of the classification of the evaluation grade, the DGNB calculates the construction compliance degree of quality certification requirements based on the score of each standard and the evaluation formula. A silver grade is above 65%, and a gold grade is above 80%.

2.4 Summary

The Gated community is the product of Chinese traditional ideology, which reflects people's most basic needs for security and privacy of living space. However, through the analysis and comparison of the earlier models, it can be seen that the gate or wall itself is not the essential demand, and the emergence of massive gated communities (Danwei) has gone far beyond the scope of people's private space and become the spatial expression of the collective economic system. Some of these units are ephemeral and disintegrated with the advent of privatization, and some still exist as dormitory areas of large state-owned enterprises and will be gradually opened or rebuilt due to the transformation of social and economic structure, affected by privatization and urbanization. In the 90s after the mass production of small and medium-sized private complexes (Xiaoqiu), this type of community dominated the urban space, and its advantages were particularly prominent during the beginning of privatization and housing reform. The gated method can solve the security problem economically by erecting walls and fences. Supported by the majority, this feature may have helped to reduce crime in the early years of China's reform and opening up, when the gaps between hierarchies sharply widened, but it is not a sustainable solution for modern society, where gentrification is taking place. This paper does not deny the advantages of gated communities but discusses Chinese urban development from a sustainable perspective, especially in cities where land resources are increasingly scarce. Such enclosure planning may lead to traffic congestion due to fewer secondary lanes, increasing people's commuting time, destroying the urban fabric, and reducing the activity in the urban space. Therefore, it is necessary to change the gated model and increase public access for the future community design. It is worth noting that the research and practice in recent years reflects the potential for people’s acceptability of open, nongated communities, especially the young generation, and the urban migration, which not only reflects the changing urban social structure but also proposes the new social needs for Chinese community design, such as the provision of public services, improving quality of life by creating
social spaces. The achievement of social sustainability through design means will be discussed in depth in the next chapter.
3. Methodology

The literature review served as a theoretical basis for the analysis of the urban communities, with case studies as practical support, and new Framework will be composed in terms of Beijing as the specific site.

A four-phase strategy is developed to **first** explore the historical background of the residential communities in China with respect to the general morphological transformation and the sociocultural and political-economic impetus behind it, to demonstrate the necessity of promoting SCD in China (summarized in Chapter 3). **Then**, case studies of a set of residential communities within an urban environment similar to China’s cities will be introduced, aiming to examine in detail the positive impacts on, and the design consequences for, the local condition. Appropriate design implements will be sought for the design of the Chinese integrated community. **Third**, by analysis the outcomes of the Literature review and case studies, an innovative design framework for the new integrated community is proposed. **Lastly**, an integrated urban community prototype is developed based on the new design framework. It is hoped that this complementary four-phase investigation strategy will ensure that the stated problems can be effectively explored and addressed in a comprehensive manner.
3.1 Case Study

The goal of an urban design is to achieve public well-being by encompassing the economic, environmental and social aspects of people’s everyday life. Community is one of the main and fundamental components of the urban environment, as it is the place people spend most of their time outside work. It is also the first place for people to step down into the city. A healthy urban environment should give people access to physical needs and services, as well as opportunities to meet each other and to make connections between neighbors and the city. A successful urban design also helps the community itself to smoothly blend into the surrounding urban realm and thrive in a sustainable way. This section is composed of a collection of cases that show great examples of urban community designs that achieved success through the use of different design approaches. These cases will be categorized by the design approaches used and analyzed from multiple perspectives to establish a framework for designing integrative community within an urban context. Aspects include Urban fabric, Connection (External and Internal), Circulation, Sense of security, and Sense of belonging.
2.1.1. Urban Fabric and Urban Context

POTSDAMER PLATZ

Figure 38. POTSDAMER PLATZ site plan (Source: https://potsdamerplatz.de/en/)

- Location: Berlin, Germany
- Architect: Renzo Piano Building Workshop
- Program: offices, apartments, cinemas, casino, theatres, restaurants and retail
- Client: Daimler-Chrysler AG
- Area: 350,000 sq m
- Project Year: 1992-2000

The dormant wasteland of Potsdamer Platz in the newly reunified capital of Germany, Berlin, was entirely renovated based on a Renzo Piano Building Workshop-designed masterplan. It was not
long before the new architecture and fresh vitality triggered by this mixed-use development gave the entire area a new inner energy, reconnecting areas of the city long separated by the Berlin wall. This new center is defined by two environmental features typical of the Berlin urban scene: green space and water.

Reconstructing Potsdamer Platz meant creating a project that would give shape to a place so steeped in memory but devoid of any physical traces offering proof of it. Having been abandoned for so long, attitudes regarding this part of the city had become deeply contradictory in terms of urban policy but also in terms of a divided sentiment pitting nostalgia against the need for a process of collective erasure. This suspension of time became even more accentuated when the Wall was built in 1961. A vast and abandoned empty expanse in what was once, at the start of the century, one of Europe’s most lively urban centers, now boasted nothing more than traces of old roads and the isolated presence of the Weinhaus Huth\textsuperscript{41}.

Staying within the guidelines imposed by urban planning regulations at the time, the masterplan complied with the Berlin tradition of city blocks and proposed a design that was, urbanistically speaking, clear, compact and transparent on the ground floor with buildings for a wide range of different types of tenants: offices, apartments, cinemas, casino, theatres, restaurants and retail. The main hub of the complex was the new Marlene Dietrich Platz. The project called for the creation of 350,000 sq m of space on a site of 68,000 sq m. Streets, sidewalks and paths, trees and water helped to define these new places and new connections.

Two towering office buildings stand as sentinels at the entrance to the new neighborhood, and an innovative gallery gives a modern twist to the retail promenade. The entertainment complex on the southwest side, housing the theatre and casino, was designed to be in synch with the Hans Scharoun-designed Neue Staatsbibliothek (1967-1978) and, in a more general sense, with the Kulturforum, an area that had once challenged the menacing boundary presented by the Wall\textsuperscript{42}.

