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基于共享理念的后单位社区公共空间更新
策略研究——以广州市共和片区为例

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The Renewal Strategy of Post-danwei Community Public Spaces Based on the Concept of Sharing: A Case Study of Gonghe Area in Guangzhou

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摘　要

　　改革开放后，我国经济和社会发生了巨大的转型。尽管单位制社区作为时代变迁后遗留的时代产物，已不再是城市社区的主导模式，但仍保有一定的存量规模并发挥着社会功能。随着时代进程的加速，转型为"后单位社区"的社区面临着诸多问题，主要表现为对外无法适应快速城市化、社会多样性增加等社会环境及城市背景变化所带来的挑战，对内又存在空间资源不良使用、社会关系和社区凝聚力减弱等一系列空间和社会问题。因而，本研究在存量时代语境及现代城市发展背景下，提出了一种基于共享理念的能够适用于解决后单位社区当前发展困境的更新路径，并从实践层面研究了后单位社区转化的内在规律和发展方向。

　　本研究采用了综合性的研究方法，包括文献综述、理论及研究对象分析、案例解读和调查研究。其中，文献综述部分阐明了共享理念和后单位社区更新的相关研究背景与现有实践；在理论和研究对象分析的环节中充分把握共享理念的内涵及后单位社区的发展历程、典型时代特征与问题，并分析理论与研究对象的相关性；通过对国内外成功的社区公共空间更新案例分析，总结了它们在公共空间共享模式上所提出的关键思路及可借鉴的经验。至此，研究架构于共享理念之下，通过结合相关分析，归纳和构建了一套系统性的、适用于后单位社区特征及问题的设计框架与方法论。更进一步，研究选择广州市内具有一定空间和社会典型性的后单位社区城市片区——共和片区，作为空间实践对象。通过对该片区的社区空间环境、居民行为模式与需求的调研，本文以公共空间改造为着眼点进行社区更新，并在设计范围内结合设计方法论与实际情况加以应用。

　　在共享理念的指导下，研究推动后单位社区公共空间共享模式的改变，以创新的共享模式和共享机制来满足不断变化的社会需求和挑战，并实现空间的高效利用和共享价值的提升，从而促进社区居民的交流与合作；在共享的语境及框架下，提出了考虑空间、时间、治理三个层面的多维度公共空间改造及管理方法。本文的研究成果有望为应对后单位社区的时代问题提供解决思路并为其空间更新改造及治理提供具有参考价值的策略与途径。

关键词：共享理念；后单位社区；公共空间；社区更新与治理

Abstract

After the reform and opening-up, China underwent significant economic and social transformations. Although danwei-based communities, as remnants of the past, are no longer the dominant model of urban communities, they still exist in a certain quantity and serve social functions. As the pace of historical progress accelerates, communities undergoing the transformation into "post-danwei communities" are confronted with numerous challenges. These challenges primarily manifest in the form of external difficulties related to their inability to adapt to rapid urbanization and the increasing social diversity stemming from changes in societal and urban contexts. Simultaneously, internal challenges arise, such as suboptimal utilization of spatial resources, weakening of social relations, and a decline in community cohesion, presenting an array of spatial and social problems. In light of these circumstances, this research proposes a theoretically grounded approach based on the concept of sharing, which is deemed suitable for addressing the current developmental predicaments faced by post-danwei communities within the context of historical continuity and contemporary urban development. Furthermore, the research explores the intrinsic patterns and developmental directions of the transformation of post-danwei communities from a practical standpoint.

This study adopts a comprehensive research approach, including literature review, theoretical and research object analysis, case interpretation, and survey research. The literature review section clarifies the research background and existing practices related to the concept of sharing and the renewal of post-danwei communities. In the theoretical and research object analysis, the study fully grasps the essence of sharing and the development process, typical era characteristics, and problems of post-danwei communities, and analyzes the relevance between theory and research objects. By analyzing successful domestic and international cases of community public space renewal, the study summarizes key ideas and learnable experiences proposed in terms of public space sharing models. Thus, the research is structured under the concept of sharing and, through relevant analysis, establishes a systematic design framework

and methodology suitable for the characteristics and problems of post-danwei communities. Furthermore, the study selects the Gonghe Area, an urban area within Guangzhou that exhibits typical spatial and social characteristics of post-danwei communities, as the spatial practice object. Through research on the district's community spatial environment, residents' behavior patterns, and needs, this paper focuses on public space transformation for community renewal and applies design methodology and practical considerations within the design scope.

Guided by the concept of sharing, this research aims to change the public space sharing models in post-danwei communities, introducing innovative sharing models and mechanisms to meet evolving social needs and challenges. The research aims to achieve more efficient utilization of space and enhance the value of sharing, thereby promoting communication and collaboration among community residents. Within the context and framework of sharing, the study proposes multidimensional approaches to public space transformation and management, considering space, time, and governance. The research findings of this study are expected to offer valuable insights and strategies for addressing the contemporary challenges faced by post-danwei communities, and to provide reference points and approaches for their spatial renewal, transformation, and governance.

Keywords: The Concept of Sharing; Post-danwei Community; Public Space; Community Renewal and Governance

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Chapter 1 Introduction

1.1 Background of the Study

1.1.1 Background of the Housing Development

The development of residential areas in China is influenced by multiple factors such as population growth, urbanization, economic development, and environmental demands. Over time, the design concepts and construction standards of residential areas have been continuously evolving and improving to adapt to social and economic changes.

For a long time, urban community development in China has been primarily driven by new area development, and the related technical standards and regulations mainly focus on the needs of newly constructed residential areas. However, when it comes to the renewal, transformation, and sustainable development of old residential areas within cities, issues such as poor housing quality in old urban areas, poor quality of public space, and aging infrastructure often cannot be effectively resolved and managed. As a result, the market sometimes lacks a basis for decision-making, and even when there is a basis, the motivation to address these issues is sometimes insufficient [1]. Therefore, the irrational planning of residential areas and the inefficient utilization of space have simultaneously led to numerous issues in urban planning, resource allocation, organizational functionality, and community development [2].

1.1.2 Current Status and Trends in Post-danwei Community Development

Since the system reform, the danwei-based community is no longer the mainstream model of urban communities. However, based on the current structure and types of urban communities, this type of community still exists [3]. At the national level, post-danwei communities retain a certain stock of housing and constitute a significant component of Chinese communities. They are also a key focus for the renewal of old and rundown neighborhoods [4]. Its evolution is not merely a matter of the survival of an independent traditional community, but rather has become an issue that cannot be ignored in the overall development and planning of cities. Therefore, the development of this type of community must be incorporated into the system of urban community construction.

The background of reform and opening up, as well as the marketization of housing, have had a profound impact on danwei. As cities transition from being dominated by "danwei people" to encompassing a broader social population, they enter the era of "post-danwei[5]." As a product of a transitional era, post-danwei communities are also facing the need for renewal and transformation. In China, most danwei communities were built in the last century and have been used and worn out for many years. Many buildings and infrastructure require updates and repairs. Additionally, due to the rapid transformation of community lifestyles and consumption patterns in our country, the gradual separation of work and housing, the current communities are no longer able to meet the evolving market demands and the need for more diverse services and consumer choices[6]. Moreover, there is an imbalance in the progress of community renewal between different regions and cities. While some places are actively promoting community renewal, others are relatively lagging behind, facing difficulties in community participation, funding, planning, and management.

In terms of development trends, as housing reforms advance, many post-danwei communities are also evolving towards openness and multifunctionality. Traditional factory and institutional danwei communities are gradually transforming into comprehensive communities that encompass residential, commercial, cultural, and educational functions. This transformation promotes community prosperity and diversity, improving the quality of life for residents.

1.1.3 The Context of Sharing

Today, we find ourselves in an era of sharing, where sharing not only brings convenience to people's lives but also impacts all aspects of production and daily life. Especially in the era of limited resources, sharing is a desirable new urban paradigm that tightly integrates the ideals of human civilization, wisdom, and sustainable development[7]. It represents a trend where people seek to optimize resource utilization through sharing and cooperation in the face of resource constraints. Forms of sharing such as the sharing economy, knowledge sharing, community sharing, and social sharing play significant roles in this context, providing people with a more sustainable and collectively prosperous future[8]. Whether it is economic, social,

spatial or other resources, in the context of development in the age of stock, sharing paints a practical picture of development for the rational redistribution of resources.

1.1.4 Relevant Policy Background

In early 2016, the "Opinions of the Communist Party of China Central Committee and the State Council on Further Strengthening Urban Planning and Construction Management" pointed out: "The concept of sustainable and shared development enables the people to gain a greater sense of achievement through joint construction and sharing." It also proposed to "strengthen the planning and construction of neighborhoods, clearly define the size of newly built neighborhoods in a hierarchical manner, promote the development of open, convenience, appropriately scaled, well-equipped, and harmonious living neighborhoods, and generally refrain from constructing enclosed residential compounds. Existing residential compounds and danwei compounds should gradually be opened up [9]." In October of the same year, the core document "New Urban Agenda" adopted at the United Nations' Third Conference on Housing and Sustainable Urban Development proposed the concept of "Cities for All", which emphasizes equal access and enjoyment of cities and human settlements for all individuals.

Simultaneously, with the rapid development and rise of Internet technology, the concept of sharing has gradually permeated various industries, becoming an inevitable trend in urban development. The 19th National Congress of the Communist Party of China highlighted in its eighth part the need to "establish a pattern of social governance based on co-building, co-governance, and sharing. Strengthen the construction of social governance systems...". In February 2019, the revised version of the "Green Residential Area Standard" formulated by the Housing and Environment Committee of the China Real Estate Association proposed the adoption of an open residential area model in the central areas of cities, where internal supporting facilities and environmental resources of residential areas are open and shared with the city, aiming to promote coordinated development between cities and residential areas. The "National New Urbanization Plan (2014-2020)" in China indicates that the goal of promoting urban development is to foster a modern urban development model that promotes social inclusion, economic practicality, compact structure, ecological soundness, and the maintenance

of a diverse and open culture [10].

In addition, various cities in China have implemented relevant systems and practices in urban sharing, as well as in the planning, design, and transformation of residential areas. Taking Guangzhou as an example, a new spatial planning approach that emphasizes "full sharing" can stimulate a greater scale of shared activities. For instance, since 2012, Guangdong has initiated projects aimed at awakening residents' sharing behavior and space utilization, to inspire urban space users to engage in activities within the city's public spaces. In 2018, Guangzhou also issued policies such as the "Guidelines for Micro-Transformation Design of Old Residential Communities in Guangzhou" in response to its own development, aiming to address the issue of urban aging. These policies provide detailed guidance on the renewal and improvement of community infrastructure, laying the foundation for further improvement of the living environment and the vitality of public spaces.

However, as of the current situation, both the spirit of relevant meetings and the community development models or concepts outlined in the "Opinions" and "Green Residential Area Standard" have not yet to be implemented at the specific level of planning and design methods. Therefore, exploring residential area and urban development models that are suitable for China's national conditions and housing needs is of great significance for the current development of urban construction.

1.2 Purpose and Significance of the Study

1.2.1 Purpose of the Study

This study integrates relevant theories from various disciplines such as sociology and architecture, and combines them with field investigations and research on domestic and international case studies. Based on the concept of sharing, a strategy system for the renewal of public spaces in residential areas has been developed, aiming to provide new ideas and approaches for the transformation of post-danwei communities. The specific research objectives include the following:

(1) The study is going to clarify the development characteristics, issues, and obstacles of post-danwei communities in China at the current stage, and identify the issues, current status,

and concepts that need attention in the renewal process.

(2) From the perspectives of urban design and community renewal, the study will clarify the meaning and relevant theories of the sharing concept, as well as explore practical applications.

(3) This study analyzes the adaptability of the "sharing concept" in the context of "post-danwei community renewal". It combines theoretical foundations and case studies to propose a design methodology applicable to public spaces in post-danwei communities. Through practical application in the renewal and transformation of Gonghe District in Guangzhou, the study explores the universality of development models, strategies, public space management, and sharing modes that are suitable for the Chinese context in post-danwei communities. This exploration is substantiated through practical insights and serves to validate the findings at the practical level.

1.2.2 Significance of the Study

"Sharing" has become an important guiding concept for the development of modern society and urban construction. The emergence of post-danwei communities is a crucial step in the transformation of modern communities, signifying a search for integration with urban communities while retaining the distinctive characteristics of post-danwei communities. Therefore, combining the concept of sharing with the renewal of public spaces in post-danwei communities can promote efficient resource utilization, increased community participation, and social equity, thus holding significant practical significance and long-term impact. Research on the application of the concept of sharing in theory and practice is of great importance in driving the renewal of post-danwei communities.

(1) Theoretical Implications

Although the concept of sharing has already permeated the fields of urban planning and architecture, and major cities have initiated related practices, a complete theoretical framework for community renewal, especially for post-danwei community renewal, has not yet been fully established. There is a lack of systematic theoretical guidance and support. The aim of this study is to summarize the existing research on sharing theories, analyze community public space

renewal cases that embody the sharing concept, and distill them into theoretical insights and practical experiences. The study will explore how to incorporate the concept of sharing into the practice of post-danwei community renewal, providing theoretical support and guidance for such efforts. It aims to offer ideas and methods for creating inclusive, sustainable, and vibrant post-danwei community environments. By combining the concept of sharing with post-danwei community renewal, the research can explore innovative paths for future urban planning and architectural practices.

(2) Practical Significance

Currently, major cities in China have made some attempts to incorporate the concept of sharing into community renewal and have begun to focus on the spatial transformation of danwei-based communities. This study will analyze and summarize successful cases of shared community design and renewal both domestically and internationally. Taking typical post-danwei communities in Guangzhou as the research subject, this study will analyze various aspects, including the physical spatial environment, community activities, and residents' needs. It will conduct an in-depth analysis of the developmental history and existing usage status, aiming to identify real-world issues and propose corresponding strategies for the redesign of public spaces. These strategies will optimize the sharing modes of spatial resources. The research aims to enhance the shared value of spaces, improve the feasibility of sharing, and realize high-quality and uncontroversial urban spaces and resource sharing. Additionally, the study goes beyond spatial design, exploring the establishment of a new spatial governance system and the balance and interaction among various stakeholders based on the concept and essence of sharing [11].

The findings derived from this study will serve as valuable references for the implementation of relevant practices in China, and offer profound insights and strategic foundations for the adaptive capacity of danwei communities in light of the contemporary developmental background. With a targeted, objective, and scientific approach, the results of this research will significantly enrich and expand the existing body of knowledge in the field of design theories. Furthermore, this study aims to generate innovative ideas that promote

inclusive development, thereby mitigating adverse factors associated with urban development and effectively integrating urban resources.

1.3 Study on Related Concepts

1.3.1 The Concept of Sharing

"Sharing" is an evolutionary advantage and characteristic of the human species, manifested by a sense of fairness and a tendency towards altruism even from infancy [12]. In general, sharing refers to the social practice or established social norms where people collectively use social resources, production resources, spatial resources, or achievements to survive and pursue a more comfortable living condition in the objective environment [7]. It can also refer to individuals or collectives voluntarily or at a low cost allowing others to jointly own or use things or information, emphasizing the joint use and participation rights of different individuals in a certain object. From the perspective of social development, the concept of sharing primarily advocates social fairness, justice, and the maximization of resource utilization. It is an important approach to addressing social issues and a significant perspective for measuring national development and civilization. From the perspective of economic development, the concept of sharing refers to a mode characterized by efficient resource utilization [13]. In the context of urban construction and management, the concept of sharing refers to a governance model characterized by positive urban development and multi-stakeholder participation.

In the context of community renewal discussed in this paper, the concept of sharing primarily addresses the issues of allocating and utilizing community spatial resources. It explores residents' ways of living and space utilization, as well as examines community management and operational models.

1.3.2 Post-danwei Communities

In this study, the concept of "post-danwei community" is repeatedly mentioned as an important background and research subject. Therefore, it is necessary to define its context. Firstly, it is important to clarify the concept of "danwei" and "danwei-based community".

The term "danwei" is a unique concept in China, representing the distinctive vision of urban construction under the planned economy. It is closely related to both historical and

contemporary cities, serving as a fundamental social organization and basic spatial unit of urban development that emerged during specific historical periods. Danwei acts as an important platform and link between the state and individuals, influencing the production and lifestyle of a significant number of urban residents during a certain period. Over the years, danwei has served as a vital reference system for resource allocation by the state and the management of social order, while also serving as a fundamental channel for maintaining social cohesion. Danwei-based communities are residential areas based on work units, composed of members from the same work unit who live together and receive unified management. It is a manifestation of both economic and social organization and serve as carriers of urban space, having a geographical dimension. The formation of the danwei system is closely related to early corporate social practices in China, known as the "employee welfare society" [14]. The danwei system reflects the social and spatial balance between work and housing, while also reducing commuting time within the work units [10].

Danwei communities are a collective term, and their types are closely related to the nature and scale of the affiliated work units. People generally use the term "danwei communities" to refer to residential spaces or combined residential and production spaces of different scales and levels [15]. These communities are typically enclosed and constructed by the government or state-owned enterprises, providing employees with work, housing, and other welfare facilities [16]. Danwei-based communities can be residential areas based on work units or urban areas that combine production and living. They are composed of members from the same work unit who live together and receive unified management, while maintaining close ties in terms of living space and emotions.

Since the 1990s, the dismantling of the danwei system and societal changes have led to a transformation in urban housing and spatial governance. Simultaneously, communities ceased to be concealed within danwei and gradually transitioned to a "community-based" model, becoming a prevalent form of residential area within cities. As the danwei system dissolved and society underwent transformation, the communities that were once attached to specific danwei experienced a separation from the special spaces, resources, and interests associated with those

danweis. These communities lost their former organizational attributes and power structures, gaining diversity and openness instead. They became comprised of residents from different danwei, industries, and cultural backgrounds. This signifies the dissolution of characteristics and operating mechanisms of the past era, while also presenting an emerging social structure and spatial operational model. Therefore, compared to other types of residential areas in the city, post-danwei communities have developed a certain level of independence in terms of system transformation, reforms in enterprises and institutions, changes in scale, and shifts in economic environment. These communities retain some spatial characteristics and interpersonal relationships inherited from the original danwei communities. However, they also integrate new changes and factors based on social background and the urban environment of the new era, presenting a relatively complex and unique community situation.

1.3.3 Community Public Space

Public space, also known as the public realm, is a place where people gather and engage in social activities, directly reflecting the vitality of urban spaces. Broadly speaking, public space refers to all places that are in contrast to private spaces, such as residences. From a narrow perspective, public space mainly refers to streets, squares, green landscapes, sports fields, and certain places that are available for people's daily use and social activities. Public spaces are generally enclosed by architectural structures, constructions, or spatial interfaces, providing places for people to live and engage in activities. From the perspective of users, the most significant characteristic of public space is its public nature, as it can be used for collective activities and shared by urban residents.

In China, community public space refers to relatively smaller activity spaces within community life circles or residential areas, distinct from public spaces at the city level. Community public space primarily caters to community residents and surrounding populations, with a relatively narrow scope of publicness. It consists of both indoor and outdoor components. These spaces aim to meet the daily needs of community residents, providing functions for social interactions, leisure activities, fitness exercises, and more. Community public spaces play a crucial role in improving the quality of life for community residents, promoting community

cohesion, and facilitating social interactions.

1.4 Domestic and Overseas Related Research

1.4.1 Research Related to Sharing

(1) The Rise of the Sharing Concept

The origin of the sharing concept can be traced back to ancient societies, as it has been present since the birth of human civilization. The ancient Greek philosopher Plato proposed the idea of communal ownership and shared production of social resources by the people, which is considered one of the origins of the "sharing" consciousness [17]. Subsequently, scholars such as Aristotle, Cicero, and Aquinas also put forth their own views on "sharing." However, in the 18th century, the concept of private property dominated, leading to a gradual loss of recognition for the idea of "sharing." It was not until the 19th century that the Marxist concept of sharing emerged, advocating for the sharing of means of production, living resources, interests, and political rights, reigniting the concept of sharing.

However, the modern development and rise of the sharing economy can be traced back to the late 20th century and early 21st century. The concept of sharing received support and recognition from numerous philosophers since its early stages and has continued to evolve. After World War II, many Western countries conducted research on shared development to explore the mutual adaptation and coordination of social civilization and the economy, as well as the distribution of social development achievements. Sharing was regarded as a strategy to address social conflicts and was used to explore political and economic freedom [13].

(2) The Impact of the Sharing Economy Concept on Urban Renewal

Naturally, urban public space is not exempt from the complexities of urban issues such as renewal, management, maintenance, and sustainable development. The introduction of the sharing concept has shifted urban design from solely considering material aspects to placing a greater emphasis on human-centered design. It aims to establish an intensive, efficient, and sustainable way of living that revolves around people's needs, creating a specific cultural form and sense of identity[18]. Currently, academic research on the impact of sharing on urban renewal primarily focuses on three aspects.

Firstly, it is based on the concept of fair justice and inclusive equality in urban development. Zhang Li (2016) proposed that urban renewal aims to achieve greater sharing of urbanization and urban development dividends among citizens. By adopting the concept of sharing, efforts are made to enhance public service facilities, improve residents' living environment, and establish information platforms to stimulate social participation and enthusiasm for urban renewal[19]. McLaren D and Agyeman J (2017) study how to coordinate social forces to foster collaborative consumption or production, enabling the sharing of personal and public resources and promoting urban justice, stability, and sustainability[20]. Zhao, S., Dong, and others (2018) proposed measures to support the construction of a sharing city, including legal support, specific planning, and the restoration of urban rights, in order to promote community development, innovation, and fairness[21].

On the other hand, it is based on the development of the sharing economy and the optimization of resource allocation. Jeffrey Kok Hui Chan (2016) argues that the sharing economy has a significant impact on urban shared space planning and operations, contributing to its development and effectiveness[22]. Qin Jing (2017) suggests that the sharing economy plays a positive role in urban renewal by improving resource utilization efficiency, addressing complex property rights issues, promoting the showcase of innovative talents, and facilitating a bottom-up approach to urban renewal mechanisms[23]. Barile et al. (2021) demonstrate that the multifaceted nature and evolving characteristics of the sharing economy have transformed production and consumption systems, significantly impacting the socio-economic and environmental aspects of urban spatial structure and urban living [24].

The third aspect is the collaborative and participatory urban development model. Nie Jingxin et al. (2018) propose that a well-ordered urban space requires the collaborative governance system built by thew government, enterprises, and the public. This involves aspects such as ensuring spatial management institutional guarantees, regulating spatial use based on credit systems, and establishing mechanisms for diverse participation through negotiation[25].

Overall, in urban design and renewal, the concept of sharing has constructed a more open system of value exchange. It enables different urban actors to actively participate in a flattened

social community, thereby enhancing the vitality of urban systems and spaces, as well as the efficiency of urban resource utilization.

(3) The Perception of Sharedness in Urban Public Space

According to studies by Western scholars, urban public space differs from general open spaces and raises questions regarding its "authenticity." In practice, there are phenomena of "sharing without commonality" or "commonality without sharing." Consequently, some domestic scholars in China have attempted to provide cognitive understanding and advocacy for the sharing of public space from different perspectives. For instance, Wang Jing (2017) proposes that in the context of sharing, efforts should be made to enhance space utilization efficiency and enrich public spaces, gather people, promote community vitality, adopt activity-oriented approaches, coordinate resources, and strengthen public participation[26]. Liu Chun (2018) believes that the sharing and utilization of public spaces play a crucial role in urban competition. By creating shared spaces, it is possible to achieve efficient and enriched urban living experiences[27]. In addition, Liu Wan (2019), through a study of the public spaces around the Wudaokou subway station, found that public spaces need to possess not only material openness but also a rich and diverse sense of place in order to provide relatively equal spatial opportunities for different groups, interests, and time periods[28].

(4) Construction of a Shared Community

Current research on shared communities has focused on co-housing communities abroad and on the exploration of shared communities in China.

Through studying foreign literature, it is found that the emergence of co-housing communities in foreign countries is rooted in the imbalance and lack of coordination in social development. Scholars believe that integrating the concept of sharing with community development can alleviate resident pressures, enhance community solidarity, and address social issues. In practice, shared spaces, resident participation, and community activities have become significant features of co-housing communities. In 1964, Danish architect Jan Gudmand-Høyer first proposed the model of "co-housing communities," aiming to create a living environment that fosters mutual assistance, sharing, and encourages social interaction. This model has

gradually become a global trend over time[29].

Table 1-1 Development Process of Co-housing Communities in Foreign Countries

(Source: Author's Own Illustration)

Time	Country	Events
1964	Denmark	Jan Gudmand-Høyer first proposed the "co-housing community" model
1977	Netherlands	Building Co-housing Community
1978	Sweden	Building Co-housing Community
1988	United States	Introduction of Co-housing Community Concept to the United States
1991	Australia	Building Co-housing Community
2000	Japan	Building Co-housing Community and Starting the Corresponding Research
2005	United States	The Handbook of Co-housing Community

Dr. Anne Kopp Hyman (2005) argues that co-housing communities are an innovative strategy to foster a sense of neighborhood community. Jo Williams (2005) believes that not only can they facilitate effective exchange and sharing of community resources among residents, thereby alleviating the burdens of daily life, but they can also bring about positive environmental and humanistic benefits[30]. Research on "co-housing communities" in the United States primarily revolves around two main works, with the earliest publication being "Cohousing: A Contemporary Approach to Housing Ourselves" by McCamant and Durrett in 1988[31]. The book explores Nordic case studies and identifies common characteristics such as shared facilities, neighborhood design, resident participation, and self-management. Chris Scotthanson and Kelly Scotthanson (2005) introduced the concept of "shared community places" and summarized the planning and construction features of co-housing communities, including resident decision-making, friendly space design, shared facilities, and appropriate scale. As an important reference work for studying co-housing communities abroad, the book holds significant practical value [32]. Japanese scholar Mirror Jotaro (2016) believes that shared communities have a positive impact not only on residents' economic conditions but also play a crucial role in promoting social interaction and community cohesion [33]. According to Satoko Shinohara (2016), the importance of neighborly relationships and the desire for community

activities are key factors influencing Japanese residents' choice of shared communities and housing. The emergence of shared housing not only activates underutilized urban spaces but also brings multiple economic and social benefits, playing an important role in sustainable urban development and improving residents' quality of life [34].

In China, many scholars have also studied and drawn lessons from the Western concept of "Co-Housing Community". He Jing, Li Jingsheng, and others (2002) were the first to introduce the model of co-housing community in China, pointing out its differences from traditional cohabitation lifestyles [35]. Wang Tingting (2015) analyzed the practical cases of the two closest Chinese models to co-housing community: cooperative housing construction and cooperative fundraising for housing construction [36]. Wang Jing (2016) proposed that the co-housing model has valuable reference significance for addressing issues such as gated communities, social detachment, and aging in China, as well as meeting the needs of the sharing economy [37]. Ji Qianyun (2018), based on summarizing Western concept, suggested that China's shared communities should achieve multidimensional and open sharing, covering aspects such as space, facilities, economy, management, technology, and information. Such a sharing model would provide residents with public spaces for organizing activities, promoting community integration and development [38]. In 2019, she built on the exploration of operational models of cohabitation communities abroad, and proposed to combine multiple dimensions of elements to form a three-dimensional sharing model [39].

(5) Community Renewal Strategies Under the Concept of Sharing

Some scholars have proposed community renewal strategies based on the concept of sharing and community-oriented approaches. Addressing community renewal through the lens of sharing requires considering fairness. This process involves coordinating and balancing the interests of stakeholders with the goal of achieving optimized spatial utilization [40]. Gong Shuzhang（2016）used Taipei as an example to study the issues arising from urban mega-construction and identified a lack of urban public spaces and vitality. In response to this issue, the importance of building a sense of neighborhood was emphasized in community renewal [41]. Wang Yao and Hong Liangping (2018) explored the role of the sharing economy in community

renewal and development using the case of Taipei's Nanchang Airport community[42]. Liu Yuelai et al. (2018) initiated micro-renewal projects and gradually fostered and established self-governing community groups, aiming to achieve community autonomy in management and operation [43]. Tong Ming and Ren Guang (2020) illustrated a flexible, coordinated, and organic urban space repair strategy based on the practice of renewal in Shanghai's Changwu Community, which was applied in the process of community sharing-oriented micro-renewal [44]. Liu Huijun (2022) examined the Lifu Jiayuan Community in Beijing's Chaoyang District as a case study and integrated various sharing strategies such as hierarchical division of community sharing, facility sharing, green space sharing, and parking space sharing. The aim was to enhance the quality of spatial functions, meet the needs of all age groups, and promote the development of community services [13].

From the perspective of public participation in the community, scholars have focused on two main aspects of research in the context of sharing. Firstly, attention is given to the "co-building" model, which involves actively engaging the public in urban development, empowering them to play a greater role in the planning and design process, and achieving collective interests and shared values in the community. Secondly, research emphasizes exploring the increased opportunities for public participation brought about by the sharing economy, providing the public with more channels to participate in community affairs and decision-making. For example, Shen Jie et al. (2018) propose that the characteristics of the sharing economy offer new opportunities and challenges for public participation in urban planning. It promotes increased resident participation and a greater sense of sharing, but also brings difficulties in coordinating interests. The sharing economy revolutionizes public participation consciousness, land use, public spaces, and urban service capabilities. It also expands avenues for public participation in urban planning through data sharing, virtual reality, the internet, and other means [45].

In the discourse of community renewal, sharing can be understood as a new spatial function, a method of community renewal, and even a form of community organization and driving force. It is a response to various issues related to community space utilization, order,

vitality, and more.
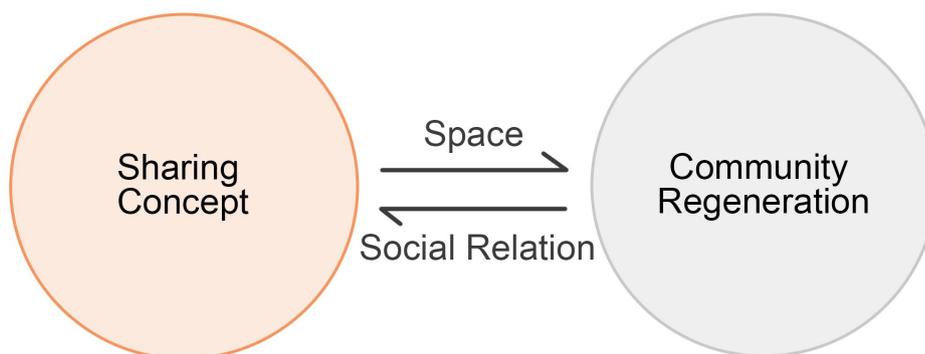
Figure 1-1 Relationship Between the Concept of Sharing and Community Renewal

(Source: Author's Own Illustration)

(6) Research Summary

Currently, the concept of sharing has been widely applied in planning practices at the urban, community, and public space levels. It focuses on methods such as stock utilization, public participation, activity-oriented approaches, and Internet technologies, providing theoretical guidance for community renewal strategies based on the concept of sharing. In general, a shared community emphasizes resource sharing and cooperation among community members, meeting their respective needs through social connections and mutual assistance, thereby promoting community cohesion and sustainable development.

Overall, both domestic and international research emphasize the aspects of shared community renewal strategies, development models, operations, participatory interactions, benefits, and sustainable development. They have also put forward policy and management recommendations to promote the development and implementation of shared communities. Domestic academic research focuses on practical cases and policy exploration, while international research emphasizes theoretical frameworks and historical experience summarization. Moreover, the research encompasses not only participation, protection, and sustainable development but also addresses social issues such as activating the aging population and reducing living costs. The mutual exchange between the two promotes the comprehensive development of shared community research.

1.4.2 Research on Danwei-based Community Renewal

(1) Research on the Origin and Evolution of Danwei Community Studies

Although the construction of danwei (work-unit) compounds in China began in the early 1950s and 1960s during the founding of the country and expanded throughout the planned economy, it had not attracted much scholarly attention before then. It was not until the 1990s that some scholars began to conduct in-depth research on danwei communities and incorporate them into the academic research agenda. These scholars started to focus on their historical background, development patterns, and their role in Chinese society and economy. Among them, Chai Yanwei (1996) was one of the early human geographers who conducted research on this topic. He defined the phenomenon of danwei compounds from a spatial perspective, emphasizing that danwei provided employment, housing, and welfare facilities, forming relatively closed spaces that protected the lives and social activities of personnel and integrated workers and their families, creating a sense of regional belonging [46].

Different disciplinary perspectives have led to diverse research approaches on the transformation of danwei communities. Lu Hanlong (1999) argues that under the pressure of marketization, danwei has increasingly lacked the ability to fulfill social functions [47]. Scholars from the field of human geography have examined the geographical space of danwei communities and found that after the dissolution of the danwei system, the egalitarian ideology of the danwei era gradually eroded, resulting in income stratification among residents within the danwei communities. He Haibing (2003) situates danwei communities within the initial stage of urban grassroots social management systems established after the establishment of the PRC, with the post-modern community system gradually replacing the danwei system in terms of functions, leading to urban communities gradually assuming the management and service functions of danwei communities[48]. Bray, David (2005) focuses on the link between spatial form and social organisation, arguing that economic transformation has caused the danwei to lose its dominant position, but its presence still influences the possibility of urban transformation [49]. Wei Shujuan et al. (2014), focusing on housing policy reform, examine the community stratification phenomenon resulting from the transformation of danwei

communities and the new problems and challenges brought to urban community development in the new context [50]. Jiang Lihua (2017), from the perspective of spatial sociology, studies the transformations of physical space and social space caused by the disintegration of danwei communities, as well as their impact and challenges on the spatial significance for the elderly. These issues include discomfort in emotional experiences, a sense of unfamiliarity in social space, and the weakening of subjective cognition [51]. Cao Yu (2019) argues that under the influence of the existing acquaintance society, the cohesion of the danwei community continues to play a significant role, which indeed has a substantial impact on the development of contemporary communities [52]. Du Peipei et al. (2019) analyze the reconstruction and transformation of danwei communities from a spatio-temporal sociological perspective, highlighting the decline, transformation, and governance issues of old danwei community spaces, reflecting the shift from guaranteed employment to informal employment and from danwei-managed property to predicaments in property management [53]. Nanqi Ye (2021) examines the impact of two major national reforms on the social space of danwei communities in China. Through on-site observations of danwei compounds in Hefei, Anhui Province, using methods such as map drawing and interviews, the micro-level changes within danwei compounds are investigated [54].

Overall, research on danwei communities is closely related to the development needs of grassroots society in China. Factors such as public space, community belonging, and property renewal in the new era have driven the development of research on danwei communities. Through interdisciplinary collaboration, a comprehensive understanding of the importance of danwei compounds in Chinese history and society can be achieved, as well as exploring their potential in the contemporary context. However, the transformation of danwei communities faces time pressure and challenges with a wide-ranging impact, and existing research lacks analysis and response to this situation.

(2) The Modernization Development of Post-danwei Communities

Research on post-danwei communities has been concentrated in the last decade, with a primary focus on community governance and revitalization. Scholars believe that establishing

a sense of community, cultivating resident self-governing organizations, and implementing space renewal and property management models are crucial factors for successfully achieving governance transformation.

In terms of community governance, most scholars believe that the strong control exerted by enterprises over communities under the danwei system is gradually diminishing, and the governance model is transitioning from unitary governance to pluralistic governance, where the governance entities are becoming more diverse. For instance, Guo Fengying et al. (2011) pointed out that institutional reforms and changes in social structure have led to the restructuring of danwei communities, introducing diverse governance entities and new community governance models, achieving a transformation spanning "state, market, and society [55]." Wu, X. (2013) advocates turning the current conflicts between different actors brought about by urban planning or regeneration into benign interactions, so as to meet the cultural, spatial and economic expectations and values of the residents of the post-danwei community and to achieve community building goals [56]. Yan Yumei (2017) studied the governance evolution of enterprise-based danwei communities, including their static structures and dynamic processes. The study highlighted comprehensive changes in the relationships between entities, governance power, and resources, and delved into governance transformations in the "post-danwei era [57]." Zhang Qiu Jie et al. (2021) found that the motivations for sharing resources within danwei are diverse and involve social, political, and economic aspects. To promote the participation in community governance, mechanisms should be established and barriers should be reduced to facilitate intrinsic actions of resource sharing [58]. Cao Xiaojin et al. (2022) conducted research on the spatial evolution of post-danwei communities and its implications for sustainable governance. Taking Xukuang community as an example, they studied and analyzed the differences and dynamics of spatial production, as well as the interconnections between residents and the government. They suggested that future sustainable community governance should prioritize residents as the core [59].

In terms of the renewal and transformation of danwei communities, the current danwei communities, to some extent, do not fully meet the demands of modern residents' lives.

However, they still need to adapt to the development of the times. Wang Meiqin (2011) emphasizes the need to transform and rebuild danwei communities based on actual conditions and residents' needs to enhance and improve the spatial environment of the community [60]. Zhang Can (2013) conducted research on urban renewal and revitalization of aging communities in Chongqing, summarizing the transformation models and spatial structural changes. It is suggested to establish neighborhood community transformation units to integrate the community into the city [61]. Wu Jingjing (2015) focuses on using theories of good governance and polycentric governance to address the issues of reconstruction in old industrial communities in Northeast China and seeks new directions for the development of danwei-based communities [62]. Wan Ting (2015) aims to maintain neighborhood relationships and proposes the "N+1" sharing model for the revitalization and transformation of post-danwei communities based on neighborhood interaction theory. Four modes, namely, concentration-oriented, complementary-oriented, green-link-oriented, and activity-related, are further derived to provide reference for the revitalization and transformation of communities in different situations [63].

(3) Research Summary

Overall, a significant number of scholars currently focus on the spatial and temporal characteristics of danwei residential neighborhoods. Through long-term research efforts, they have gradually developed a relatively comprehensive cognitive framework and system for understanding the issues related to danwei communities. However, there is a lack of comprehensive research on danwei communities in the current context of the environment and social background, as the existing studies mainly concentrate on the traditional danwei compounds during the planned economy period and explore the changes in danwei during the economic system transition.

Moreover, fundamental changes have occurred in danwei communities in terms of politics, economy, and society, which have had an impact on the governance logic of post-danwei communities in the current stage. Nevertheless, there is relatively limited research on the micro-level and design improvement level[54]. Space renewal strategies mostly focus on case studies,

with limited summaries of universal strategic frameworks and technical routes. There is insufficient attention given to the substantive governance subjects of post-danwei communities—residents and communities—and a lack of detailed analysis of the relationships among stakeholders within post-danwei communities. It can be observed that most existing research focuses on a single dimension, such as space, management, or social relationships, without a comprehensive review of post-danwei characteristics and comprehensive studies on the transformation and optimization of spatial and social issues.