\textsuperscript{41}RPBW, POTSDAMER PLATZ. http://www.rpbw.com/project/potsdamer-platz

\textsuperscript{42}Ibid.
2.1.2. Connection

- External: Open site plan, Pedestrian friendly
- Internal: Semi-public Space

LINKED HYBRID, Beijing, China

![Image of LINKED HYBRID, Beijing, China](http://www.stevenholl.com/projects/beijing-linked-hybrid)

*Figure 39. LINKED HYBRID (Source: http://www.stevenholl.com/projects/beijing-linked-hybrid)*

- Location: Beijing, China
- Architect: Steven Holl Architects
- Program: 750 apartments, public green space, commercial zones, hotel, cinemateque, kindergarten, Montessori school, underground parking
- Client: Modern Green Development Co., Ltd. Beijing
- Area: 220000.0 sq m
- Project Year: 2009
The Linked Hybrid, a 220,000 square meter pedestrian-friendly urban complex, inviting and allowing public access from every side, was described as an "open city within a city". This project was developed during the 2008 Beijing Olympic games, featured as a project for the sustainable city of Beijing. It promotes interactive relations and encourages encounters in public spaces that vary from commercial, residential, and educational to recreational. The entire complex is a three-dimensional urban space in which buildings on the ground, under the ground and over the ground are fused together.

The ground level offers a number of open passages through which all people (residents and visitors) can walk. These passages ensure small-scale micro-urbanisms. Shops activate the urban space surrounding the large reflecting pond. On the intermediate level of the lower buildings, public roof gardens offer tranquil green spaces, and at the top of the eight residential towers, private roof...
gardens are connected to the penthouses. All the public functions on the ground level, including a restaurant, hotel, Montessori school, kindergarten, and cinema have connections with the green spaces surrounding and penetrating the project. The elevator displaces like a "jump cut" to another series of passages on a higher levels. From the 12th to the 18th floor a multifunctional series of skybridges with a swimming pool, a fitness room, a café, a gallery, an auditorium and a mini salon connects the eight residential towers and the hotel tower, offering spectacular views over the unfolding city. Programmatically, this loop aspires to be semi-lattice-like rather than simplistically linear. The architect hopes the public sky-loop and base-loop will constantly generate random relationships and will function as social condensers resulting in a special experience of city life to both residents and visitors.

Figure 39. LINKED HYBRID circulation
(Source:https://www.archdaily.com/34302/linked-hybrid-steven-holl-architects?ad_medium=gallery)
Figure 40. LINKED HYBRID Sky bridges
(Source: https://www.archdaily.com/34302/linked-hybrid-steven-holl-architects?ad_medium=gallery)
Homes for All - Dortheavej Residence, Copenhagen, Denmark

![Dortheavej Residence](https://www.archdaily.com/903495/homes-for-all-dortheavej-residence-bjarke-ingels-group)

*Figure 41. Dortheavej Residence (Source:https://www.archdaily.com/903495/homes-for-all-dortheavej-residence-bjarke-ingels-group)*

- Architect: Bjarke Ingels Group
- Program: Social Housing
- Client: the City of London Corporation
- Area: 6800.0 sq m
- Project Year: 2018

The project architect was asked to create a much needed affordable housing and public space in the area while keeping the pedestrian passageways open and the adjacent green yard untouched.44

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44 ArchDaily, *Homes for All - Dortheavej Residence / Bjarke Ingels Group / Bjarke Ingels Group*, 08 Oct 2018
[https://www.archdaily.com/903495/homes-for-all-dortheavej-residence-bjarke-ingels-group](https://www.archdaily.com/903495/homes-for-all-dortheavej-residence-bjarke-ingels-group)
Figure 42. Diagram (Source:https://www.archdaily.com/)
The characteristic checkered pattern of Dortheavej is based on a singular prefab structure. Conceived as a porous wall, the building gently curves in the center, creating space for a public plaza towards the street on the south side and an intimate green courtyard towards the north. At the street level, the building opens up to allow the residents and general public to pass seamlessly into the courtyard.

Evening views of Dortheavej situated in one of the most multi-ethnic, low-income neighborhoods in Copenhagen, show the building as light and transparent. Residents can look out from their balconies and the surrounding community can observe the activity inside. The small square created by the building’s slight curve will be landscaped with cherry trees and spaces for bicycle parking—the preferred way of getting around the city. The north-facing façade looks towards an enclosed green courtyard, which residents of Dortheavej and the neighboring buildings can use for recreational activities.

2.1.3. Circulation & Programming

- Create “Multi Ground Floor” System or Develop subterranean space
- Control traffic and advocate Bikeable community.

Barbican Center, London, UK

- London, UK
- Architect: Chamberlin, Powell and Bon Architects
- Program:
- Client: the City of London Corporation
- Area: 160000.0 sq m
- Project Year: 1976
The Barbican mixed-use development is home to 4,000 residents, the Guildhall School of Music & Drama and the London Symphony Orchestra[^1]. It is located in the heart of London. The Barbican complex was designed as an urban microcosm, with residential blocks arranged around communal spaces – an approach inspired by the work of Le Corbusier and his vision for a ‘vertical garden city’.

The residential blocks are linked by two systems of pedestrian circulation: the highwalk and the podium. The highwalk, a network of bridges and narrow walkways, encompasses the estate. The podium is a raised platform, which becomes a new ‘ground level’ once inside the boundary of the estate. This design feature allows the Barbican to be entirely pedestrianized, with road and rail traffic passing underneath, out of both sight and sound.

All three tower blocks and the majority of the terrace blocks stand above the podium on piloti, enabling pedestrians to navigate the estate unimpeded by buildings. Perhaps the most striking of

these can be found beneath Gilbert House, a terrace block spanning the lake that bisects the podium. The height of the columns allows even the highwalk to pass beneath the main structure; a bridge is nestled among the supporting colonnade. The podium creates a sense of airiness, while the highwalk encourages movement and exploration; together, they produce open space that flows throughout the estate.