1996-1999	1999-2003	2003-2010	2010-2017	2017-2022
The Pioneering Phase of Research	The Embryonic Stage of Research	Rapid Development Phase of Research	Governance Thinking Stage	Community Renewal Exploration Phase

Figure 1-2 Development Process of Danwei Community Research

(Source: Author's Own Illustration)

1.5 Research Content, Methodology and Framework

1.5.1 Research Content

This study adopts the concept of sharing and aims to conduct a comprehensive study and design of post-danwei communities and their public spaces. Firstly, the study systematically reviews the academic achievements of relevant theories, the developmental history, characteristics, and research directions of danwei-based communities both domestically and internationally. Secondly, it collects a substantial number of renewal cases of community public spaces from both domestic and international sources and analyzes them to summarize and establish a strategic framework for the sharing modes of public spaces in post-danwei communities. Furthermore, in-depth discussions are conducted for each strategic direction, proposing a set of practical and applicable design methods for transformation. Lastly, taking the case of Gonghe Area in Yuexiu, Guangzhou, as a design validation, valuable references are provided for future renewal and transformation of post-danwei communities.

1.5.2 Research Methodology

(1) Literature Review Method

By reviewing domestic and foreign literature, reading books and articles related to sharing

concept and post-danwei community, the research has enriched the knowledge of relevant theories and gained a better understanding of conceptual models. The study also clarifies the corresponding policies and regulations, understanding the development process and current research status in this field, and gained a systematic understanding of the discipline and its practical development. Valuable and referenceable exemplary cases are accessed to grasp experienced theories and methods.

(2) Field Research Method

In terms of case study, the research has conducted literature research and on-site observations of representative community renewal cases. Through field visits, the author has obtained first-hand information related to case studies, complementing the literature read before. In terms of project design, the author has conducted field investigations of the design subjects. Through visits and photography, the real and valid project information is obtained to fully understand the overview, spatial layout, existing issues, development history, and models of the practical objects. And questionnaires, interviews, and other forms are used to conduct qualitative and quantitative analysis, in order to fully understand residents' spatial usage and future needs. By personally experiencing the existing problems, targeted strategies can be better proposed.

(3) Interdisciplinary Analysis Method

Given the multifaceted nature of revitalizing post-danwei communities, this research study recognizes the necessity of engaging various disciplines and stakeholders. Therefore, it will adopt an interdisciplinary approach, drawing insights from diverse fields such as architecture, sociology, psychology, and political science. By incorporating this broad range of perspectives, the study aims to attain a holistic understanding of the research problems, contextual background, and theoretical underpinnings, enabling a more comprehensive analysis and formulation of effective strategies for renewal and transformation in these communities.

(4) Case Study Method

The study emphasizes the importance of gathering experience from case studies to study

community transformation and the sharing-oriented renewal of public spaces. By documenting and evaluating renewal techniques, valuable insights can be extracted and key lessons identified. Through comparative analysis with the local context, commonalities can be identified, leading to the establishment of fundamental design principles and focal areas for interventions.

1.5.3 Research Framework
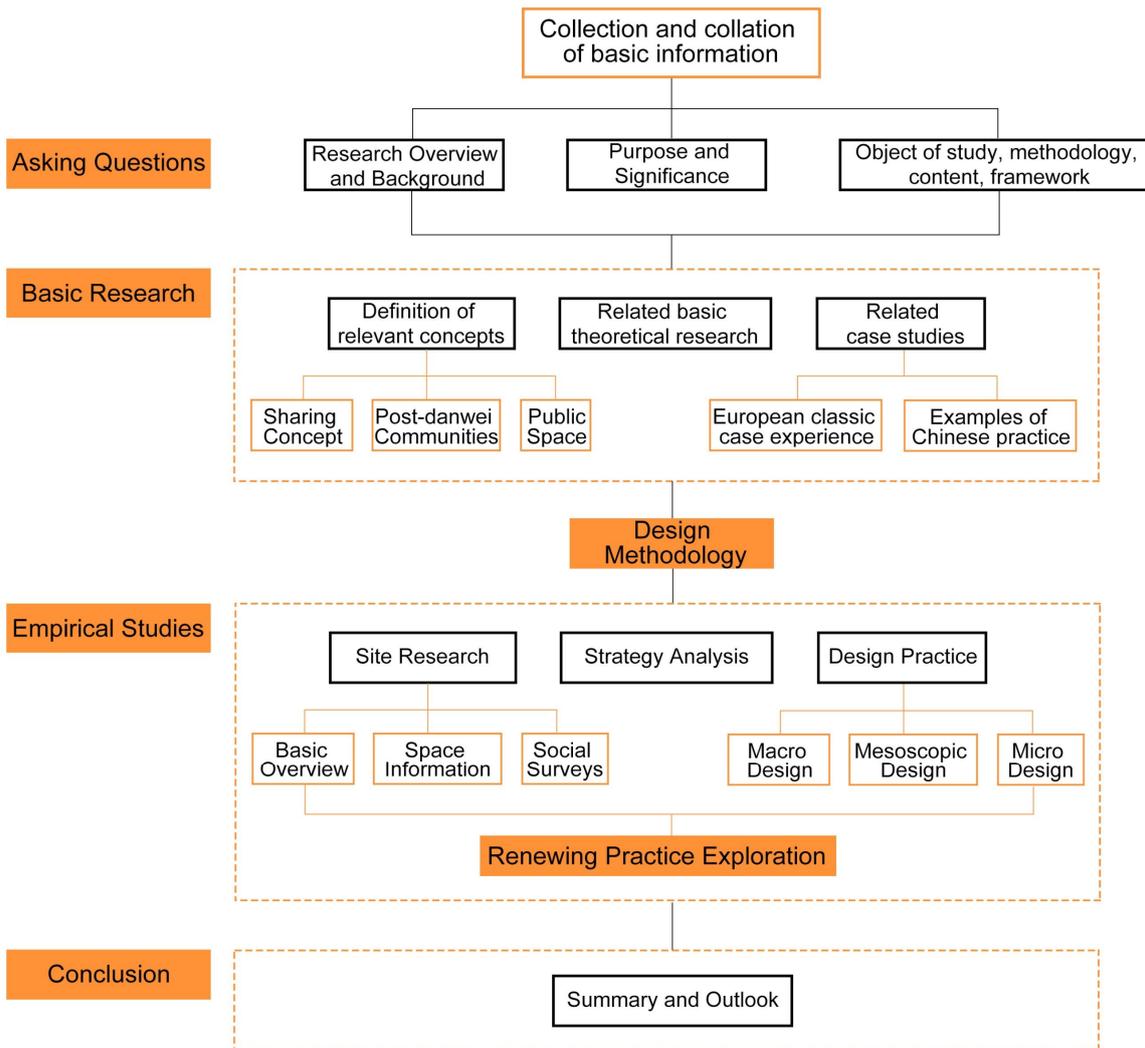
Figure 1-3 Research Framework

(Source: Author's Own Illustration)

Chapter 2 Relevant Basic Research

2.1 Characteristics and Issues of Post-Danwei Communities
2.1.1 Main Types of Communities

Depending on the functions of the organizations, the types of danwei-based communities formed around them vary, mainly including corporate danwei, public institution danwei, and high-efficiency danwei. Due to the distinct spatial and social relationship characteristics exhibited by different types of danwei communities, this study focuses on the research of public institution danwei communities and the subsequent formation of post-danwei communities.

(1) Enterprise Danwei Communities

This type of community is commonly found in industrial cities and is generally composed of three parts: production area, office area, and residential area. It occupies a relatively large area, and often the production and residential areas are separate. The production area is where industrial production takes place and is usually of a large scale. The office area is responsible for administrative tasks, production supervision, and logistics. The residential area is where employees and their families live and includes housing and some public facilities for daily life.

(2) Institution Danwei Communities

In comparison to enterprise danwei communities, institution danwei communities exhibit a distinct composition with limited or no production functions. Typically, these communities encompass office areas and residential spaces, often structured as integrated work-live units or adjacent office and residential buildings [64]. Notably, they showcase prominent central public spaces and designated zoning for public and residential structures. However, the relocation of enterprise danwei has led to a shift in the predominant purpose of many institution danwei communities, resulting in their transformation into primarily residential-focused areas.

(3) University Danwei Communities

Compared to the open spatial forms of Western universities that are fully accessible to the city and society, Chinese campus spaces often have more distinct physical boundaries and relatively independent spatial systems. Among them, teaching functions are central in zoning,

while residential areas are typically adjacent to the teaching areas and often separated by walls.

2.1.2 Main Types of Community Public Space

In comparison to public spaces found within cities, the public spaces in post-danwei communities exhibit a smaller scale and scope. They serve a more limited range of services, resulting in a reduced variety of public spaces compared to other types of residential areas. These spaces are often situated on the periphery of the community rather than integrated within it. Furthermore, there are noticeable distinctions in terms of their richness and vibrancy. Many existing public spaces in danwei communities are repurposed from outdoor spaces and public facilities inherited from the original danwei community.

Table 2-1 Classification of Public Spaces in Post-Danwei Communities

(Source: Author's Own Illustration)

Type	Scope
Streets and Boundary Space	Community Boundary, City Streets
	Community Internal Footpaths and Carriageways
	Passages
	Open Spaces Along Fences and Railings
Square Space	Small Square
	Community Park
	Small Garden
	Small Green Space Landscapes
	Play and Fitness Space
Community Public Buildings	Library / Reading Room
	Exhibition Space
	Indoor Fitness
	Chess Room
	Meeting Room
	Public Classrooms
	Markets
	Multi-purpose Hall

To provide a comprehensive understanding, the author categorizes these spaces into three types based on their physical characteristics: street and boundary spaces, square spaces, and public building spaces (Table 2-1). These classifications help to capture the diverse forms and

functions of public spaces within post-danwei communities, shedding light on their spatial dynamics and highlighting the need for further exploration in this area.

In a district or community's public space system, the various elements are closely interconnected and interact with each other, creating an organic and comprehensive whole (Figure 2-1). Street spaces act as mediators and connectors, integrating building spaces and square spaces. The architectural space provides functions such as entertainment, work and commerce, while sqaure spaces become central gathering and communication areas. The continuity and interactivity of street spaces enable convenient transitions between different areas, facilitating movement and interaction among various functional zones within the community.
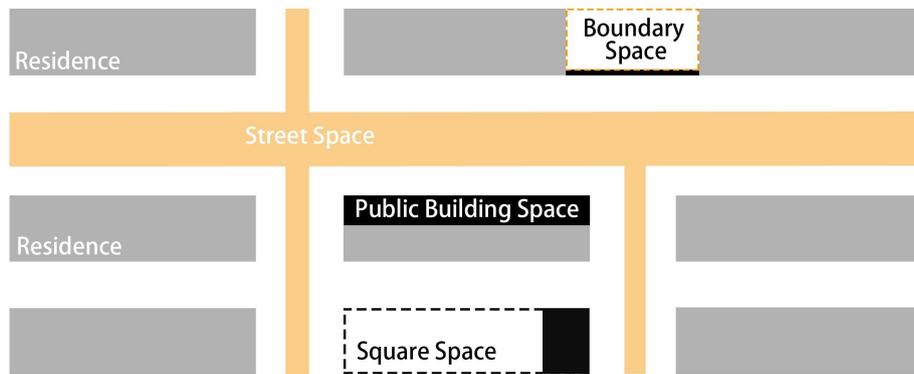
Figure 2-1 Relationship Between Different Types of Public Spaces

(Source: Author's Own Illustration)

2.1.3 Transformation Process of Domestic Danwei Communities

During the peak of the planned economy era, social resources were fully concentrated in the hands of the state, and danwei became the main symbol of community formation based on collective welfare systems [16]. Among them, the collective welfare provided includes basic living benefits for employees or their relatives, such as housing and public facilities. For a long time, the danwei has played a significant role in national resource allocation and social control, serving as a key tool for social cohesion [16]. With the gradual implementation of reform and the development of a market economy, the property rights of the residential houses in the danwei compounds were distributed to individual occupants, leading to the gradual loss of the danwei's (organisational entity) control over its territory[54]. Danwei communities are beginning to

gradually decline, and the connections and integration of resources within the communities are starting to loosen.

Under the influence of the market economy, the subordinate relationship between individuals and danwei is gradually weakening. Some communities have undergone restructuring, and the original "state-danwei-individual" system is gradually weakening while individual consciousness is gradually strengthening. Compared to the danwei system, the community system imposes fewer restrictions on citizens. The role of danwei in social organization and supervision is weakened, and neighborhood committees gradually replace danwei as the "administrative entities" of post-danwei communities. Society is exhibiting an increasingly diverse, hierarchical, and polarized trend[65]. The new housing reforms allow market forces and private enterprises to play a greater role in the overall economy, particularly in housing production and consumption.

Period	Time	Features
Budding Period	1950s	The country establishes a new political and economic system
Peak	1960s -1970s	Collective welfare system, strong sense of collective identity
Transformation	Reform and Opening Up	The planned economic system gradually disintegrated and the danwei system began to decline
Declining Period	Declining Period	Monetisation and commodification of housing, social diversification and stratification

Figure 2-2 Analysis of the Transformation Process of Danwei Communities

(Source: Author's Own Illustration)

In summary, the transition from a planned economy to a market economy has significantly influenced the dynamics of community formation and social organization in post-danwei communities. The redistribution of property rights, weakening of danwei control, and increased market participation have contributed to the evolution of community structures, with neighborhood committees assuming administrative roles. The housing reforms have also played a pivotal role, fostering greater market involvement in the housing sector and expanding

individual choices. These transformative changes reflect the shifting landscape of post-danwei communities, where market forces and new governance structures have reshaped the social fabric and empowered residents with greater autonomy and options.

2.1.4 Characteristics of Post-Danwei Communities

Although post-danwei communities in different regions, and even within the same region, may exhibit certain variations, they share similarities in terms of scale, social spatial composition, and spatial layout. By studying the spatial and social characteristics of danwei-based communities and their transformation processes, the research can provide a clearer and more precise understanding of the aspects that post-danwei communities retain or change based on the characteristics of danwei-based communities.

(1) Spatial Characteristics

From the perspective of spatial enclosure, traditional danwei communities are often characterized by a certain level of closedness. These communities inherited the traditional neighborhood system and Soviet-style residential complexes, employing spatial segmentation and enclosure through the use of walls and other means to protect internal land and resources, while emphasizing security and exclusivity. These communities have clear boundaries, access control systems, and internal transportation systems. Due to the "work-live" nature of these communities, there was a relative sense of safety within, allowing residents to freely engage in activities, and children to play independently.

However, in post-danwei communities in many regions of China, community boundaries are still predominantly defined by rigid boundaries such as walls or buildings. Athough symbolic gates may exist, most communities are fully open to external visitors. Therefore, the boundaries and gates serve more as spatial constraints rather than restrictions on social attributes and activities [16]. Currently, while other city residents are not explicitly prohibited from entering these communities, access often requires a considerable amount of time, hindering spatial accessibility and the sharing of facilities [66].

In terms of functionality, the danwei-based community's working area and the residential area for employees' families overlap significantly in space. The entire community is built within

a relatively concentrated area. The danwei provides residents with spaces for work, family life, entertainment, and neighborhood interactions. It is equipped with numerous facilities for daily living, services, and housing, offering functional complexity and diversity to meet the needs of employees or residents in their daily lives and production.

However, with the development of the separation between work and residence and the socialization of public facilities, post-danwei communities tend to focus more on residential functions, while public facilities are dispersed in other blocks near the community to serve the danweis and the surrounding residents. Additionally, due to the relocation of danweis, there have been certain changes and expansions in the land and space utilization of the danweis (Table 2-2). Therefore, compared to the functionally well-established danwei-based communities, post-danwei communities are more involved in the relationship between the community and the city and external blocks.

Table 2-2 Features of the Evolution of Land Use and Spatial Functions

(Source: Author's Own Illustration)
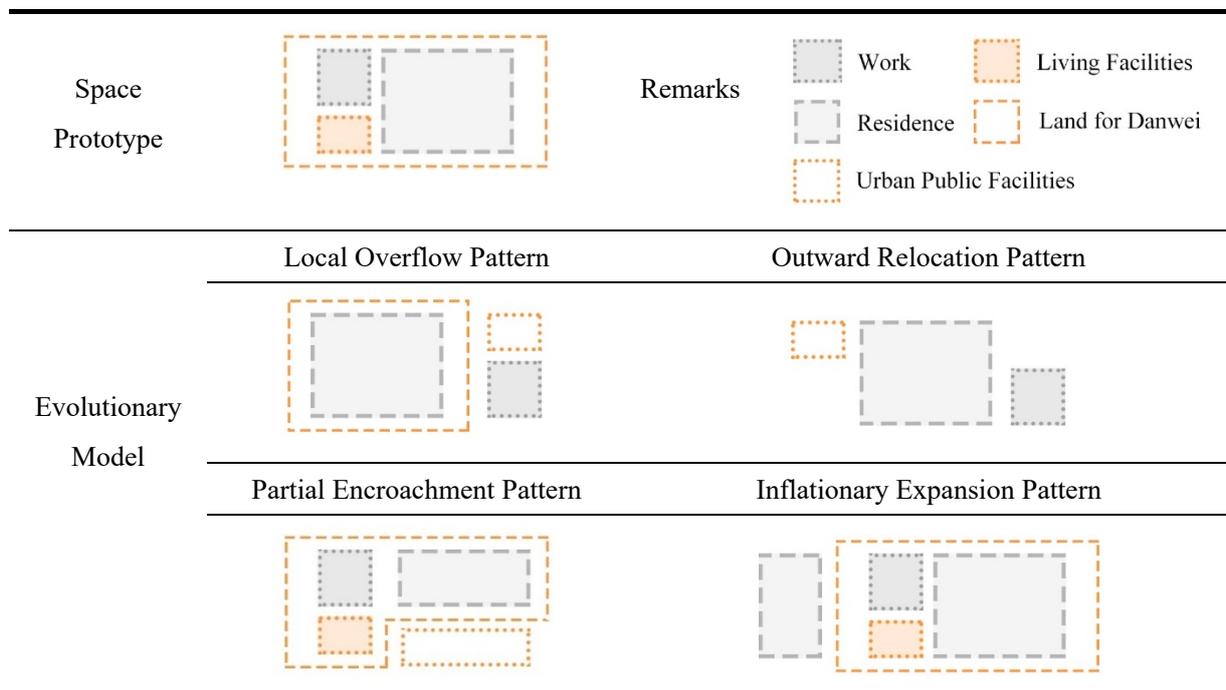
In terms of spatial layout, there are variations in the internal spatial forms of danwei communities in different regions or contexts. Overall, the architectural texture of danwei communities can be roughly categorized into four types: linear, courtyard, strip-block, and grid (Figure 2-3). Generally, courtyard-style buildings have lower density, while the other forms

have limited preserved public spaces. Due to the early construction of most danwei communities, the available land inside the courtyards has been nearly exhausted, leading to a significant amount of "squeezed-in" construction or demolition and reconstruction in post-danwei communities. This results in architectural variations in style, age, and scale within the community, creating a lack of order and an ongoing increase in building size with a decrease in public spaces [67]. Additionally, each danwei community typically has a designated public activity space, but they are all enclosed by the community's walls and cannot be connected to or directly accessible from the roads.

| Arranged in Rows | Courtyard Style | Strips and Blocks | Grid-like |
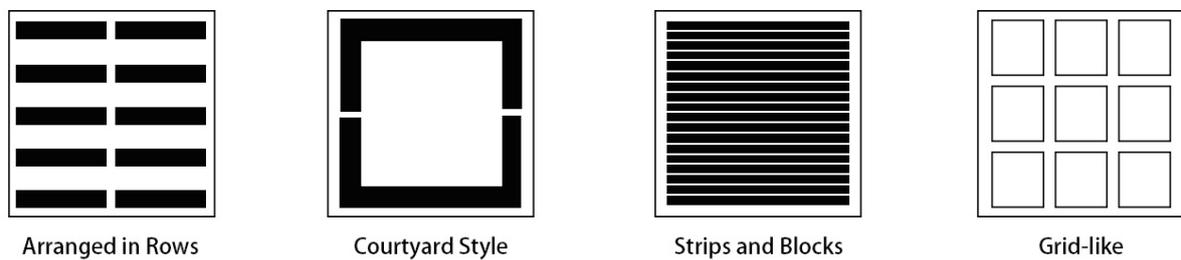
Figure 2-3 Types of Spatial Layout in Danwei Communities

(Source: Author's Own Illustration)

From the perspective of the quality of the spatial environment, taking Guangzhou as an example, the common types of danwei communities in Guangzhou are predominantly in the form of row-style layouts. The study has summarized several common types of community layouts at the current stage and extracted representative spatial textures within the urban area to compare the building density of danwei communities, other traditional aging community, and commercial residential areas (Table 2-3).

The results of this observation revealed a consistent trend: the highest building density was observed in danwei-based communities or post-danwei communities within these three categories. The primary reason for this higher density is that these communities were typically designed to accommodate a larger population, specifically to meet the needs of the respective unit or organization. Consequently, the availability and quality of public space resources tend to be relatively limited in these communities.

Table 2-3 Building Density of Different Types of Communities

(Source: Author's Own Illustration)

Type	Danwei Community	Aging Community	Commercial Housing Estates
Plan			
Average Building Density	38.8%	36.7%	29.4%
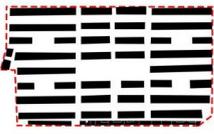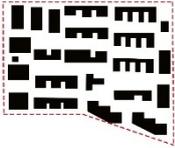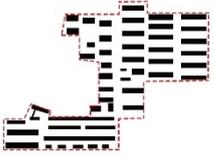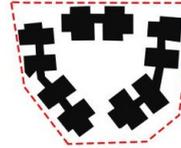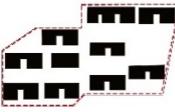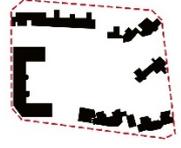
In addition, compared to commercial housing communities, post-danwei communities are typically composed of early-built danwei housing. These communities, which were originally constructed as danwei-based neighborhoods, often face challenges of inadequate space management and maintenance in later stages. Furthermore, the presence of informal constructions may exacerbate these issues. As a result, post-danwei communities commonly exhibit relatively simple architectural styles, smaller building distances, relatively rudimentary public facilities and supporting equipment, smaller public green spaces, and overall lower environmental quality. These characteristics contribute to the distinct and often less desirable physical environment found in post-danwei communities.

Figure 2-4 Comparison of Living Environment

(Source: Author's Own Illustration)

(2) Social Characteristics

With the development of the planned economic system, danwei (work units) are directly associated with social resources. The residents within the same danwei compound have their work and living spaces combined, and they enjoy relatively comprehensive social services. The characteristics of danwei include the close connection between work, life, and social facilities, and the residents within the danwei have great similarities in their living habits and beliefs. They are often self-sufficient within the work unit, a situation referred to as "organized dependence" by Walder (1986), which involves providing systematic collective consumption within the danwei. There are extensive and close relationships among people, and each community member has a sense of identification and reliance on the space. However, there is a lack of interaction between the community and other areas of the city, and "working in the same work unit" becomes the emotional foundation in the community while also acting as a barrier to external communication[68]. Therefore, former danwei communities often have strong internal emotional connections but weaker external contacts.

In former danwei-based communities, strong social connections exist alongside work connections. These communities provide a closed and secure space for children to freely explore and play. Within this environment, neighbors develop close community connections and mutually supportive relationships. They are familiar with each other and willingly care for each other's children, ensuring their safety and well-being. Even in the absence of parents, neighbors keep a watchful eye on the children, offering assistance, guidance, and additional supervision. The original sharing mode within danwei-based communities naturally facilitates interactions among community members. Residents often gather in the courtyard, sharing their lives, experiences, and offering mutual support. This sharing mode not only fosters emotional bonds among neighbors but also strengthens community cohesion and a sense of belonging.

After undergoing processes such as housing transactions, spatial reorganization, community mergers, or community reorganization, the majority of post-danwei communities have experienced certain degrees of resident displacement, changes in neighborly relations, and adjustments in management approaches. People now choose to move into the community based

on different needs, no longer solely relying on work or the danwei as a strong social bond.
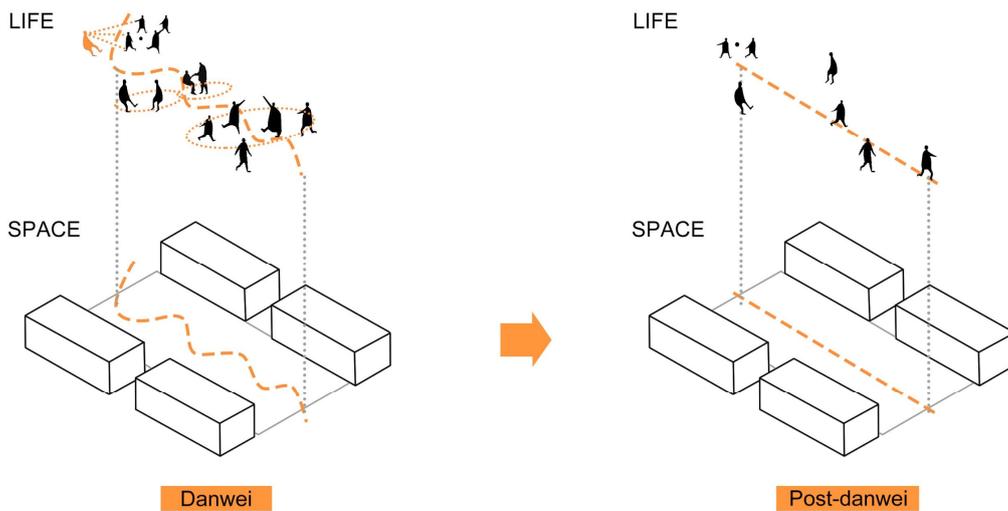
Figure 2-5 Schematic Representation of Changes in Social Characteristics

(Source: Author's Own Illustration)

This shift alters the original logic within the community, transforming it from external exclusivity to internal mixing, thereby weakening and even dissolving the existing "acquaintance society" and neighborly network. The invisible boundaries in residents' minds gradually blur during the process of community hybridization and element reconfiguration [69]. Additionally, as communities gradually become more open, the boundaries between residents and outsiders also become increasingly blurred (Figure 2-6). The community exhibits new social relationships, social networks, and community culture. In terms of management, most of the community work, including resource allocation, control, and integration, is now carried out by the neighborhood committees in place of the former danwei.

Figure 2-6 From External Exclusion to Internal and External Mixing

(Source: Author's Own Illustration)

(3) Summary of Changes in Various Dimensions of Characteristics

In conclusion, danwei-based communities, rooted in geographical and occupational relationships, exhibit a strong interplay of spatial connections and a network of community culture. These communities foster a deep sense of identification and belonging among their residents, forming the bedrock of their social fabric.

Table 2-4 Summary of Changes in Various Levels of Characteristics

(Source: Author's Own Illustration)

Classification	Original Condition	Current Condition
Economy Background	Planned Economy	Market Economy
Institutional Background	Danweization	De-danweization
Land Ownership	Country-Government	Country-Government
Ownership of Residential Building	Work Unit	Individual & Work Unit
Right of Use of Residential Building	Individual & Work Unit	Households & Tenants
Population Composition	Staff of Work Unit, Employee's Family	Staff of Work Unit, Employee's Family, Retired Employee, Home Buyers Tenant, The Rest
Land Occupation	Allocated Land	Migration
Boundary	Clear Boundary	Reduction & Expansion
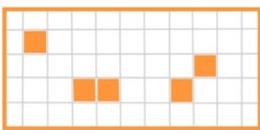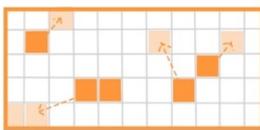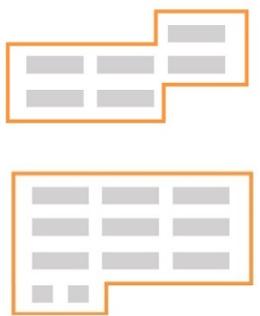
2.1.5 Summary of Current Issues in Post-danwei Communities

By integrating the original social and spatial characteristics of danwei communities with the new features of the current era, and placing them within the context of contemporary urban

background and urban development needs, a comprehensive summary of the issues exhibited by post-danwei communities can be presented from a more objective perspective. Similarly, the demise of the danwei system and the rapid development of urbanization have greatly impacted the physical spaces and social relationships of communities that were based on danweis.

(1) Physical Space Issues

From the perspective of spatial structure and resources, danwei communities have transitioned from highly organized and integrated community spaces in the past to a fragmented trend, and land use has shifted from extensive to intensive. Reconstruction and redevelopment led to inconsistencies in community scale, size, and quality, along with poor land integration, resulting in decreased spatial connectivity and integration while increasing internal segregation.

From the perspective of public spaces, the existing public spaces are no longer able to meet the needs of the new community population and urban demands. Public space resources are limited and lack integration. The disintegration of the previous sharing models has resulted in low space utilization, as well as issues of underutilization, overcrowding, or disorder. Some informal constructions reflect the role of private rights in a post-danweization context, leading to a certain degree of privatization of public space. Such forms of addition and alteration contribute to further spatial confusion and extremely inefficient land use.

Furthermore, limited land resources and historical significance constrain the availability of suitable space for community renewal in post-danwei communities. This lack of space hinders large-scale renewal and transformation efforts, preventing the existing community areas from adequately meeting residents' needs and limiting the community's development potential.
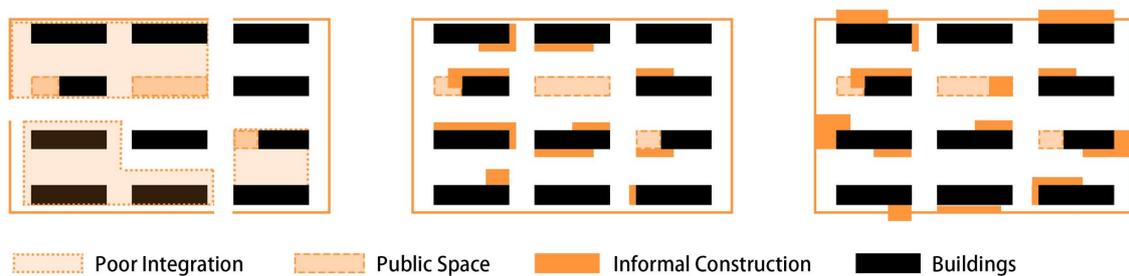
Figure 2-7 Analysis of the Transformation Process of Danwei Communitie

(Source: Author's Own Illustration)

(2) Social Relationship Issues

Housing reform has led to significant mobility and turnover within and outside the community. Houses have been resold, sublet, or passed down to children, causing changes in resident composition. The influx of rural labor during urbanization has complicated the community's social relationship network without the opportunity for reestablishment and maintenance. This hybridization phenomenon impacts the community's sense of community and social relationships. Existing residents experience the breakdown of familiar neighborly relationships and changes in social networks, while new residents bring different cultural backgrounds, values, and social habits. So intimate and high-quality social relationships are replaced with alienation and unfamiliar, low-quality social relationships (Figure 2-8).
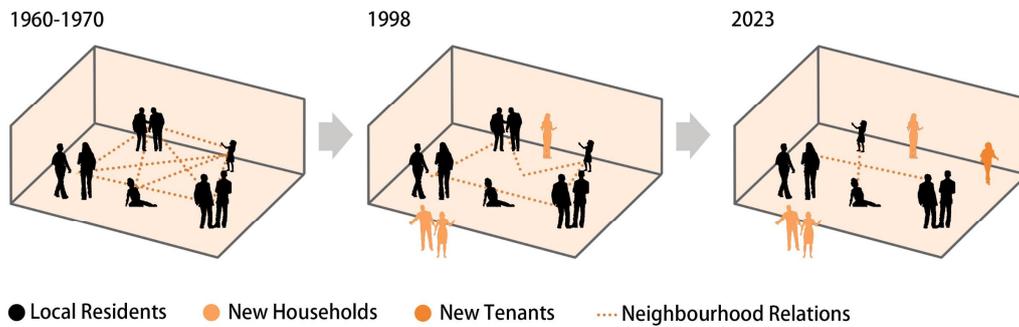
Figure 2-8 Schematic Representation of Social Network Changes

(Source: Author's Own Illustration)

Furthermore, the decentralization of physical space within the community can lead to significant changes in social space, which may have negative impacts on community cohesion and social connections (Figure 2-9). Firstly, the dissolution of common issues is one aspect where heterogeneous members within the community may lose consensus on common topics due to different life experiences and interests. Engaging in different activities, residents may no longer have shared concerns and discussion topics, and there may even be mutual exclusion between spaces due to differences in interests and needs. Secondly, changes in the sharing patterns of public space occur when the functional spaces and types of residents become decentralized, resulting in a gradual decrease in the shared use of public spaces among different individuals. Additionally, due to the scarcity of public space and the subpar quality of certain

spaces, a situation can arise where the majority of low-quality resources go unused while there is competition for the limited high-quality resources. Furthermore, the externalization of daily activities is another influencing factor. As different functional spaces gradually move away from the community, residents' daily activities may shift to external locations. Consumption, entertainment, and social activities may take place in commercial centers, entertainment districts, or online social networks that are located further away from the community, leading to a decrease in economic activities and social networks within the community. As a result, residents in contemporary post-danwei communities often lack common interests, goals, shared values, and cultural similarities. They may also lack the sense of belonging to the community, which in turn hinders neighborly assistance and community-building actions.

······ Out-migration of Facilities   --- Out-migration of Residents   ● Residents   ▬ Public Facilities
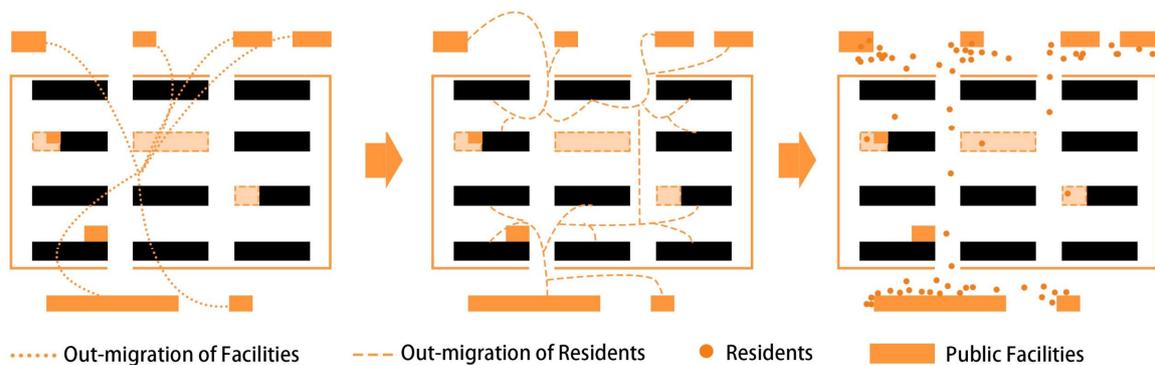
Figure 2-9 Illustration of the Impact of Physical Space Changes on Social Space

(Source: Author's Own Illustration)

(3) Community Management Issues

After socialization, community-based on danwei took two different development paths: one path was through reform to shift towards socialized management of the community, while in other cases, it mostly involved the reintegration of relatively small danwei communities with outdated structures, leading to a vacuum in community management and services. This management vacuum will further exacerbate disorder, environmental deterioration, and significantly affect the comfort of community residents. Various problems have emerged on these two different paths [16]. The underlying reasons are also related to the fact that these communities are usually small and old, with obvious legacy issues. Therefore, property management companies generally do not prefer to take over such communities, resulting in a

lack of management and order in terms of sanitation, green space maintenance, and safety. Community members also lack practical awareness and a sense of community identity, resulting in a lack of proactive willingness to participate in community transformation activities. At the same time, the neighborhood committee is unable to integrate the different interests and needs of residents into a single spatial structure.

2.1.6 The Challenges of Post-danwei Community Renewal

(1) Development of Operational Mechanisms

Regardless of how a community is redeveloped, it requires strong support from local residents and a comprehensive response to their needs. It also necessitates adaptive transformations in the organizational, management, and service methods at the grassroots level of the city. This process inevitably places certain demands on the innovation and rationalization of the urban grassroots governance system and community self-governance model [70]. Community redevelopment projects often involve multiple stakeholders, including not only residents within and around the community but also relevant departments of the original danwei, administrative authorities, social organizations, investors, planners, designers, and construction companies, among others. Currently, there is a lack of well-established communication and collaborative mechanisms, making it necessary to explore how to mobilize the enthusiasm of all participants and foster a positive cooperation [71].

(2) Overcoming the Issue of Hybrid Property Rights

In the early stages of reform, the ownership of housing in many danwei communities had transitioned from collective ownership to individual ownership. With the increasing marketization of housing, the property rights within danwei communities have become increasingly hybridized. A considerable number of danwei housing owners have chosen to move out of the community and sell their properties, resulting in the outflow of danwei property rights to the society and a complex demographic structure of housing occupants. The complexity of property rights and demographic structure affects the residents' rights and interests during community redevelopment, as well as the legal and compensation issues related to the transfer of rights and interests. This, to some extent, adds difficulty and complexity to the

process of renewal and redeveloping unit communities.

(3) Resistance Encountered During Implementation

The implementation process of post-danwei community redevelopment often faces the challenges of cumbersome and complex procedures. In addition, the lack of effective communication and collaborative platforms, as well as the need to consider practical issues such as funding sources for site or housing demolition and renewal, further exacerbate the situation. If these practical aspects are not properly addressed or fail to receive support and cooperation from different stakeholders, they can create significant obstacles to the progress of community redevelopment.

(4) From Spatial Issues to Social Issues

Issues such as overcrowding, pollution, and social stratification cannot be fully resolved solely through demolition or spatial transformation [10]. It is also necessary to consider the establishment of community platforms and social networks. For example, how to establish good relationships between residents, between residents and migrants, and balance their interests, fostering harmonious social interaction patterns, reducing conflicts in spatial usage, and creating a positive social ecosystem. Therefore, transformation should not only focus on improving spatial quality but also pay more attention to the psychological and social impacts on space users, as well as the social value and influence brought about by spatial transformation. It is important to consider the multidimensional development of social spaces and reflect on how spatial transformation can address the social and cultural issues commonly found in post-danwei communities.