The lakes and gardens provide the residents with generous communal outdoor space, representing a rarity in an otherwise heavily built-up area of London. These landscaped areas lie below the level of the podium, with the changing elevations adding visual interest and lending a sense of seclusion. To ensure the underground line below does not disturb those enjoying the gardens, Ove Arup devised an engineering solution to reduce vibration from passing trains. The track was mounted on rubber bearings, representing the only section of the entire London Underground network to be modified in this way.

Figure 44. Photograph of a drawn perspective section of the Barbican Centre, Silk Street, City of London. taken in 1970; image from RIBApix (number RIBA92181)
2.1.4. Sense of Security

- Creating the Multifunction Program, keeping the Neighborhood busy and concerned.

Central Saint Giles, London, UK

![Central Saint Giles, London, UK](https://www.centralsaintgiles.com/)

Figure 45. Central Saint Giles street view (Source: https://www.centralsaintgiles.com/)

- Architect: Fletcher Priest Architects, Renzo Piano Building Workshop
- Program: Retail, Office, Apartment
- Client: Legal & General with Mitsubishi Estate Corporation Stanhope PLC
- Area: 66090.0 sq m
- Project Year: 2010

Central Saint Giles provides 66,090 m² of floor space – almost double that of the old St Giles Court – split between two separate buildings. The 15-story west block is for residential use,
providing 109 flats of which 53 are designated as affordable. The much larger horseshoe-shaped eastern block, standing 11 stories high, encircles a publicly accessible courtyard comprising 27% of the site's area. It provides 37,625 m² of office space with by far the largest floor plates of any office block in the West End of London, with 4,000 m² on all but the top two floors. At ground level, 2,276 m² of space is available for retail outlets and restaurants. The block is irregularly shaped, with recesses, projections and roof terraces that are intended to make it look more interesting and to break up its bulk.46

Central Saint Giles located in Soho, Central business district of London, has a mixed-use composition that allows it to blend well into the surrounding urban context and seize the city vibe. Its multifunctional commercial area arrangement controls the flow of people and space, allowing this area to maintain a consistently dynamic state, with a ground floor with restaurants, bars, and shops to satisfy the needs of people's daily lives and for entertainment.

Figure 46. Plaza view (Source:https://www.broadgateestates.co.uk/central-st-giles)

2.1.5. Sense of Place / Sense of Community

- Provide common space/facilities for collaboration.
- Advocate Community Engagement, Share resources and responsibility.

Coop Housing at River Spreefeld, Berlin, German

Figure 47. Coop Housing diagram


- Location: Berlin, Germany
- Architect: Carpaneto Architekten, Fatkoehl Architekten, BARarchitekten
- Collaborators: Die Zusammenarbeiter, Christian Schöning, Angelika Drescher
- Area: 7400.0 sq m
- Project Year: 2013
The project mission is to harness its location’s unique potential to create a socially just, economically stable, and environmentally responsible urban building block.

Three buildings form a confident and distinct unity in terms of their design and position in the urban space. Open to the river and neighbors, they do not set themselves off like blocks. The individual and communal terraces have become a distinguishing feature; they offer a much-used compensation for the “loss” of open spaces to the public. The building design consists of predominantly simple support and construction systems that enable a rich variety of options for the organization of various uses.47

The residential population in River Spreefeld is diverse. It is multigenerational and multicultural, allowing people of different classes. Apartments are barrier-free, with communal use of laundry rooms, fitness rooms, guest rooms, rooftop terraces, and the music and youth room.

The ground floor is largely open to the public, reflecting its attitude to the urban environment. It includes a carpentry workshop, catering kitchen, studios, daycare center, and a coworking space. Available to nonresidents are Option Rooms – unassigned, unfinished spaces for community, social, or cultural projects. Option Rooms maintain the project’s open character at the juncture of living and urban development. The ambitious budget has helped to focus on the essentials. In exchange for the required equity capital, users can carry out the needed construction work within their dwellings on-their own. In this way, and to demonstrate solidarity by providing the necessary credit collateral, the project has allowed the participation of people with very little capital.

Rents are staggered and start at a level on par with government subsidized housing, without having received this subsidy, which has helped many of the Spreefeld residents who could not otherwise afford to live in the city center under today’s conditions. Just as it was defined and administered from the start, participation has focused on collective concerns, uses, and spaces. The social skills that have developed throughout this process both enrich and facilitate a cooperative way of living.

The objectives have been implemented for the most part, and the project generates income in the

47 Archdaily, Coop Housing at River Spreefeld / Carpaneto Architekten + Fatkoehl Architekten + BARarchitekten, 17 Jan 2015
form of value in its use for both residents and the city. It produces new insights and has become part of the debate, allowing more people to have a say than just the “experts”.

The buildings also comply with the Passive-House-Standard and produce their own regenerative energy through a cogeneration unit, a geo-thermal system and photovoltaics. In addition to conventional units, there are six cluster apartments that provide a communal living structure for groups of 4 to 21 people.\textsuperscript{48}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{community-collaborative-space.png}
\caption{Community collaborative space}
\end{figure}

(Source: https://righttobuildtoolkit.org.uk/case-studies/spreefeld-genossenschaft-berlin/#)

\textsuperscript{48} Ibid.
2.2. Design Framework

The design case study provides significant strategies that need to be considered in this project. It examines the design principle and supports the establishment of a framework for the design of an integrative sustainable community in the Chinese urban context. To summarize the above-considered strategies, the urban integrative communities share similar characteristic, as outlined below.