(5) Displacement of Spatial Deficiencies

Many post-danwei communities, due to the lack of long-term planning during early construction or insufficient consideration during the introduction of new business formats, have encountered a shortage of reserved land and adjusted spaces. As a result, public spaces are already facing scarcity issues. Even when there is a need for additional or improved amenities, they are often constrained by a lack of sufficient land area, leading to a challenging situation of

"intent without space" [72].

2.2 Interpreting the Sharing Concept and Public Space Characteristics

The concept of sharing, chosen as the theoretical foundation for the research, has a certain connection with the research and spatial design focus - public space. By interpreting the connotation of the sharing concept and studying the attributes of public spaces, the aim is to uncover the relationship between the two.

2.2.1 The Connotation and Scope of the Sharing Concept

(1) The Essence and Connotation of Sharing at Different Levels

At the spatial level, sharing is a process of rational integration and efficient utilization of resources or spaces. It aims to achieve fair resource allocation, improve space utilization efficiency, and maximize social benefits. Sharing creates a shared environment by enabling more people to use and access resources, facilitating their efficient utilization. Sharing can occur in various places, including public spaces, private spaces, and collaborative spaces. For public spaces in different communities with different ownership, the essence of sharing is reflected in value exchange.

At the social relationship level, sharing should be viewed as a reciprocal relationship rather than one-sided benefit acquisition. This means that sharing is not only about passively receiving contributions from others or merely exchanging interests between individuals. Instead, it encourages interaction, collaboration, and mutual benefit among participants. It can also be seen as a spirit of use, focusing on whether people can genuinely access and connect with others through spatial mediation, maximizing human-to-human connections[73]. The spirit of sharing encourages community participation and shared management of resources. Therefore, sharing needs to be based on active participation and cooperation. Additionally, sharing should also prioritize long-term sustainability and consider the rational utilization of resources and social equity. The success of sharing relies on establishing a foundation of good social relationships and trust to facilitate resource sharing, co-building, and co-management.

(2) Interpretation of the Sharing Connotation in a Community Context

The connotation of sharing varies in different contexts. In the context of communities, the sharing connotation emphasizes the rational integration and efficient utilization of community spaces, the awareness and behavior of community members in sharing resources, the collective participation of community members in community development and construction, and the mutual assistance, cooperation, and reciprocal relationships among community members[74]. Therefore, this research summarizes its connotation in four aspects: "efficient utilization," "open inclusivity," "effective communication," and "co-building and co-governance."

2.2.2 Study of the Attributes of Public Spaces

Public spaces themselves can be regarded as shared resources. From the perspective of resource attributes, spaces can be categorized into three types: firstly, completely public resources that must be shared by the general public, such as city-level public spaces and facilities; secondly, private resources that can be accessed through exchange and mutual assistance to meet one's own needs; and thirdly, semi-public resources that are neither fully shared nor purely private, such as community resources, which are collectively owned by community members.

In terms of resource characteristics, public spaces exhibit diversity and heterogeneity in terms of physical space, space users, and types of activities. The core of public spaces lies in their public and social nature, which requires a sense of identification from the users. In many cases, public spaces are indeed designed to facilitate community interaction and sharing. These spaces provide a place for people to meet, communicate, relax, and engage in activities, encouraging interaction and the sharing of resources, experiences, and knowledge among space users. However, in practical usage, there may still be rules and restrictions, and even instances of unreasonable or inappropriate usage, which can lead to a range of issues such as resource waste, environmental degradation, and disruptions in public order [75].

2.2.3 The Impact of the Sharing Concept on Public Space Design

The introduction of the sharing concept can drive changes in the original usage and sharing modes of public spaces, optimizing the allocation of spatial resources and enhancing the

efficiency of space utilization and the value of sharing[76]. The sharing concept emphasizes resource sharing, cooperation, and mutual assistance, which can facilitate more positive social interaction and collaboration in public spaces. This helps to meet the needs of different groups and promotes community cohesion and engagement.
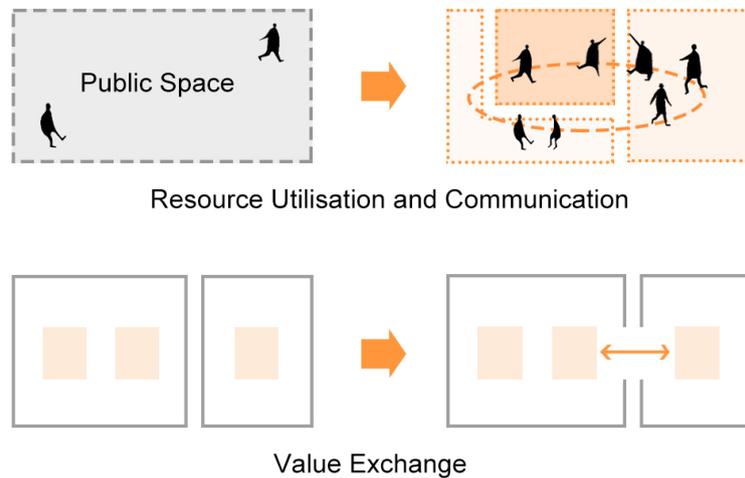
Figure 2-10 The Impact of the Sharing Concept on Public Space

(Source: Author's Own Illustration)

The sharing concept provides a theoretical framework and a way to establish spatial mechanisms for public space utilization, transforming it from a traditional user-oriented model to a diversified sharing model that fully unleashes the potential and value of space. Public spaces have also become an important community resource, bringing greater well-being and sustainable development to society. The sharing concept can be realized through the establishment of sharing mechanisms, facilities, and activities in public spaces, promoting resource sharing, mutual assistance, and social participation among community members.

2.3 Analysis of Issues in Post-danwei Communities from a Sharing Perspective

Based on the interpretation of the essence of sharing and its relationship with public space, as well as the analysis of common issues in existing post-danwei communities in terms of space and society, it is possible to interpret some core problems and pain points of post-danwei communities from a sharing perspective.

From the perspective of spatial usage patterns, there is a situation of "common but not

shared" in the availability of public space resources, characterized by issues of resource monopolization, unfair distribution, conflicts in usage, and disparities in spatial quality. Furthermore, there is a lack of effective integration and fragmentation of spatial resources. Such patterns of public space usage are unfavorable for meeting the needs of different types of residents and facilitating communication among them, thereby exacerbating social detachment among individuals.

From the perspective of users' sharing consciousness, after the transition from danwei-based communities, residents in post-danwei communities gradually lose their sense and practice of sharing, leading to a lack of consensus on common issues within the community. Limited opportunities for communication and interaction among residents contribute to social disconnection and differentiation in post-danwei communities.

Regarding the participation in space management, the insufficient community management and services are related to a lack of effective collaboration mechanisms. Sharing relies on active participation and cooperation. However, some community management organizations fail to establish effective sharing and cooperation mechanisms with residents or among residents themselves, resulting in low levels of community engagement and delayed feedback in community services.
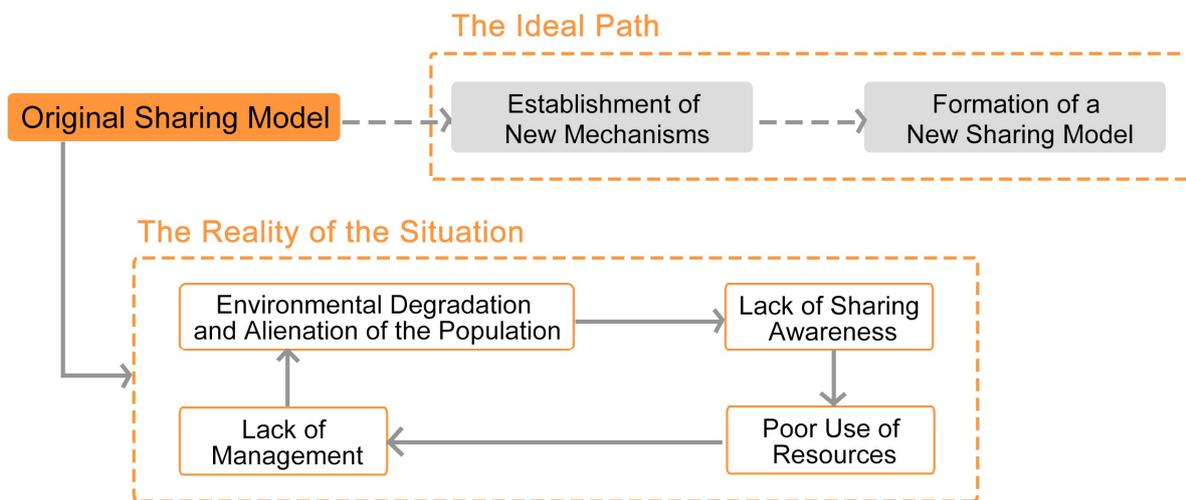
Figure 2-11 Post-danwei Community Dilemma

(Source: Author's Own Illustration)

In general, this implies that post-danwei communities have experienced the dissolution of

the old sharing patterns while new sharing patterns have not yet been established, leading to a social and spatial usage pattern characterized by a deterioration in community relations and the environment. This situation has resulted in a noticeable vicious cycle.

2.4 Assessment of the Relationship Between Post-Danwei Communities and the Concept of Sharing

The problems existing in post-danwei communities primarily involve physical space utilization and social relationship connections. The attitudes towards resource utilization and the approach to managing relationship networks inherent in the sharing concept align with the challenges faced by post-danwei communities, such as the breakdown of sharing patterns, low space utilization, and diminished vibrancy. Therefore, adopting a sharing-oriented perspective in the renewal of public spaces within post-danwei communities aligns with the direction of resource utilization, addresses the typical issues of such communities, and meets residents' spatial needs. It also provides valuable guidance for community renewal and organizational operation, enabling the creation of flexible community spaces capable of accommodating diverse activities. This approach effectively balances the rights of society and citizens, fosters a sense of space equity, and optimizes the operating model of the community.
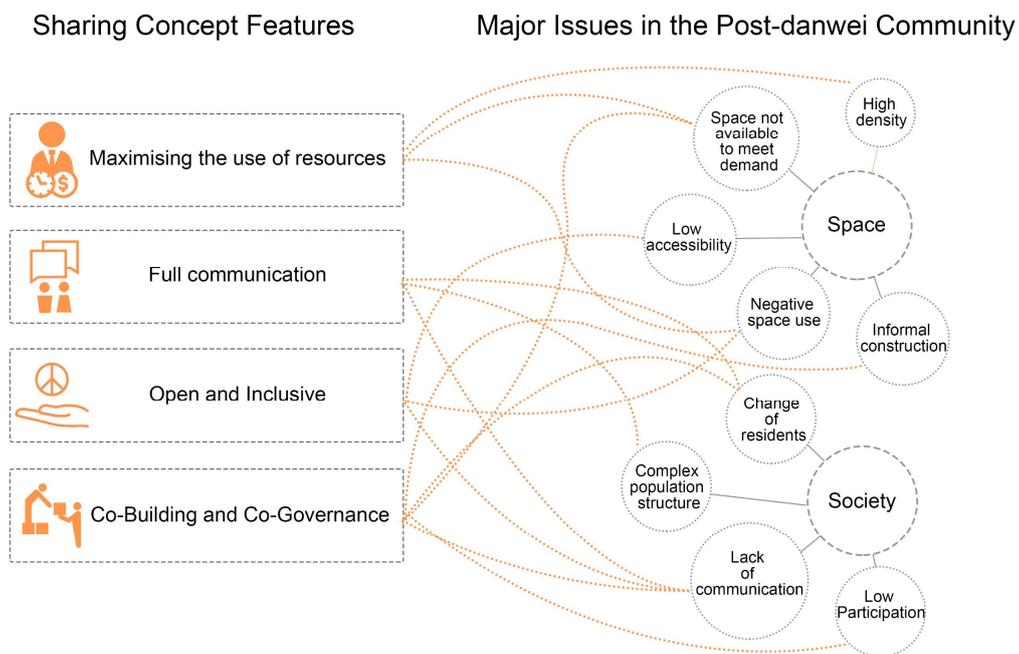
Figure 2-12 Causal Relationship Between Post-Danwei Communities and Sharing

(Source: Author's Own Illustration)

By incorporating the concept of sharing and considering the characteristics, issues, it is possible to develop design paths and frameworks for renewing public spaces, promoting sharing. This framework can be expanded for various spaces and renewal approaches (Figure 2-13).
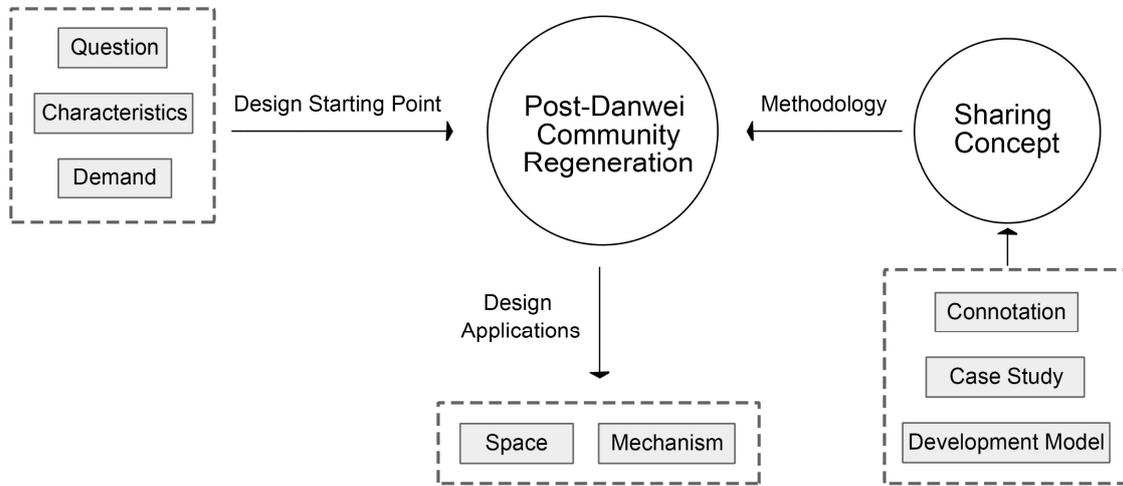
Figure 2-13 Deduction of the Relationship between Design Objects and Methods

(Source: Author's Own Illustration)

2.5 Chapter Summary

This chapter primarily focuses on foundational research related to the research topic, providing a theoretical basis and contextual understanding for subsequent methodological development and spatial practices.

In addition, the research delves into the types, developmental processes, common characteristics, contemporary issues, and potential challenges that the post-danwei communities may encounter in their future revitalization processes. Firstly, the investigation of community types and public space types serves as a basis for determining the types of design practices and spatial categorization. Secondly, the research explores the developmental processes of post-danwei communities, analyzing the reasons, origins, and evolution of these community types to better understand their background and context. This chapter summarizes the common characteristics of post-danwei communities from spatial and social perspectives, considering the influence of both the danwei system and the contemporary era. This helps to elucidate how post-danwei communities, as distinct entities from general old neighborhoods, have evolved under the dual impact of the danwei system and societal development. Understanding these

characteristics is crucial for comprehending the operational mechanisms of post-danwei communities. Given the focus on contemporary renewal and transformation, the article highlights the challenges and issues that post-danwei communities face in the current social context, as well as the potential challenges that may arise in future renewal processes. Additionally, the research further synthesizes the interpretation of the connotation of the sharing concept and the exploration of the relationship between public space characteristics and the concept, aiming to clarify the relationship between theory and spatial operations. It includes the summarized issues from a sharing perspective and proposes relevant research questions.

Through in-depth research and analysis of these aspects, the study aims to comprehensively understand the development trends, practical issues, and future directions of post-danwei communities. This will provide valuable insights and guidance, laying the foundation for subsequent case studies and design investigations.

Chapter 3 Case Studies of Community Renewal Practices

3.1 The Study on Community Renewal Strategies in Italy

3.1.1 Background of Community Renewal

Since the reconstruction after World War II, Italy witnessed big changes as well as the search for an urban modernity and identity, emphasizing a strong link between physical form and community building [6]. From the 1970s to the 1990s, the experiences of two world wars also fostered a strong sense of belonging in local communities in Europe. As a result, many European cities witnessed a wave of renewal that emphasized the role of communities, bringing community renewal into the public attention and gradually establishing it as a significant field within urban renewal. In addition to the enlightening significance of renewal policies and mechanisms, Italy has also accumulated rich practical experiences in community renewal. These cases of renewal cover various aspects, including improving living environments, enhancing residential quality, transforming public spaces, revitalizing abandoned buildings, and restoring neighborly relationships, regional economic revitalization, and community vitality recovery in the social environment [77].

3.1.2 Sharing Strategies for Different Types of Spaces

In Italy, community outdoor activity spaces or small squares are prevalent features within clusters of residential buildings. These spaces exhibit a diverse range of sizes and are strategically distributed throughout the community, offering both concentrated and linear arrangements. These areas are thoughtfully equipped with exercise facilities, exhibition areas, and outdoor furniture, all meticulously designed to promote interactive behavior. The intention is to encourage residents to actively engage with one another, share experiences, and derive enjoyment from the communal amenities provided. The presence of these well-designed and inclusive spaces contributes significantly to the vibrant social fabric of the community. They not only facilitate physical activities but also foster meaningful social interactions among residents, creating a sense of belonging and strengthening the community bonds.
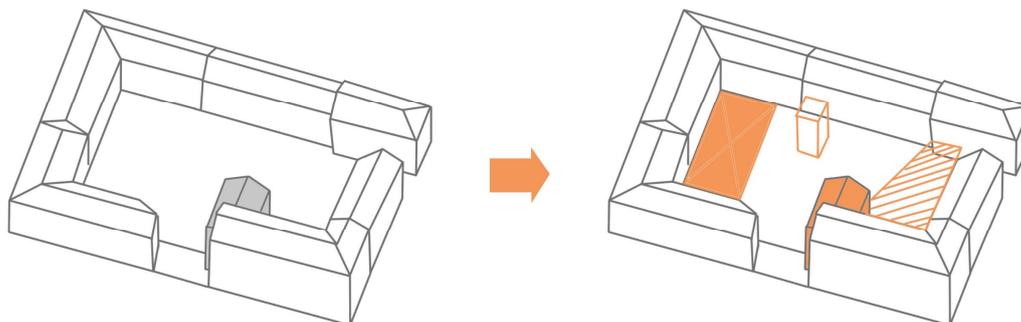
Figure 3-1 Illustration of Courtyard Space Transformation

(Source: Author's Own Illustration)

From the perspective of street space usage experience, most community businesses rely on street spaces, such as cafes, tobacco shops, bars, ice cream parlors, and more. This requires streets to exhibit a certain level of extroversion. By shaping the vibrancy of street spaces and enhancing their liveliness, communities can gain more development opportunities and resources. Local bars and cafes serve as focal points for gathering people, which is crucial for maintaining community popularity.

From an architectural perspective, community building renewal in Italy focuses on repurposing abandoned public buildings like old farmhouses, factories, and warehouses. The emphasis is on social interaction rather than meticulous design, resulting in changes in the social structure of community members and organizations. The renewal process prioritizes outward-facing and customizable spaces to accommodate various activities while ensuring privacy and safety. This approach allows for flexible space usage based on the specific needs of different activities in different spaces.