1. Creating open space and maximizing public use at the ground level.

The American scholar Michael Walzer divided urban space into two distinct types: "narrow sense space" and "open space". The narrow sense space refers to the single function space. Open space is widely used, from which the public can take what they need. According to the famous British designer R. Rogers, suburban residential buildings, traditional residential quarters, commercial areas, car parks, underground passageways, overpasses, shopping centers and even the car itself belong to the narrow sense of space. Lively squares, vibrant streets, bazaars, parks, and open-air cafes, among others, are examples of open spaces. In an open space, people from all walks of life come together to create a sense of responsibility, personality and interpersonal feelings. The disappearance of open controls can have catastrophic consequences. The development and expansion of American cities, as early as the changes in Chinese cities, have led to a series of consequences: the planning of public spaces that are no longer cordial and friendly, and at which people are at a distance, is seen as a dangerous and frightening place. The classification of urban activities has become increasingly obvious, with the gradual shrinking of open space and replacement by a large privately enclosed space, such as security guards around barrier-erected obstacles. This change is also an important cause of closed-end residential districts in China. In China, the physical “Gated” form has been examined as a means to obtain security and ownership by the collective, which is an out-of-date notion since society has undergone rapid growth in a different direction. Additionally, to build a healthier city in a more sustainable way to satisfy people’s social needs, it is necessary to physically and mentally reconsider the living pattern. the
purpose of opening a residential area is not simply to demolish the wall to open the entire community, but to open people’s minds and hearts, altering the lifestyle. Additionally, is it designed to influence the surrounding urban environment.

2. Promoting mid to high-rise residential building and improve the utilization of land.
Compact housing has the advantage of mutual promotion, as stressed by Richard Rogers. The compact city formed by interlocking activities is more convenient, and it can reduce the need for automobile traffic and thereby greatly reduce transportation in general, saving at least a quarter of the city's energy consumption, resulting in less traffic congestion and better air quality, which in turn encourages people to ride bicycles or walk instead of driving to their destination.

The compact city limits energy waste. The power plant generates electricity while generating hot water, a byproduct of a conventional power plant. The local thermal power plant uses the hot water for power generation. This approach can double the efficiency of conventional energy transfer networks, and urban waste can also be burned at local thermal power plants, generating heat that can meet 30 percent of the energy demand in the adjacent area.

3. Increasing the sense of security by the mixed-use composition.
The community design consists of the following

- Plan workplaces and residences, more closely linking them together
- Commercial/activity space for people’s daily needs and to maintain a busy community
- Build neighborhoods with multiple forms of housing, rather than a single residential complex
- Place facility buildings in the surrounding neighborhood to form an organic whole

4. Creating a healthy microenvironment
In addition to their undeniable ecological and social benefits, green spaces can improve the quality of life of high-density buildings through their potential climate-conditioning functions, because green spaces can help regulate air temperature and humidity, to a large extent to reduce the air pollution.

Regulation of the urban microclimate has the beneficial effects of green space and planted forests. In urban areas, green spaces and plantations adjust the temperature balance by increasing the oxygen supply. In addition, increasing the humidity and principle of filtering natural air can greatly improve the local and overall environment. Beijing and other heavily polluted cities, for example, have increased the area of vegetation and green space to play a role in filtering and absorbing part of the toxic gases in the air. In community public spaces, the placement of landscape elements should be considered, such as wetland and water features, which can effectively reduce the regional heat island effect and prevent urban inland inundation.

5. Fostering a strong sense of Place/ Sense of belonging

Prior research on residential satisfaction in China has shown that residents having a sense of belonging to the community will make people feel more satisfied with the community. Additionally, the provision of functional space for community activity and sharing management responsibility can give members the opportunity to participate in building up the community shared value. Cohousing projects in Germany could be an example of self-management.

Summary and Design Matrix

The purpose of this chapter is to draw a system design framework based on design principles and case study. See the table 3 below for summary. This design framework will work as matrix to guide the specific design scheme and implementation selection in the design section.
<table>
<thead>
<tr>
<th>Contribution</th>
<th>Case study</th>
<th>Possible design approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Open access and maximizing public use at the ground level</strong></td>
<td>Better cohesion with Urban Fabric and Urban Context</td>
<td>Narrow the distance between buildings, give priority to pedestrians and bike. Increase accessibility from different direction.</td>
</tr>
<tr>
<td><strong>High-rise, compact residential building</strong></td>
<td>Improving the utilization of land Housing equity</td>
<td>Design apartment tower, Provide different size unit, especially compact size unit.</td>
</tr>
<tr>
<td><strong>Mixed-use composition</strong></td>
<td>Increasing the sense of security</td>
<td>Combines multifunctional spaces for public, business, residential and commercial that can be used in different time periods in a day. Use vertical access control system.</td>
</tr>
<tr>
<td><strong>Healthy micro-environment, high quality outdoor space</strong></td>
<td>Healthy life style, Well-being</td>
<td>Design outdoor green space for recreation and public activities, Design bike path and traffic system that have well connection to the city infrastructure.</td>
</tr>
<tr>
<td><strong>Sharing facilities, value and responsibility</strong></td>
<td>Fostering a strong sense of Place and Sense of belonging</td>
<td>Design semi-public space for community members, Design self-manage program for common space.</td>
</tr>
</tbody>
</table>
3. Design

This section focus on applying design to the actual site in the city of Beijing based on the Framework established in Chapter 4. The design process starts from site analysis, which includes the location, history, urban context, and climate of the city. Based on the site analysis, this thesis develops programs and specific design works.

1) Location
The selected site is located in the northeast corner of Beijing, in Wangjing neighborhood, Chaoyang District, between the 4th and 5th ring of the city. There are four main highways across the region. Beijing international airport is in the north, and the 798 art district is in the south. The neighborhood has a variety of large chain stores, rich educational resources, schools such as Beijing University of traditional Chinese medicine, and the central academy of fine arts. The medical services of Wangjing are also well-established. There are approximately 300,000 permanent residents, of which foreigners (Japanese and Korean) account for a large proportion.

The site is a single city block of 355 meters in length and 200 meters in width, surrounded by mid to high rise buildings and facing a city park in the northwest.

The reasons for selecting Beijing as the site are as follows. Beijing is the capital city, with a rich history and resources. It is a place in which one can observe different layers for different periods: the traditional heritage Forbidden city, traditional Chinese courtyard, Work unit, as well as the residential Gated community. In contrast, it is a city in China facing Representative urban issues. It is also a city of migrants, with rapid growth and increasing diversity. Numerous modern challenges can be assessed, such as traffic, a poor environment, and urban sprawl. Additionally, it is a City in focus, with ongoing urban practices.
Figure 49. Map of Beijing City Center

Figure 50. Wangjing Site
2) History

The history of Wangjing is several hundred years longer than the city of Beijing. According to historical records, Wangjing as a name first appeared in the Liao dynasty, a thousand years ago. The Liao dynasty made its capital in Zhongjing (now ningcheng in Inner Mongolia) and took Youzhou (now Beijing) as one of its subsidiary capitals, which was called Nanjing (means “capital in the south”, also known as Yanjing). Wangjing was then on the traffic artery leading to Youzhou via Gubeikou in central Beijing. The sun hou (now the Sun River) to the north of Wangjing was also on the south bank of the Wenyu River (now the Wenyu River). It was an important ferry crossing at that time for entering and leaving Youzhou from the northeast, and it was also a place where all soldiers would fight.

Following the origin of "Wangjing", people also spread a Qianlong royal seal Wangjing legend. In that year, emperor Qianlong spent time in the resort during the summer. He passed by the village via the imperial road and stopped to rest. This legend actually examines the altitude of Wangjing village. Although it is located in the great plain, the altitude of Wangjing village is almost one meter higher than the surrounding villages and more than 2 meters higher than the village of Sun He.50

After liberation, the sparsely populated Dashanzi area gradually moved to 798 electric machinery, Panasonic color tube and other factories, and many workers moved to form the later Dashanzi area in the east. After the reform in the 1980s, especially since the new century, the development of the first CBD in central Beijing has been saturated, and the great Wangjing area, with its geographical and resource advantages, has risen in line with the trend.

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The formerly abandoned and grassy communities in Wangjing have become an icon in the gateway to Beijing. More than 100 international enterprises and high-tech start-up companies have settled in Wangjing, with a total registered capital of more than 15 billion yuan. Great Wangjing has become the "second CBD" of Beijing.
3) Urban Context and Demography Information

A large number of the residents are professionals and foreigners, and the middle class makes up a large proportion. There is Wangjing west station of line 13 in the subway, and line 15 in the east of Wangjing is also very convenient. However, since the street is not south-north oriented, it is easy to become confused when driving.

![Figure 54. Age Distribution (2010)](Data from: https://www.citypopulation.de/php/china-township-beijing-admin_c.php?adm2id=110105026)

![Figure 55. Population Growth](Data from: https://www.citypopulation.de/php/china-township-beijing-admin_c.php?adm2id=110105026)
The community has become a hub for international company to build headquarters and laboratories, private enterprises and national entrepreneurship bases for overseas students. In recent years, it has driven the development of IT, application software and other high-tech industries. An open, diversified and international regional atmosphere is rapidly forming.
The real estate market of residential property development is mature in this area, the project quality is high, the living atmosphere is strong, and life service facilities are complete. Business property started late, and the atmosphere is just forming.
Figure 58. Surrounding Site - General Context
Figure 59. Huajidi Neighborhood - South of Wangjing (Source: Baidu map)

Figure 60. 798 Art District - East of Wangjing (Source: Photo by Edward Caruso)
4) Climate

Beijing has four distinct seasons. Winter is the longest, and spring and autumn are the shortest. Spring has a variable temperature, large diurnal range and is prone to windy, dusty weather. Summer is hot and rainy and is a season of thunderstorms, wind, heavy rainfall and other convective weather. Autumn is usually sunny with less rain, and it is the most comfortable and pleasant time during the year. Winter is cold and dry, with heavy wind and rarely snow, and it is not suitable for long-term outdoor activities.

![Average temperatures](source: www.weather and climate.com)

*Figure 61. Average temperatures (Source: www.weather and climate.com)*

![Average humidity](source: www.weather and climate.com)

*Figure 62. Average humidity (Source: www.weather and climate.com)*
Figure 63. Average sun hours (Source: www.weather and climate.com)

Figure 64. Average precipitation (Source: www.weather and climate.com)

Figure 65. Average rainy days (Source: www.weather and climate.com)
The wind direction varies significantly from day to day. The special topography of "Beijing bay" makes the valley wind in Beijing area obvious. In the plain area, the wind tends to be southerly in the afternoon and northerly at midnight. It is more southerly in spring and northerly in winter.

The climate analysis is to support the further design of massing and orientation of the building complex. At the same time, based on the general weather condition of this northern city, the design will consider blocking the chill wind during the winter season and gaining sun exposure for outdoor space in the summer season.
4.2 Concept and Big Ideas

- Promoting the Mid-rise to High-rise, compact Housing

Due to Beijing’s rapidly growing immigrant population, to accommodate new residents in this area and improve urban land use efficiency, this design promotes Mid-rise to High-rise development, with compact Housing as a priority. Additionally, because a huge number of residents living in this area are young professionals, especially employees of high-tech companies and international enterprises, apartment models will be economically efficient with a compact size to meet the needs of a single person or young couple.

- Creating open space, maximize public use of ground level.

- Increasing the sense of security by a mixed-use composition

- To create a healthy microenvironment, a landscape design incorporating the city park in the neighborhood.

*Figure 67. Design Concept Diagram*
Walkable and Bikeable community, designing a pedestrian and bike lane, bike storage for daily commuter. Position the building to acquire natural light and air flow.

- Provide equal housing opportunity for different classes;
- Foster a strong sense of Place/ Sense of belonging by designing quality public space and community common space.
- Advocate a Healthy lifestyle in a walk-able, bike-able community.

Due to the critical location of Wangjing, on the gateway of Beijing airport to the city center, a new development in this neighborhood has the potential to become the icon of Beijing and showcase the flourishing of Chinese culture. Thus, to take advantage of the higher altitude of Wangjing village, it is sitting on the best spot to acquire shine in the city skyline of Beijing. The inspiration of the concept “cloud” comes from Chinese landscape paintings, in which revolving clouds will be the linking structure to connect each individual building tower. The cultural concept of the "auspicious cloud" as a traditional icon has a thousand-year history in China. It is a representative symbol of Chinese culture, symbolizing auspicious clouds in the sky and expressing the wish for auspiciousness, happiness and the yearning for life.