Figure 3-2 Via Baltea

(Source: Cooperative City Magazine)

For example, Via Baltea in Turin (Figure 3-2) was transformed from a 900 square meter abandoned printing factory. The project aimed to provide services and activities for the citizens through self-funded commercial and socio-cultural activities such as restaurants, bakeries, and space rentals. Over time, the content and participants of the space gradually became more diverse, and residents began to have new social and activity needs. As a result, the application of the space became more comprehensive, incorporating functions such as shared kitchens, meeting spaces, co-working offices, artisan workshops, and dance schools for the public. This combination of business and community activities is achieved through the collaboration of community cooperatives and business associations. The cooperatives are dedicated to promoting citizen expression, ensuring that projects and initiatives have a positive social impact on the community by uniting and encouraging citizen participation [77]. Through experimental collaborations between associations and public institutions, the management of community spaces and socio-cultural activities is effectively facilitated (Figure 3-3).
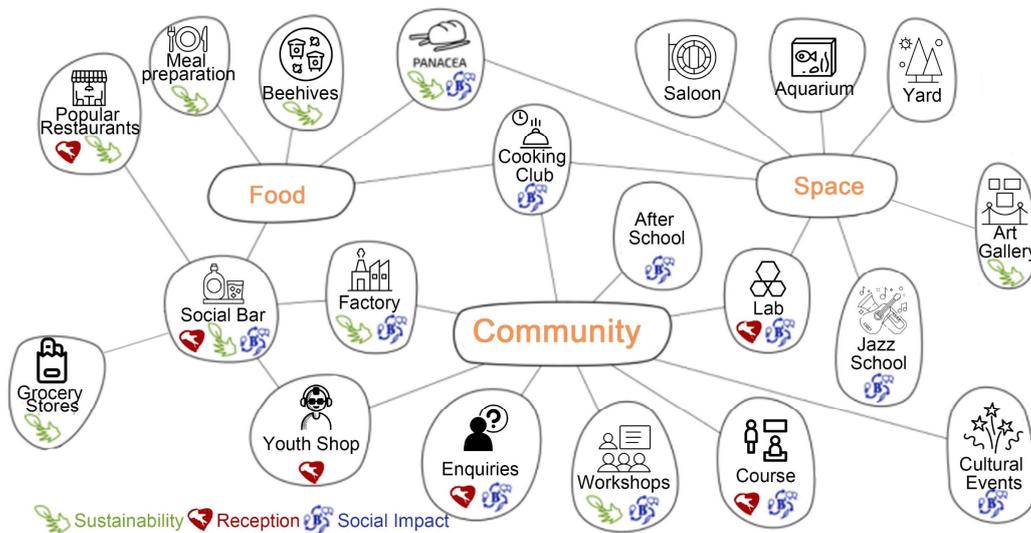
Figure 3-3 Elements of Via Baltea Renewal

(Source: Author's Own Illustration)

3.1.3 Time-sharing Strategy

Open-air food markets, while effectively organizing community spaces and fostering neighborly relationships, have increasingly incorporated spatial integration to optimize space utilization. In areas with limited land availability and high building density, the trend of spatial

integration has emerged, primarily through the practice of time-sharing[77]. For example, the Crispi Square Market in Turin is located at the intersection of a community and a major urban thoroughfare. It partially expands the east-west space at the entrance of the block, designated for both market and parking purposes (Figure 3-4). The market space is supported by dendritic steel structures with a folding roof, creating a large open space for circulation at the bottom. After the market closes, both sides can be utilized as parking lots. Additionally, the space can be used for other activities during evenings and holidays.
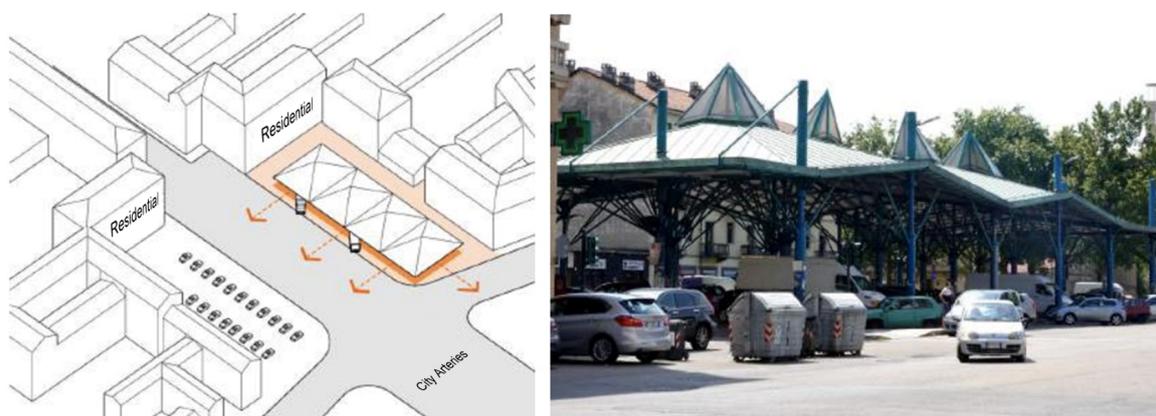
Figure 3-4 Piazza Crispi

(Source: Adapted From Reference [77])

3.1.4 Approaches and Patterns of Community Renewal

For the development and promotion of community space renewal and sharing in Italy, there is a certain logic to the strategies. Firstly, there needs to be available existing space, which can be either public or private. This is the prerequisite and fundamental condition for community reconstruction and revitalization. Secondly, there should be attractive or cohesive activities, important spaces, or platforms that serve as the link for activities. These can include relevant activities or functions proposed by management associations or community organizations, such as neighborhood houses, participatory community centers, community gardens, etc., which fill the space with social functions and activities. Thirdly, qualified public departments or organizational associations provide necessary resources for community renewal projects, or it can be a community maintenance committee formed spontaneously by residents.

3.2 The Study on the Operation Mechanisms of Saettedammen Community, Denmark

3.2.1 The Community Public Space Sharing Model

Saettedammen is an intergenerational co-living community and the first of its kind in Denmark. It is an open and non-dogmatic community that is based on social activities, including various interest groups, daily communal dinners, shared celebrations of holidays, and cultural events. The design of the community takes into consideration multiple attributes in the public and communal spaces, including spaces that cater to both social interactions and privacy. There are facilities available for public use and spaces for spontaneous gatherings, as well as areas for individual solitude. The community consists of independent apartments and houses, as well as shared common spaces such as a communal dining area, kitchen, laundry room, game room, and children's playroom. The residential units and two-story apartments are arranged around a central shared garden. These shared spaces are used for social gatherings and daily activities.
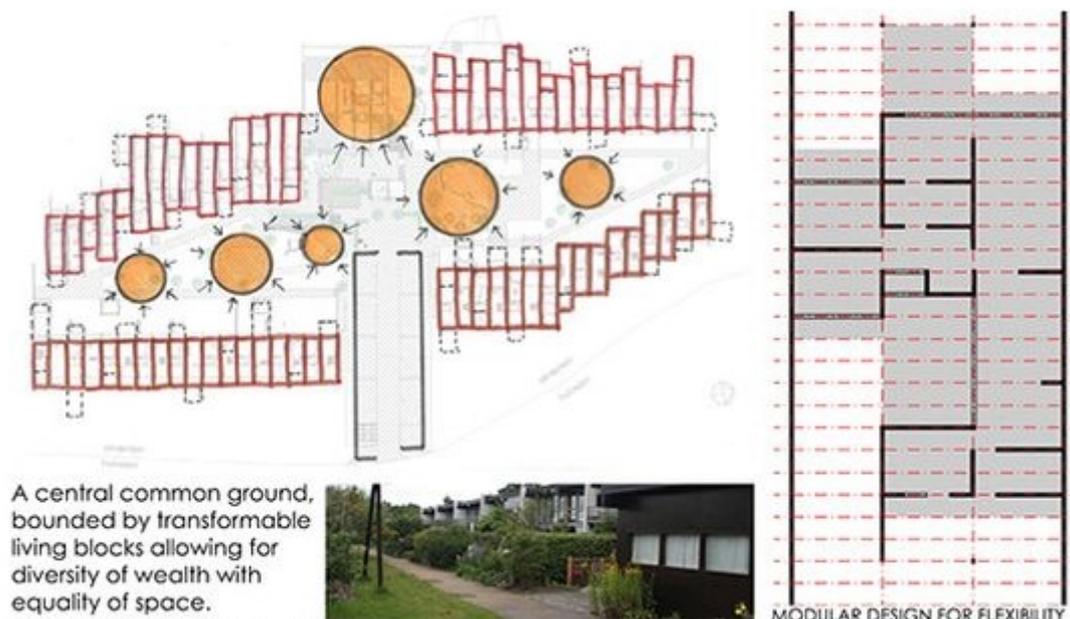
Figure 3-5 Community Space Sharing in Saettedammen, Denmark

（Source: Pinterest）

3.2.2 Community Operational Model

Shared communities are characterized by a collective spirit and a shared set of values, underpinned by the active participation and intentional choice of residents to live within such a

community. The Saettedammen community exemplifies this ethos through its resident-led model, which empowers community members to take the lead in crucial aspects such as site selection, decision-making processes, design considerations, and overall financial coordination. Over time, the project garnered support from the local government, leading to a shift in funding sources. While initial funding relied primarily on residents' contributions, the community successfully secured government loans and established a limited equity model. These strategic shifts not only facilitated the establishment and ongoing operation of the community but also ensured a more sustainable and robust framework for its long-term viability.

Mutual care and support form an integral part of the community's core values and spirit, fostering a sense of solidarity among its members. One of the key factors that led to the community's inception was the shared interest in childcare spaces. While the demand for shared daycare services decreased over time due to aging community members, the community seamlessly adapted by expanding its focus to encompass the care of elderly individuals and their caregivers. This inclusive approach ensures that elderly residents receive the necessary support to enhance their quality of life within the community. Moreover, residents partake in communal meals five days a week, with each individual expected to participate at least once and take turns in preparing meals for other community members. The community also organizes various activities, including morning exercises amidst the local forest, promoting a healthy and active lifestyle among its residents.

The operation model of this community is highly proficient in cultivating connections and facilitating interactions among individuals or groups with shared needs for space and community activities. Through this model, the community nurtures a sense of shared values and a collective spirit, motivating residents to strike a balance between independence and interdependence. This harmonious dynamic fosters effective communication and the fulfillment of each other's needs within the community. By actively engaging in mutual support and cooperation, residents not only create a deep sense of belonging but also cultivate a strong community bond. As a result, the overall well-being and quality of life for all community members are significantly enhanced.
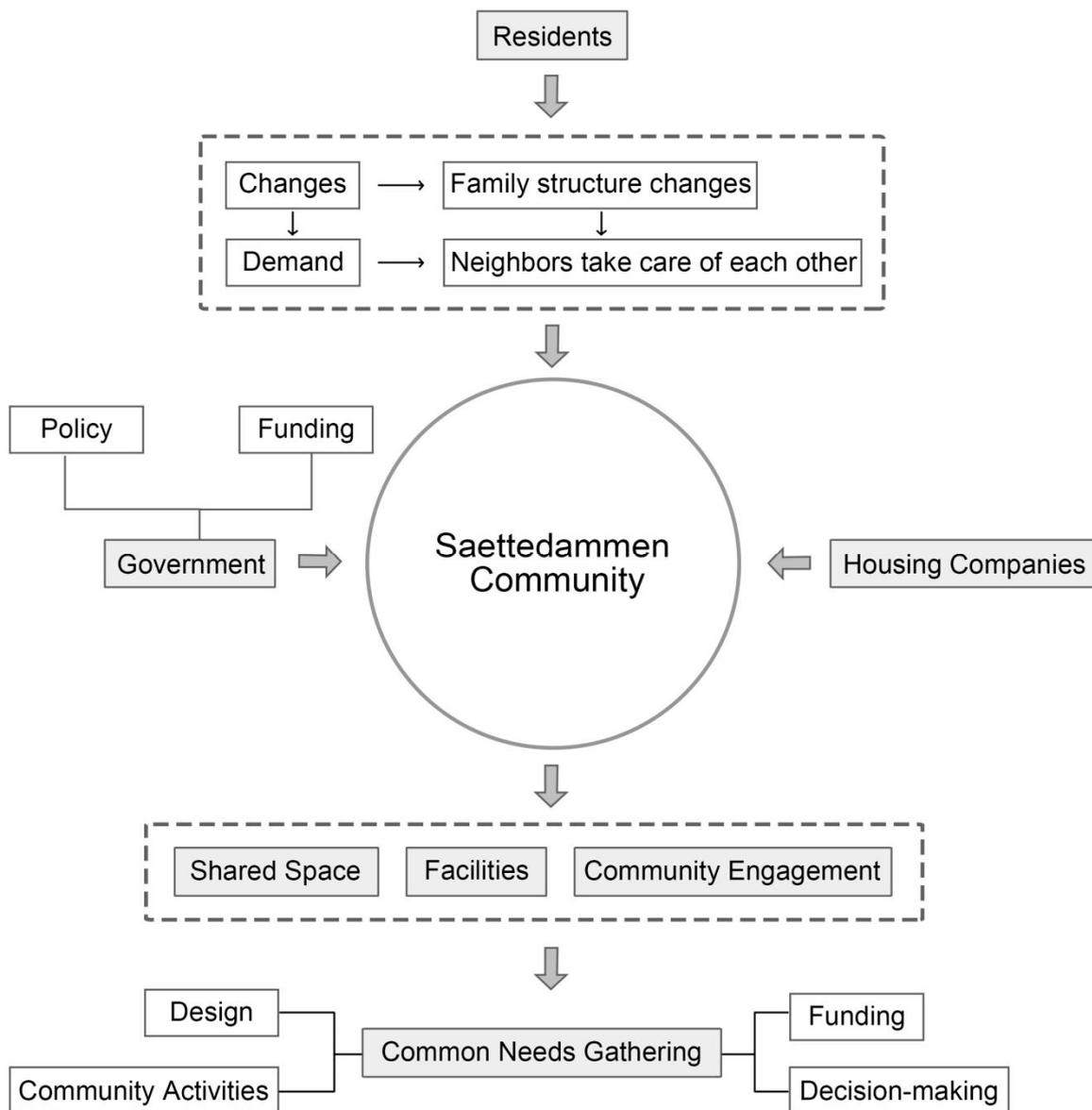
Figure 3-6 Analysis of the Operation Model of the Saettedammen Community

(Source: Author's Own Illustration)

3.3 The Study on Renewal Strategies of the Huafu Community, Shanghai

3.3.1 Project Overview

Huafu Community is located in the central part of Xuhui District, Shanghai. It was built in the 1990s and is surrounded by major traffic arteries and the Metro Line 3. However, it lacks public service facilities, and the residents' daily public life is relatively limited. The community is composed of four smaller neighborhoods, each built in different periods and managed

independently, resulting in a long-term state of disorder and disarray. While the residents enjoy a convenient geographical location with accessible transportation, their quality of life is not satisfactory. Therefore, since 2019, Caohexing Street has started the transformation of the Huafu Community.
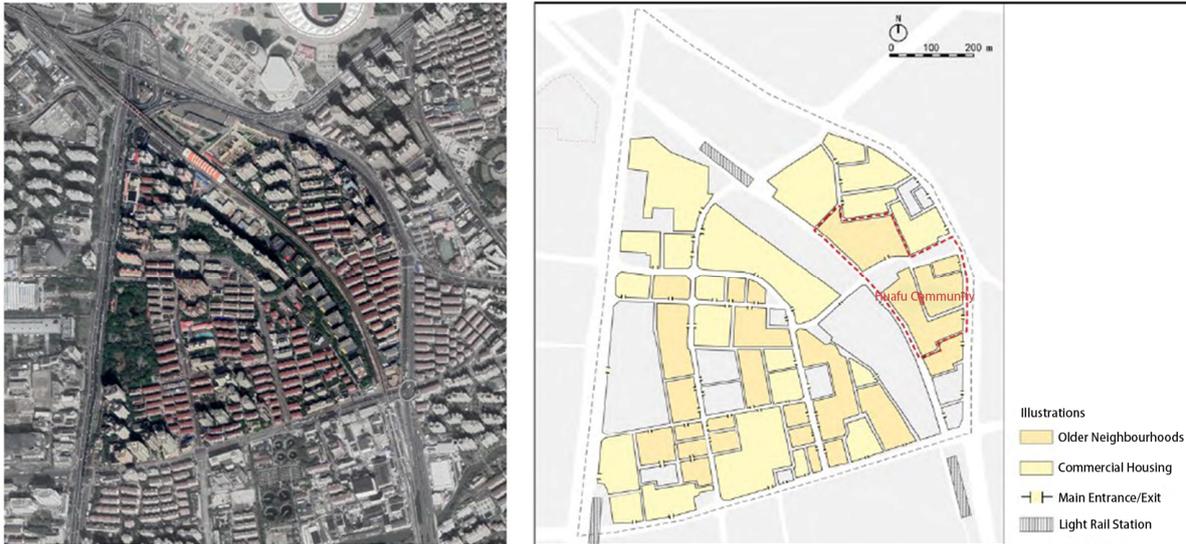
Figure 3-7 Project Location and Surrounding Community Spatial Relationships

(Source: Ziyunzhai Architecture)

3.3.2 Identification of Key Site Issues

(1) Scarcity of Public Resources

Most of the communities in this area were built in earlier periods, resulting in a relatively traditional and less carefully designed spatial layout. Additionally, the facilities and amenities in these communities are relatively inadequate. Furthermore, each neighborhood has a small scale and is relatively closed off, with intersecting walls separating the limited areas, leading to a scarcity and strain on public space resources. Moreover, there is a lack of connectivity, shared spaces, and synergy between these communities.

(2) Negative, Unused Areas of Community Space

Due to the concentration of people's activities, attention, and the efforts of community management personnel in the central areas of the neighborhoods, the boundaries and peripheral zones between communities become neglected corners, making them easily overlooked and becoming passive areas within the community space. Additionally, there are some unused

spaces that lack necessary functions and content, making it difficult to accommodate community public services [78].

(3) Unreasonable Use of Boundary and Amenity Street Space

315 Lane serves as a major access route for entering and exiting the Huafu community, carrying out the daily life and public service functions of the community. However, due to the lack of corresponding planning, design, and spatial management, combined with the pressure from surrounding walls, buildings, and greenery, as well as the occupation of parking spaces by vehicles, the road has been in a state of disorder, congestion, and lacking vitality for a long time. The situation observed on this street represents a typical problem faced by many contemporary danwei or traditional old community sections.