Figure 68. Concept of the “Cloud” (Source: Landscape painting by Liucheng Zhang)
4.3 Massing Design and Urban Fabric

Figure 69. Massing Diagram
The overall distribution of the complex is the high-rise building in the east and north corner, and low and middle-rise buildings in the west and south. Because the eastern part of the site is adjacent to the highway and viaduct, to prevent the outdoor activities from being disturbed by high-speed traffic and its noise, the high-rise buildings are arranged on the edge to block the noise and separate the traffic flow.

Based on the previous analysis of Beijing's climate, Beijing is generally more suitable for outdoor activities in spring and autumn. The figure 70 below shows the sun cast situation on the site in a typical autumn afternoon. By placing the low-rise buildings on the south side, the outdoor areas receive more sunlight, while the high-rise buildings on the north side block the cold wind during the winter season.

*Figure 70. Massing and Site Analysis (Fall season)*
Figure 71. Neighborhood Analysis - Hot-spots & Flow

Because public facilities are more conducive to attracting the surrounding residents, based on the map of the area, the southwest corner of the site is closer to the densely populated area, so the public facilities and main entryway of the site are close to this location. Due to the lack of continuity of the adjacent buildings, to increase the popularity and promote the walk-ability of this area, the secondary road system is condensed, and the building footprint and its volume are relatively compact, reflecting an urban pattern of the residential-oriented community, referencing the residential area of Huajadi in the south.
Figure 72. Neighborhood Analysis - Zoning
4.4 Programming

The main goals of Programming are as follows. 1. From the perspective of function, this is a residence-oriented community, and it will mainly provide housing for the surrounding working population. The living facilities must first meet the daily needs of residents to reduce people's long-distance travel. 2. In terms of safety, the creation of a good mixed functional space is needed, so that this area has a certain amount of flow and outdoor activities during different times of the day to maintain its popularity, simultaneously with a reasonable separation of the public and living space. 3. In terms of quality of life, green spaces, outdoor areas and common residence spaces will be designed to provide healthy social and recreational spaces.
According to a survey conducted in Wangjing area\textsuperscript{51}, residents of this area believe that Wangjing lacks public cultural facilities such as a library. As a representative public space, the public library can not only meet people's cultural needs for reading and learning but

also serve as a good communication space. Opening the library to the public not only enriches people's spare time, but it also helps to cultivate a good learning atmosphere and improves the educational level of the community. The main building of the library is a four to five-story building with the main entrance facing the public green space in the southwest corner.

**Multi-function Space/Museum**

*Figure 75. Museum during the Weekdays*  
*Figure 76. Public events during the Weekends*

The Multi-function space/Museum sits in the middle of the south side, facing the park space and attached to the library in the west, adjacent to the gallery building to the east. The programming of this public area is intended to take advantage of the current artistic feeling of its surrounding neighborhood and develop an asset-based community development based on its location close to an art district and art academy. The building has an open floor plan, and it serves as exhibition space during the weekdays and hosts public events and local markets on the weekends. In the summer season, the multi-function space will work as a community hub here pedestrian can easily walk across the interior hallway to reach the central plaza area and access it from different directions, enjoying the public activities in the outdoor space.
The commercial space is located in the northeast corner of the site, and it provides shopping and recreational retail space for people, lunch as well as social space for staff.
working in the office buildings. This “Multi-Ground level” setting aims to create eyes in the public space and create a transit hub, with its junctional position allowing commuters to walk, bike and access vehicles.

Figure 79. Floor Plans 2-4 (Multilevel Commercial Space in Black)

Apartment Towers

Figure 80. Section view of apartment towers (Interior common space in gray)
The apartment building consists of public spaces, semipublic spaces, and private apartments. On the ground floor, there are public retail Spaces. Residents can enter the semipublic areas on the upper floor by the elevator in the access control lobby. These areas are usually roof green Spaces or Bridges connecting the two towers. Residents, especially children and the elderly, can move safely in these areas without being threatened by traffic. These semipublic spaces within the building can also create a good social atmosphere and provide the possibility for the residence to be mixed across different classes. The terrace green space can also be rooftop farms, which can not only provide some daily needs for residents living in the buildings but also increase the sense of participation. Residents can claim the space in the rooftop farm and take responsibility for managing a piece of land in the community.

Figure 81.
Typical Apartment Unit
4.5 Accessibility and Circulation

The core of the design is to provide as many pedestrian and bike paths as possible on the ground floor, allowing people to walk to every corner of the community. Among them, the main walking and outdoor activity areas are a plaza in the central area and a park in the south, which are centered around these public buildings with libraries, museums, and community centers as the starting points. It also attracts visitors from the park site in the west, residents from residential areas in the south, and workers from business offices in the north.
Figure 83. Axon diagram
Figure 84. View from the City Park Side

Figure 85. View from the South Crossroad
4. Summary and Perspective

There are still pending problems to be solved in China's current urban development, and we need to make continuous attempts to identify solutions that meet local needs in terms of urban design. The design of an integrated community has great benefits for future development in its neighborhood, by creating inviting urban environment and promoting dialogue between city blocks, which will become the urban trend in the near future. The integrated community design can create a healthy social environment for people and society, despite the continued coexistence of the Gated community in the future; people's sense of security and belonging will no longer remain in the Gated form. To achieve the ultimate sustainable goal, economic, environmental and social aspects all need to be carefully considered in a holistic system; and design implements need to be practiced in a local context.

This research was conducted within an urban design scope, and the final design proposal had a spatial practice focus only to achieve a clear outcome. The acknowledgement of a comprehensive design system, in reality, might involve policy, market, civilization, planning, crime, and a series of other variables. All the various factors and their effects require research in a planning scope in the future. For example, the traffic problem is related to the planning of the urban transportation network, which cannot be alleviated by adding a few branch roads but also requires the whole city to arrange the road network reasonably, reduce the construction of excessively wide streets, and add two or four lanes of access. Regarding the safety issue, although the design and arrangement of the space can improve the present situation, the essential feature of solving this problem is to reduce the crime rate, which needs to be addressed by improving the overall quality of the education system.
6. Appendix

Wells check list (Community Section)
### SUC – Social Spaces

**Part 1: Indoor Gathering Spaces**
- At least one of the following public use spaces where people can interact and congregate at no cost is within the project boundary:
  - Community center.
  - Senior center.
  - Library.
  - Museum.
  - Atrium.

**Part 2: Outdoor Gathering Spaces**
- At least two of the following public use spaces where people can interact and congregate at no cost are within the project boundary:
  - Plac or square.
  - Park.
  - Amphitheater.
  - Pedestrian street.
  - Community garden.

**Part 3: Programming for Social Cohesion**
- The project hosts or permits residents, employers, businesses and organizations to host no-cost entry events at least once per quarter such as:
  - Block party or neighborhood association event.
  - Cultural festival.
  - Celebration of a community milestone.
  - Community-wide service day.
  - Arts Festival.
  - Street fair.
  - Food Festival.
  - Carnival or fair.

### PUB – Public Spaces

- 75% of privately-owned commercial or residential buildings with a floor area of 10,000 m² [108,860 ft²] provide public access to an allotted space that meets the following requirements:
  - Totals at least 186 m² [2,000 ft²].
  - Accessible at all times, unless regularly closed for security purposes (e.g., during nighttime hours) or for special events.
  - Entry points are accessible from a minimum of one public use street.
  - Signage at entrance indicates hours of accessibility, the space’s designation as public use and that patronage of the business or building is not necessary to use the space.
  - Provides quality seating areas and sufficient lighting and is easily navigable.
  - Adheres to a regular maintenance and cleaning schedule.

### SAN – Sanitation

**Part 1: Waste Receptacles**
- Waste receptacles meet the following requirements:
  - Available on sidewalks in commercial and mixed-use zones to collect pedestrian litter.
  - Installed at least every 244 m [800 ft] along pedestrian-accessible paths.
  - Empty regularly.

**Part 2: Sidewalk and Street Cleaning**
- The following requirements are met:
  - Sidewalk cleaning is performed regularly.
  - Street cleaning, including cleaning of designated bike lanes, is performed regularly.
  - Street cleaning schedule is posted for public notice.

**Part 3: Community Beautification**
- The following requirement is met:
  - Residents and businesses are invited to participate in beautification initiatives that are held, at minimum, annually.
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PHW – Community Health and Wellness

Part 1: Health Needs Assessment and Programming

A point-by-point narrative demonstrates plans for the following:

a. Completion or identification of a community health needs assessment that identifies the local burden of disease (including the top five causes of morbidity and mortality) in the project's municipality or county.
b. Creation and dissemination of multichannel health campaigns that include programming and education developed to address the environmental design and lifestyle factors that contribute to the top five causes of morbidity and mortality in the project.
c. Evaluation of the campaigns to assess outcomes and impact. (Professional Narrative)

Part 2: Screening Programs

Annual screening programs are available at no cost to all residents and visitors regardless of insurance status for at least six of the following, with selection dependent on local burden of disease data (Part 1 of this Feature), within an 800 m (0.5 mi) walk distance or 20-minute mass transit ride of the project boundary:

a. Breast cancer.
b. Colorectal cancer.
c. Cervical cancer.
d. Skin cancer.
e. Cardiovascular disease risk factors, including blood pressure, cholesterol, and body mass index (BMI).
f. Stroke risk factors, including blood pressure and cholesterol.
g. Type 2 diabetes.
h. Respiratory health.
i. Vision.
j. Hearing.
k. Mental health.
l. Sexual health. (Policy Document and Map)

Part 3: Resource Database

An electronic database or resource list is available that contains culturally and literacy level-appropriate information related to each of the following:

a. Vaccination.
b. Maternal and child health.
c. Adolescent health.
d. Sexual and reproductive health.
e. Parenting and caregiving.
f. Substance use, abuse, and dependency.
g. Mental health, including suicide prevention hotlines.
h. Interpersonal violence.
i. Financial education or health.
j. Employment readiness.
k. Basic life skills education.
l. Any other health condition identified in the community health needs assessment (Part 1 of this Feature). (Policy Document)

CHR – Community Health Resilience

Part 1: Community Preparedness

An emergency planning and preparedness policy addresses relevant threats to the project (e.g., natural disasters and health emergencies) and achieves the following:

a. Identifies the unique health risks of the population within the project boundary (may include an assessment of the larger geographic area outside the project boundary, so long as the project boundary is included in that geographic unit).
b. Builds partnerships to support preparedness (e.g., Red Cross and a local emergency response unit).
c. Engages with community organizations to foster supportive resource networks (e.g., food banks and local health departments).
d. Coordinates training and promotes community engagement in preparedness (e.g., emergency response training or drills at local schools and workplaces). (Policy Document)

Part 2: Community Recovery

A recovery policy addresses recovery, adaptation and/or regrowth and considers the following:

a. Recovery needs and monitoring of various public health, medical, mental, and behavioral health systems and resources.
b. Coordination of recovery efforts among public health, medical, mental, and behavioral health systems.
c. Efforts to mitigate damages in future incidents. (Policy Document)
**PRI - Access to Primary Health Care**

**Part 1: Geographic Access**
- At least one of the following programs, policies or conditions is met to facilitate access to a general medicine health care facility:
  - a. Facility is located within an 800 m [0.5 mi] walk distance or 20-minute mass transit ride of the project boundary.
  - b. Facility transport services are provided through at least one of the following: non-emergency medical transportation services, mass transit discounts, shuttle services, parking or taxi vouchers or other means of facilitated access.

**EQU - Educational Opportunity**

**Part 1: Educational Access**
- The following educational support programs are provided, as appropriate based on local demographic need, within an 800 m [0.5 mi] walk distance or 20-minute mass transit ride of the project boundary:
  - a. Center-based early childhood education (i.e., pre-kindergarten).
  - b. Full day kindergarten programs.
  - c. Secondary school completion programs.
  - d. Out-of-school time academic programs.
  - e. Post-secondary education opportunities.
  - f. Continuing education for formal (i.e., accredited) and informal lifelong learning.