From the perspective of spatial resources, many boundary spaces are rigidly divided from the streets due to the presence of walls, separating the internal activities, green spaces, and dead-end areas of the boundaries. As a result, some boundary spaces suffer from low utilization efficiency, cramped conditions, and even neglect, turning valuable community public spaces into isolated corners with limited accessibility and difficulty for residents to use.
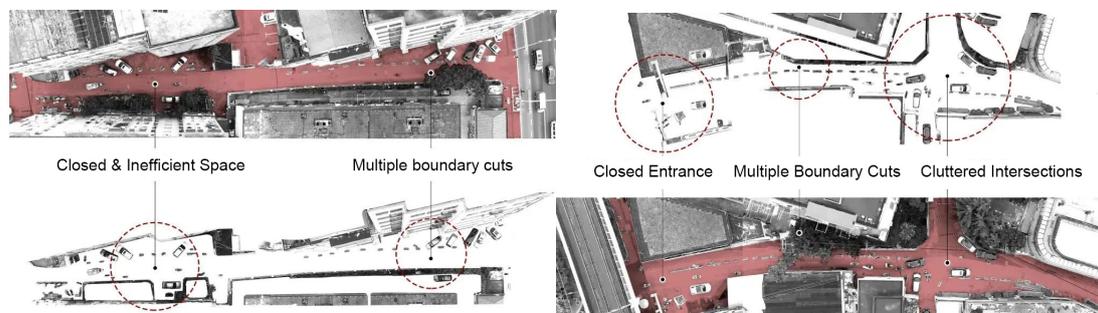
Figure 3-8 Current State of Spatial Division

(Source: Adapted from Ziyunzhai Architecture)

3.3.3 Space Transformation Strategies

(1) Structural Adjustment, Spatial Stitching

After obtaining the opinions of community residents, the Huafu district initiated various construction projects, including the demolition of illegal structures, road widening, and removal of boundary walls. Led by the local authorities, the consolidation of four residential units was

carried out, and the scattered spaces within were integrated. Taking into consideration the overall structure and functionality, a comprehensive planning was conducted to promote more efficient allocation of spatial resources. The main measures included organizing the existing spaces and roads, removing internal boundary walls, and adjusting the proportion of parking spaces and green areas. After the renewal, a certain increment of space can be released to alleviate the urgent demand for parking or activity areas, while also providing additional community services and leisure landscape functions to enhance the overall quality of the community.
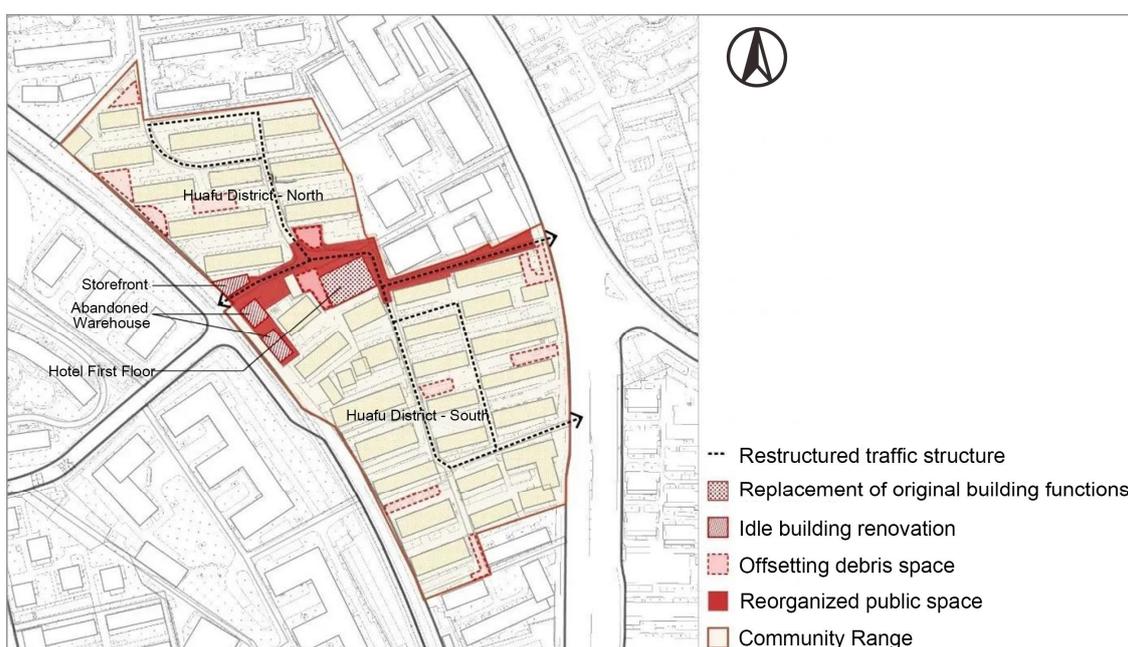
Figure 3-9 Illustrative Plan for the Restructuring of Public Space Structure

(Source: Adapted from Ziyunzhai Architecture)

(2) Sorting Out the Public Space System and Activating Sharing

The transformation aims to reshape the community street spaces not only to provide functional access but also to serve as a medium connecting important communication and activity areas. Therefore, it is crucial to design and streamline the public space system, linking fragmented spatial resources and fully utilizing them. In the Huafu community, although boundary transformations always involve complex stakeholder issues, the design of the district fully considers enhancing the flexibility and permeability of boundaries while obtaining residents' support and ensuring full accountability for the spaces.

Through the design of public alleyways, the scope of public domains is defined, connecting shared resources on both sides of the road and optimizing the space. By transforming existing disorganized and underutilized spaces, the community is activated, and a series of shared spaces, such as community gardens, canteens, supermarkets, and more, are interconnected, making residents' lives and social interactions more diverse.
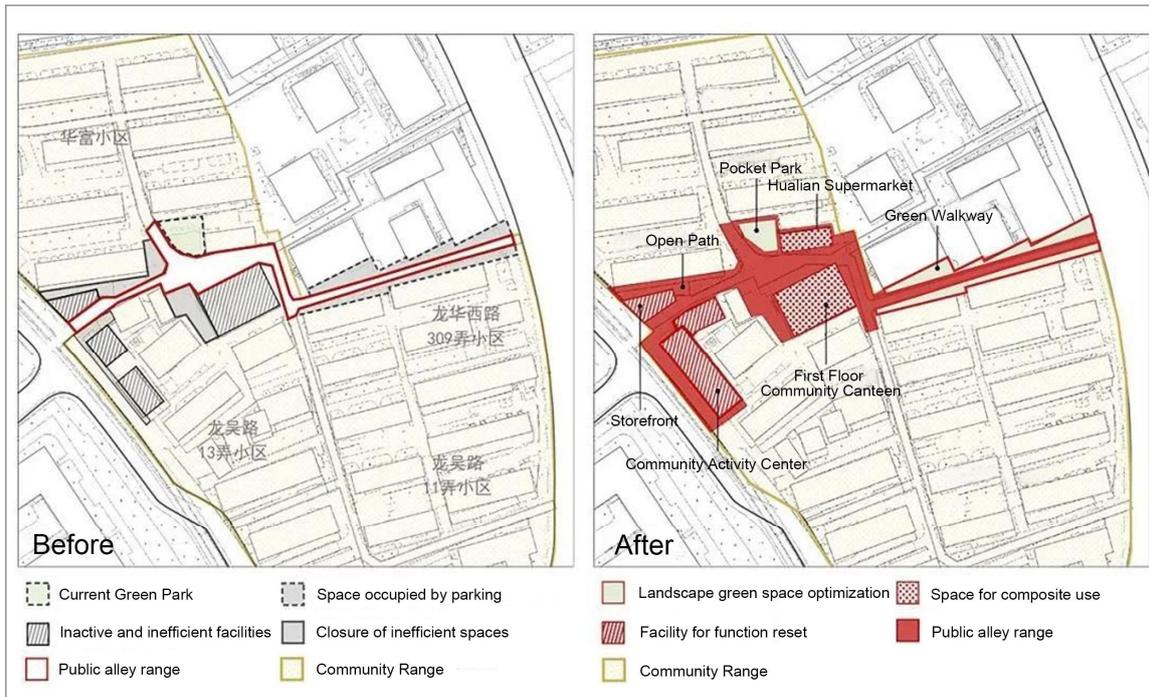
Figure 3-10 Conceptual Reconstruction of Alley Spaces

(Source: Adapted from Ziyunzhai Architecture)

When discussing the transformation and sharing of architectural spaces, an illustrative example can be seen in repurposing an old factory building (Figure 3-11). The design approach involves the conversion of the building into a dynamic neighborhood hub, which is achieved by demolishing the surrounding walls on one side of the elevated highway. By incorporating green design principles underneath the highway, the space is transformed into an inviting outdoor area that seamlessly connects with the street. Simultaneously, within the interior of the building, various functions are integrated to maximize its utility. These include a community library, exhibition hall, community activity room, and meeting room. The revitalized space serves as a central activity node, acting as a communication platform for residents residing within a 15-minute living radius. In this way, the repurposed building not only breathes new

life into the neighborhood but also facilitates social interaction and engagement among community members.
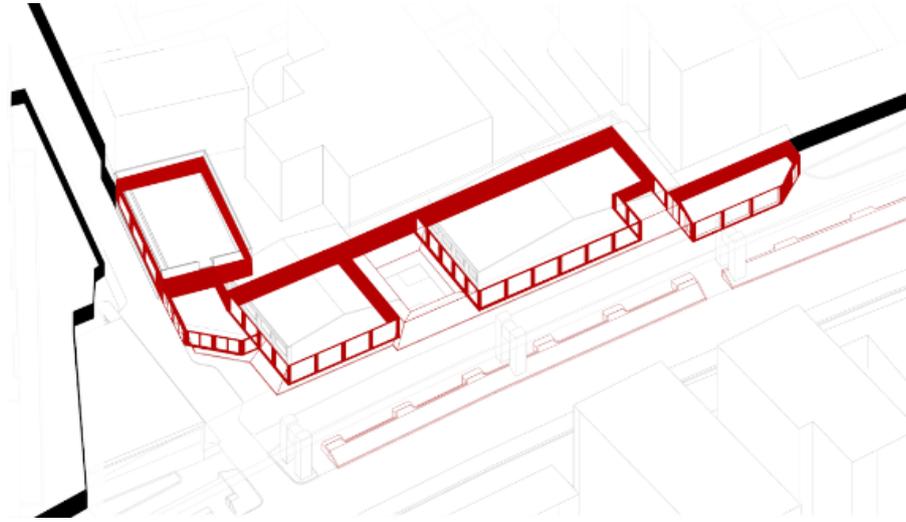
Figure 3-11 Illustration of Factory Building Transformation

(Source: Ziyunzhai Architecture)

Figure 3-12 Photos of the Factory Before and After the Renewal

(Source: Ziyunzhai Architecture)

(3) Diversified Participation for Shared Development

The renewal of Huafu Community, like numerous other community transformations, is characterized by intricate land use relationships. It encompasses the utilization of rural land and railway system assets, presenting a multitude of uncertainties, historical complications, and conflicts pertaining to property rights, economic interests, and social relationships among residents throughout the renewal process. These complex dynamics necessitate careful navigation and thoughtful consideration of the diverse stakeholders involved to ensure a successful and inclusive transformation that addresses the varied challenges and interests within the community (Figure 3-13).

Therefore, in the process of community renewal, it is essential to fully respect the residents' right to information and decision-making, have a comprehensive understanding of property rights and spatial ownership, and engage the street committee, residents, and designers in the allocation of funds, design decisions, and implementation of the plans. This approach reflects that the renewal is not only about the physical space but also about the co-building and sharing of the community's spiritual space. By establishing strong connections and integrating spaces, the residents in the area are closely united and linked. Furthermore, it allows everyone to have the right to participate in the use and governance of the space, creating a good community based on the principles of co-building, sharing, and governance, benefiting everyone involved.

Physical Space

Spiritual Space
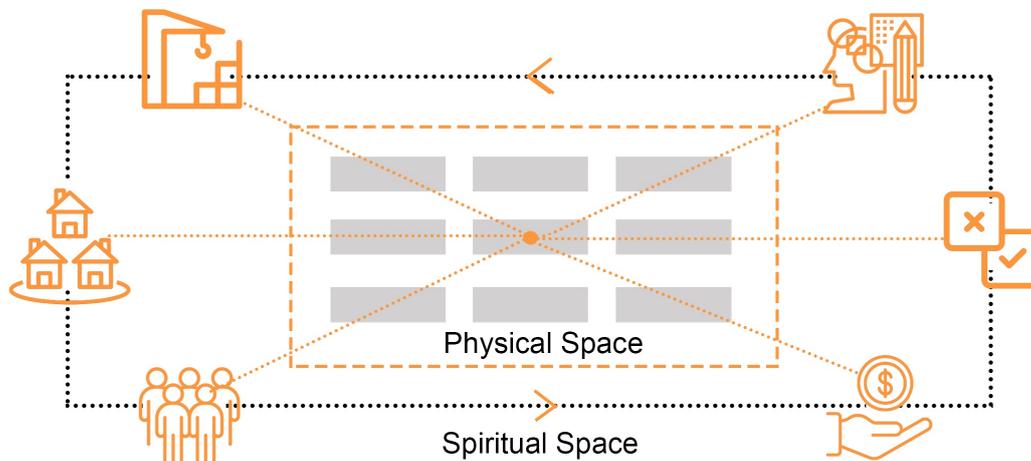
Figure 3-13 Diversified Participation Illustration

(Source: Author's Own Illustration)

3.4 Chapter Summary

In the context of urban renewal practices in Italy, the flexible transformation of square spaces has been a key reference for enhancing the flexibility of public square spaces in post-danwei communities. Attention has also been given to street spaces as vibrant links connecting squares and building spaces. In the case of architectural interventions, public building spaces in post-danwei communities can learn from how continuous functional adjustments and iterations are made based on residents' needs, thus stimulating diverse community activities. Additionally, effective time management mechanisms can be established, considering the usage patterns and spatial characteristics to fully meet the varying functional needs of the same space during different time periods.

In cooperative communities in Denmark, post-danwei communities can consider how to establish connections in public spaces through the establishment of shared values or needs. Additionally, having effective operational mechanisms can enable residents to collectively contribute to the utilization and development of community spaces. This, to a certain extent, can help post-danwei communities establish new community networks and social ecosystems.

In the case of the Huafu Community's renewal practices in Shanghai, emphasis has been placed on spatial design strategies, including structural adjustments in residential areas, the creation of public streets, and the activation and interconnection of shared nodes.
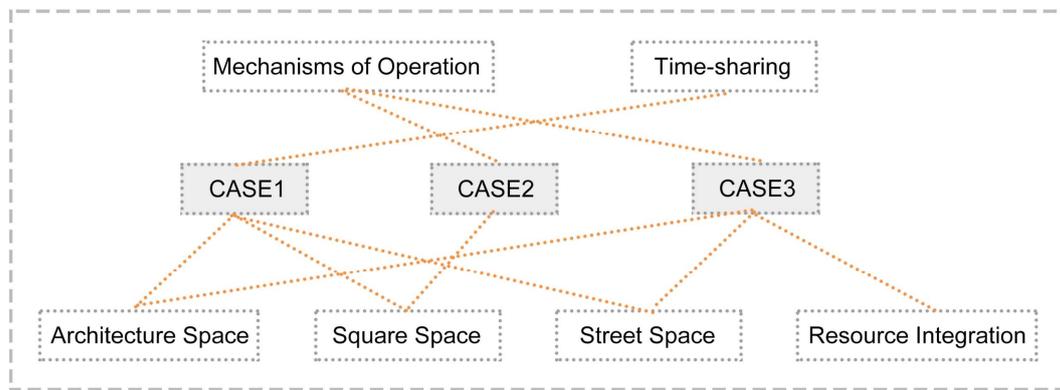
Figure 3-14 Experience That Can be Learnt From Different Cases

(Source: Author's Own Illustration)

To summarize the experiences of case design and renewal, they can be classified according to the implementation of the connotation of sharing and the effects it can bring, as well as the directions for addressing community issues (Table 3-1). The first category focuses on the efficient utilization of community spaces, such as exploring existing spaces and creating multifunctional areas. The second category emphasizes openness and inclusiveness, such as opening up community boundaries or public spaces for sharing. The next category is about fostering extensive communication among residents and creating functionally diverse community spaces to meet the needs of different individuals. It is also important to establish platforms for communication among residents and various social roles, promote community bonding and cohesion through community event planning, and enhance community vitality. Lastly, attention should be given to the "co-building, co-governance, and sharing" community governance system. This involves actively involving residents in project initiation, design, and

space management, stimulating their enthusiasm for participating in community transformation, and fully leveraging the role of different community members.

Table 3-1 Summary of Community Sharing Strategies

(Source: Author's Own Illustration)

Purpose	Method	Space Type
Efficient Use of Space Resources	Tapping and Utilizing Stock and Idle Tesources	Green space, Shared Building, Shared Facilities
	Functional Compound	Community Center, Shared Living Room, Shared Open Spaces, Space rental
	Timeshare	Shared Parking, Multi-Purpose room
Open and Inclusive	Open Borders	Shared Green Space, Shared Streets, Shared Interface
Full communication	Functional Compound	Community Center, Shared Living Room, Shared Open Spaces
	Event Planning	Community Bazaar, Shared Kitchen, Community Networking Sessions, Craft Events
Co-Building and Co-Governance	Community Cooperatives	Shared Office
	Establishing Shared Values and Needs	Shared Kitchen, Shared Childcare, Senior Living Space
	Resident Participation in Design and Operation	/

At the same time, through the information gathering process of various cases, it can be observed that with the continuous development of technology and information technology, compared to the previous danwei-based community in our country where neighborly sharing relationships and shared spaces and facilities were prominent, today's community sharing has become more multidimensional. Sharing is not limited to expressing material spaces, but also includes economic resources, cultural resources, information resources, and more (Figure 3-15). Additionally, information technology is utilized for promoting, operating, and managing spatial resources. By combining Internet technology, more innovative community management and activity promotion methods can be provided, enabling communities to keep pace with the rapid development of cities and modern lifestyles. This helps improve the operational efficiency of

community spaces and the utilization of various resources [39].
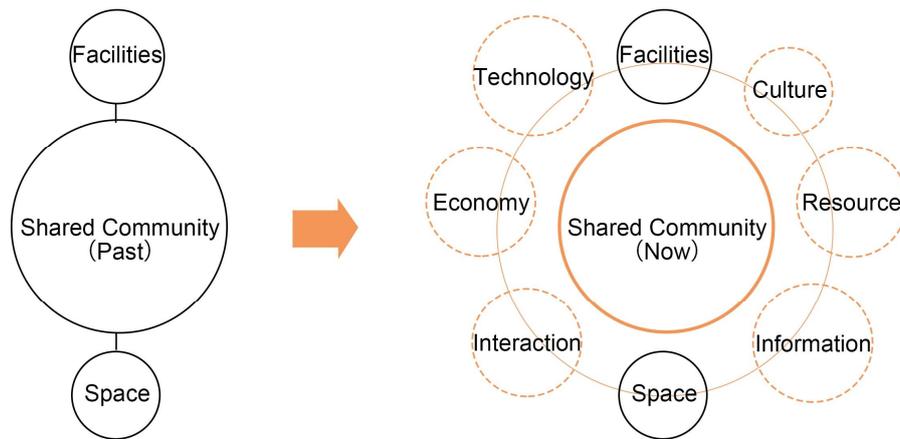
Figure 3-15 Evolution of Sharing Models

(Source: Author's Own Illustration)

Chapter 4 The Renewal Methodology of Public Space in Post-danwei Communities Under the Concept of Sharing

4.1 Design Principles and Objectives

4.1.1 Design Principles

(1) Responding to Urban Development

In accordance with the higher-level planning, it is essential to fully respect the nature and basic conditions of the site and adopt an adaptive approach. By revitalizing existing areas and leveraging their potential, it becomes possible to drive comprehensive development in the area, effectively aligning with urban development trends, adapting to the contemporary context, and considering the surrounding urban environment. Exploring sustainable renewal models, optimizing urban functions and spatial patterns, and enhancing urban vitality are crucial for promoting high-quality urban development.

(2) Full Assurance of Impartiality

The achievement of urban resource sharing through the renewal and transformation of community public spaces should be based on the principles of fairness and equity in both the design and implementation phases. Different user needs and existing conditions should be taken into consideration from the early stages of the planning process, ensuring that all residents have equal opportunities to access public facilities and spatial resources. This approach aims to maximize the utilization benefits, interests, and values of the renewal efforts.