**HOU - Fundamental Housing Quality**

**Part 1: Accessible Dwellings**
- All newly constructed multi-family residential buildings with at least five units (including mixed-use buildings with residences) owned, managed or operated by the project owner meet the following:
  - a. All entrances and public common use areas comply with U.S. Fair Housing Act Accessibility Requirements for Multi-Family Housing or local equivalent.

**Part 2: Universal Design**
- At least 99% of multi-family residential buildings with at least five units (including mixed-use buildings with residences) owned, managed or operated by the project owner design a minimum of 20% (and no fewer than one) of its units in accordance with the following:
  - a. LEED ND v4 Visability and universal design Option 1.

**EQU - Housing Equity and Affordability**

**Part 1: Unit Allocation**
- At least one of the following requirements is met for all for-rent dwelling units, including mixed-use buildings:
  - a. 25% or more units are designated for tenants whose incomes are at or below 50% of local Area Median Income (AMI), adjusted for family size.
  - b. 40% or more units are designated for tenants whose incomes are at or below 60% of local AMI, adjusted for family size.
  - c. A difference to locally applicable affordable housing regulations.

**Part 2: Housing Cost Limits**
- The following requirement is met for all for-rent dwelling units:
  - a. Monthly housing costs (including any utility allowances) paid by the tenant are in accordance with those set under the Low-Income Housing Tax Credit (LIHTC) Program based on Section 42 of the Internal Revenue Code.
### DIG - Digital Connectivity (1 of the 2 parts is required)

**Part 1: Digital Infrastructure**
- The following requirements are met:
  a. Adoption of a "dig once" principle: all new buildings must install internet cables or fiber optics cables when laying underground lines (e.g., sewer or electricity).
  b. All new or retrofitted buildings are fitted with provider-neutral wiring that any internet service carrier can connect to from an access point in or near the building.

**Part 2: Wi-Fi Network**
- The following requirements are met:
  a. Network of no-cost Wi-Fi hotspots or zones is available in public spaces.
  b. Network covers at least 75% of the public use area owned, operated or managed by the project owner.

### CEC - Civic Engagement

**Part 1: Voting Opportunities**
- At least one of the following requirements is met:
  a. All dwelling units are within an 800 m (0.5 mi) walk distance of a voting station.
  b. Vans, shuttles or alternative enhanced transport to voting stations are provided on voting days.

**Part 2: Community Engagement**
- At least two of the following requirements are met:
  a. Minimum of one in-person or digital town hall meeting with capabilities for digital participation is held per year.
  b. Residents have the right and are encouraged to create a resident and/or tenant association that is independent of project administration.
  c. Residents have the opportunity to engage in participatory budgeting.
  d. Residents have the opportunity to participate in citizen advisory boards.

### PHE - Preservation and Rehabilitation

**Part 1: Preservation of Place**
- The following requirements are met:
  a. All buildings or landscapes protected by federal, state and local historic or heritage preservation programs are intact.
  b. Consultation with local historic association or governing body for long-term plans for buildings or landscapes protected by federal, state and local historical or heritage preservation programs, including understanding rehabilitation needs and community constituency.

**Part 2: Vacant Lot Transformation**
- All lots vacant at time of certification that are owned or managed by the project owner have debris removed and undergo a lot transformation process that meets at least one of the following requirements:
  a. Visual enhancement through artwork at the lot perimeter.
  b. Planting of grass or vegetation with perimeter demarcation to facilitate stormwater runoff.
  c. Creation of pop-up gardens or temporary planting plots.
**CEL - Celebration of Place**

**Part 1: Community Design and Identity**

The following aspects are included in the project plan:
- Incorporation of native flora into landscape design throughout the project area.
- Installation of public art throughout the project area, including both temporary and permanent installations.
- Adoption of vernacular design strategies that honor local architecture and material supply.
- Designation of sites that celebrate local culture or history.
- Education of residents and visitors about design and operation elements of the project.

**Part 2: Community-serving Retail and Institutions**

A narrative describes how the project promotes local retail and institutional cultivation, including a consideration of the following:
- Serving the target community demographics.
- Supporting opportunities for locally-owned retail.
- Fostering health and wellness-oriented retail and institutional offerings.
- Encouraging food retailers within the project area to purchase goods from local producers.
- Encouraging active transportation to everyday services and retail needs.

**ART - Public Art (1 of the 2 parts is required)**

**Part 1: Percent for Art**

All new buildings larger than 2,223 m² (23,000 ft²) owned, operated or managed by the project owner meet at least one of the following requirements:
- At least 1% of the total cost of construction (maximum required $200,000 USD) is spent on public art on the site or within the community.
- At least 20% of the building frontage is dedicated to public art.

**Part 2: Public Art Program**

The project adopts a public art program and provides a narrative demonstrating the following:
- Financial support from project for public art projects.
- Prioritization of the recruitment of local artists for the creation of temporary and permanent works.
- Consultation with an art professional in the selection of local artists.

**SAF - Community Confidence**

A point-by-point narrative outlines how at least three of the following requirements of the CPTED framework are incorporated in the design and/or operation of spaces owned, operated or managed by the project owner:
- Natural surveillance – spatial design and placement of physical elements to increase visibility within and around a space.
- Natural access management – landscape and wayfinding elements that help define and guide community members throughout space.
- Space delineation – physical and environmental attributes that help define space and express a positive sense of ownership.
- Activity support – planning and placing community social activities in public spaces.
- Physical maintenance – general upkeep plan for buildings and public spaces that includes activities such as landscaping and trash maintenance.
- Order maintenance – prevention and remediation plan for vandalism and property damage.
- Social capital – designated gathering areas, community programs or events that foster social trust and positive collective action regarding community safety.

**POC - Post-Occupancy Surveys**

**Part 1: User Survey Content**

A representative sample of at least 30% of occupants are surveyed annually (starting within one year of achieving 50% occupancy) on the following topics:
- Physical environmental quality, including air, water, light, acoustics and thermal comfort.
- Social environment, including social programming, quality of life and perceived safety.
- Community design, including access to services and amenities.

**Part 2: Information Reporting**

Survey results are reported on an aggregated, anonymized basis to the following groups:
- Project owners and managers.
- Community residents (upon request).
- The IBI Group, at least once per year.
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