(3) Meeting Adaptability and Inclusiveness

Adaptability and inclusivity are important entry points for meeting the needs of community public space renewal in the context of existing planning. Public space resources are often limited in post-danwei communities, and therefore, space transformation strategies that exhibit good adaptability and inclusivity can enhance the spatial utilization rate. This allows for a greater variety of activities to take place within the same area, while also accommodating the functional and lifestyle needs, behavioral habits, and spatial usage patterns of different groups of people. Additionally, consideration should be given to the spatial requirements of special

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populations and the specific demands of different activities.

(4) Improved Safety and Accessibility

The safety of the community is an essential prerequisite for ensuring daily neighborhood activities and social interactions, while accessibility plays a role in facilitating the occurrence of these activities to some extent. The improvement and mutual reinforcement of both factors can contribute to the spatial optimization of the place to a certain degree.

(5) Attention to Openness and Pluralism

The residential spaces in post-danwei communities are no longer in a completely closed and isolated state. They have transitioned from being inward-oriented and privatized spaces to being integrated with the surrounding urban areas and urban environment. These spaces are gradually becoming more inclusive of outsiders and accommodating a more diverse population structure and activities. Therefore, it is essential to fully understand the level of openness in post-danwei communities and pay attention to the construction and development of community diversity.

(6) Creating a Sense of Place and Belonging

The community should not only provide residents with livable spaces but also create a warm, harmonious, and communicative atmosphere that encourages unity and mutual assistance. It is essential to reflect a sense of place in the layout and design of public spaces and facilities, promoting communication and emotional bonding among different groups of people and maintaining social networks. This fosters a sense of belonging for residents and ensures that they can find a unique sense of belonging within the community.

4.1.2 Design Objectives

Under the concept of sharing, the design objectives for the renewal of community public spaces aim to enhance space quality and community resource utilization through the transformation and reuse of existing spaces. Additionally, the goals include establishing a well-functioning community organization and operation model, as well as fostering friendly and flexible neighborhood relationships. Therefore, by adopting the concept of sharing as a design

principle, new spaces and models of community life can be expanded, promoting the continuous generation of positive effects and revitalizing the community.
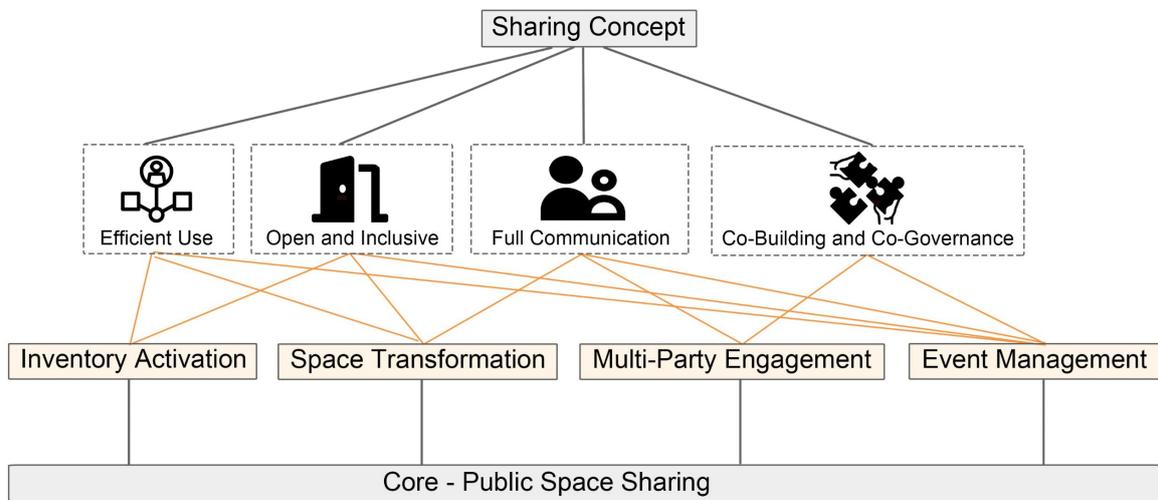
Figure 4-1 Design Objectives

(Source: Author's Own Illustration)

4.2 Conditions and Objects of Operation

4.2.1 Conditions of Operation

The existing concept of sharing is considered a widely accepted urban and economic development idea, which can be used as a means of urban design. However, if it is regarded as a concept and strategy with universal values, it will vary according to different operational objects and conditions.

For post-danwei communities, there are certain differences in spatial patterns and existing characteristics among different urban areas. While public spaces can serve as the entry point for design, the possibility of sharing exists even in contexts with limited resources and scale. However, the effectiveness and feasibility of its transformation and the content of sharing need to be evaluated based on local conditions. Therefore, an effective assessment of the basic conditions of the site to be renewed should be conducted before implementing design strategies.

In terms of implementation feasibility, the post-danwei community should have certain open conditions or be in a gradually open state. It is preferable to focus on communities that have completed housing reforms to reduce resistance arising from property rights hybridization.

In terms of renewal potential, the larger the scale involved and the more spaces that can be renovated or conditionally renovated, the more evident the utilization rate of natural spaces and the creation of sharing opportunities will be. In terms of renewal influence, it is advisable to select spaces located in typical urban areas rather than remote suburban or rural areas, to ensure that the design of sharing is not limited to discussions within the community itself but also considers the relationship between the community and the city as well as the community living circle. In terms of the universality of renewal and transformation, the selected community should have typical characteristics and spatial issues of post-danwei communities, with certain problems existing in the use of public spaces.
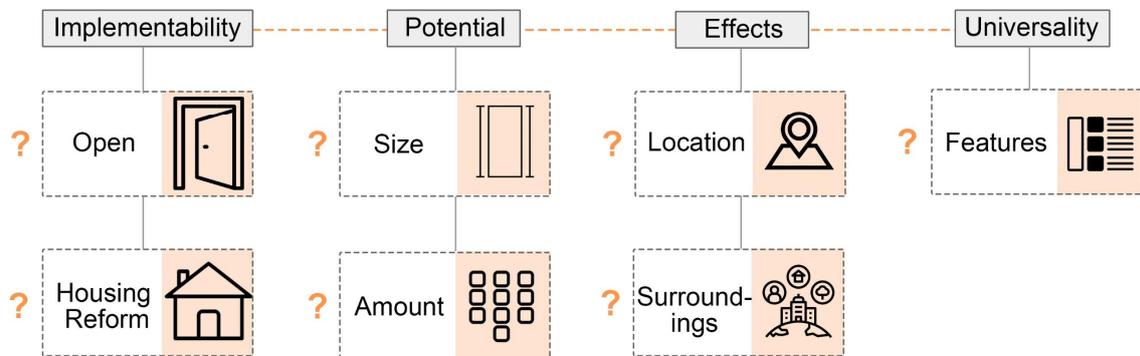
Figure 4-2 Assessment of Conditions

(Source: Author's Own Illustration)

Therefore, considering its transformation effectiveness and impact, it is advisable to select communities or districts with a large residential population, not limited to a single residential area, and with certain problems and potential. This approach reflects the feasibility of implementing the concept in design.

4.2.2 Objects of Operation

The primary focus of this study is to discuss the concept of sharing design in relation to the renewal of public spaces within post-danwei communities. It is important to note that not all post-danwei communities or their associated public spaces require renewal. The main emphasis lies in addressing the existing issues related to spatial utilization and identifying spaces that have the potential for renewal. When selecting suitable projects for activation, it is crucial to consider the community's development dynamics and the associated costs of renewal.

Additionally, establishing a feedback mechanism and coordinating the overall spatial structure are essential. Also, this involves establishing a strong linkage between urban resources and district resources, as well as ensuring spatial continuity throughout the community.

4.3 Design Strategy

4.3.1 Sharing of Spatial Dimensions

(1) External Sharing of Area Resources

In urban design, particularly under the concept of sharing, a holistic approach is taken to consider not only the immediate needs and utilization within a specific scope but also the interdependent relationships and exchange of interests between different areas (Figure 4-3). It is essential to gain a comprehensive understanding of the existing spatial resources within and beyond the design scope, as well as the evolving spatial and functional needs of the population, during the early stages of the design process. This comprehensive understanding enables the identification of potential gaps in functions within the design scope and the assessment of potential redundancies in existing functions in the surrounding areas. By doing so, it becomes possible to strive for the most rational and optimized utilization of spatial and social resources. Through a thoughtful integration of resources and needs, strategic design approaches can be formulated to create a more inclusive and sustainable urban environment that fosters equitable access, encourages collaboration, and supports the well-being of the community.
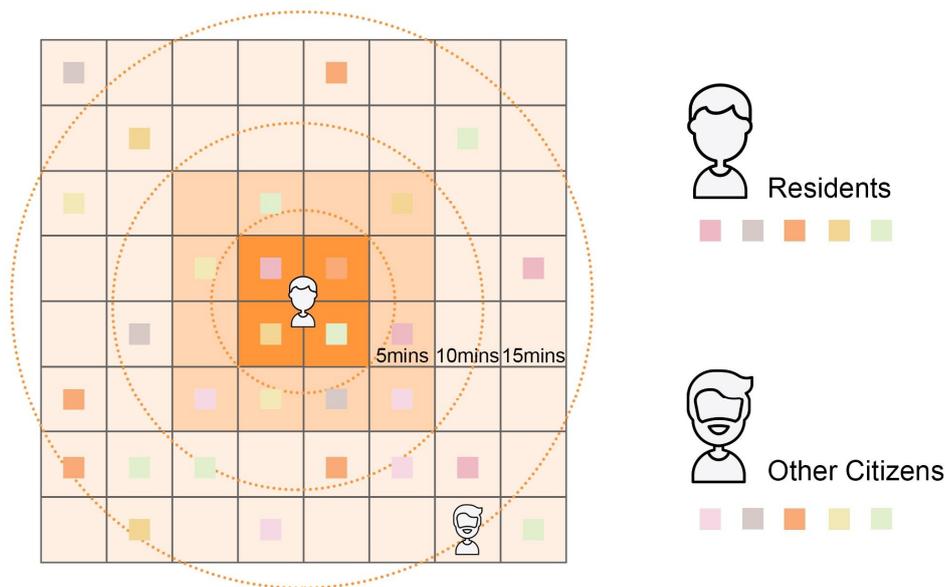
Figure 4-3 External Sharing of Area Resources

(Source: Author's Own Illustration)

(2) To Explore and Revitalise the Stock of Resources Internally

The public spaces in a community are shared resources for all residents. In post-danwei communities, it is essential to fully explore and assess the abandoned, underutilized, ambiguous, and disorderly spaces within the community. Determining their quantity, scale, and scope, as well as analyzing their potential for transformation, facilitates future spatial reorganization, resource integration, and redistribution. These spaces can then be transformed into tangible physical entities that cater to the daily needs of the residents. By revitalizing existing community resources, additional spatial benefits can be obtained, compensating for issues such as imbalanced community amenities. This approach involves organic and sustainable renewal, focusing on maximizing the utilization of existing spaces and facilities, rather than solely relying on incremental additions [79].

STEP1

Selecting sites and mapping characteristics

STEP2

Tapping into the stock space

STEP3

Integrating space and implanting functions

STEP4

Revitalize the stock and stimulate vitality
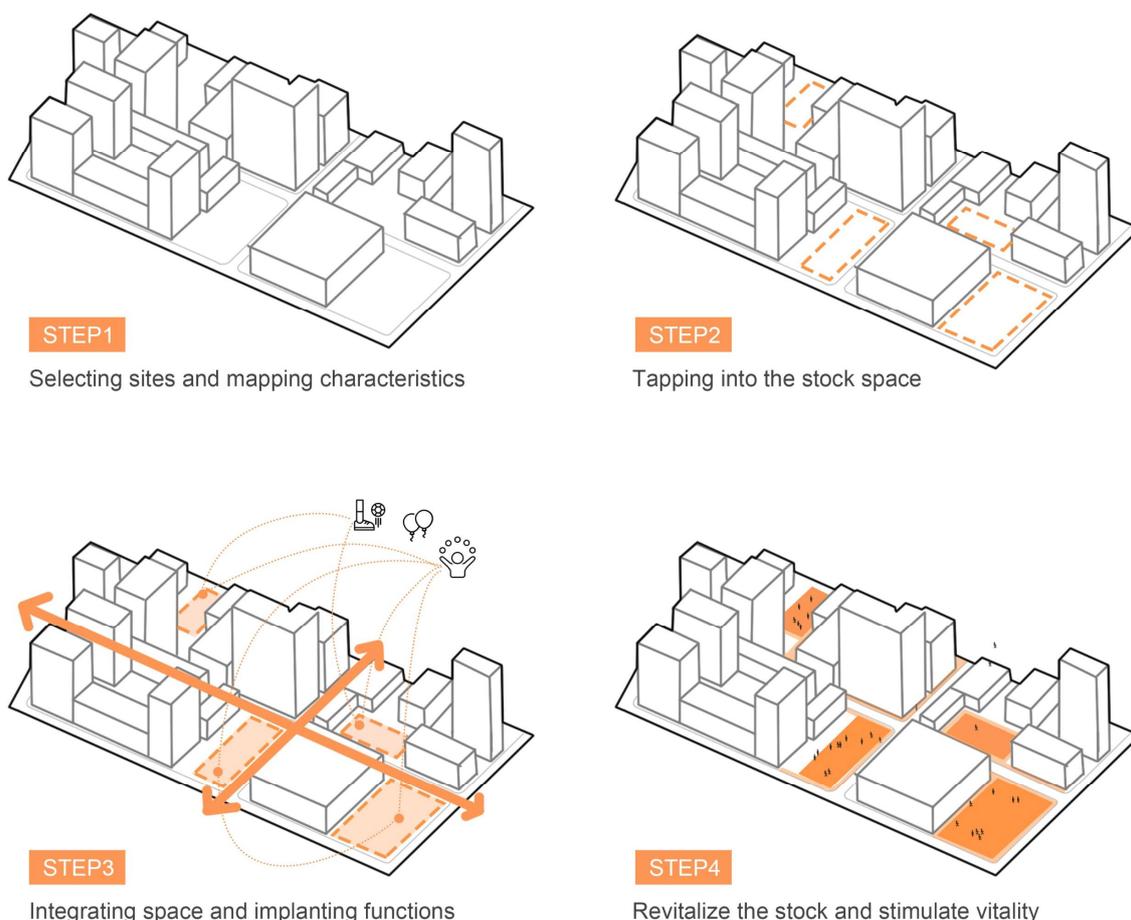
Figure 4-4 Tapping and Revitalising Stock

(3) Analysis of Activation Points and Creation of Shared Interfaces

Based on the community's demonstrated openness and taking into account the current utilization of boundaries and population, it is essential to conduct a thorough analysis of the site's public interfaces that exhibit a strong public nature (Figure 4-5). These interfaces can effectively serve as shared points of interaction for the entire district. Simultaneously, it is crucial to identify appropriate areas for innovation and activation to foster openness and sharing. By strategically integrating these breakthrough and activation points, they can extend as public interfaces into the sub-public spaces, effectively linking the shared interfaces and community public spaces. This integration enhances the overall organization and permeability of the public spaces, creating a more cohesive and interconnected community environment.

STEP1

Analysis of site boundaries

STEP2

Tapping into openable borders

STEP3

Creating shared access

STEP4

Activating the public space system
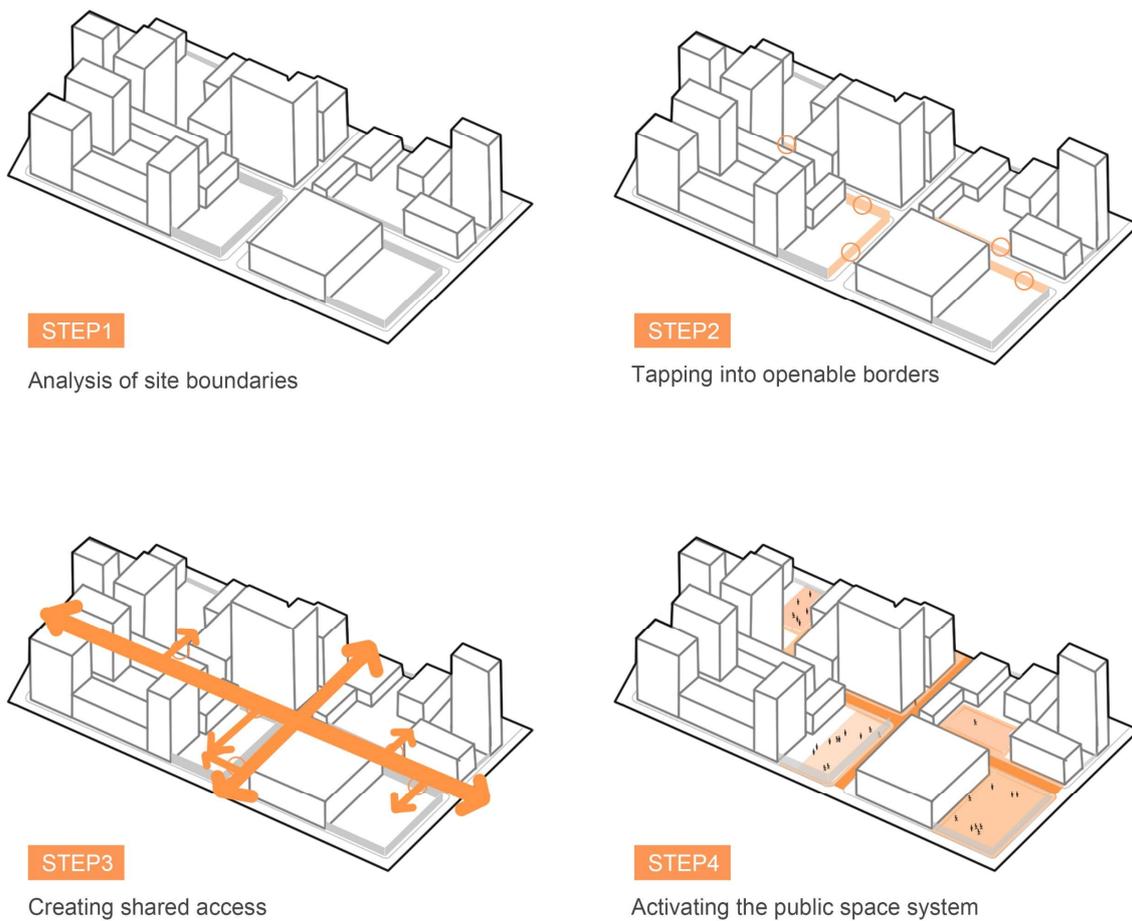
Figure 4-5 Creating a Shared Interface

(Source: Author's Own Illustration)

(4) Integration of Spatial Functions to Enhance Composability

Given the differences between post-danwei communities and traditional danwei-based neighborhoods, it is important to consider the frequent turnover of residents in the research and design process. Therefore, the investigation needs to start from the existing and potential residents with diverse behavioral patterns, identifying and recognizing multiple stakeholders. These stakeholders include individuals from different age groups, economic income levels, cultural and religious backgrounds, social organizations, and various industries. The design work should be focused on addressing the needs of these stakeholders [7]. Conduct thorough research on the site to understand the most desired or needed functions for different types of residents. The direction of community renewal can be determined by involving the residents in decision-making.
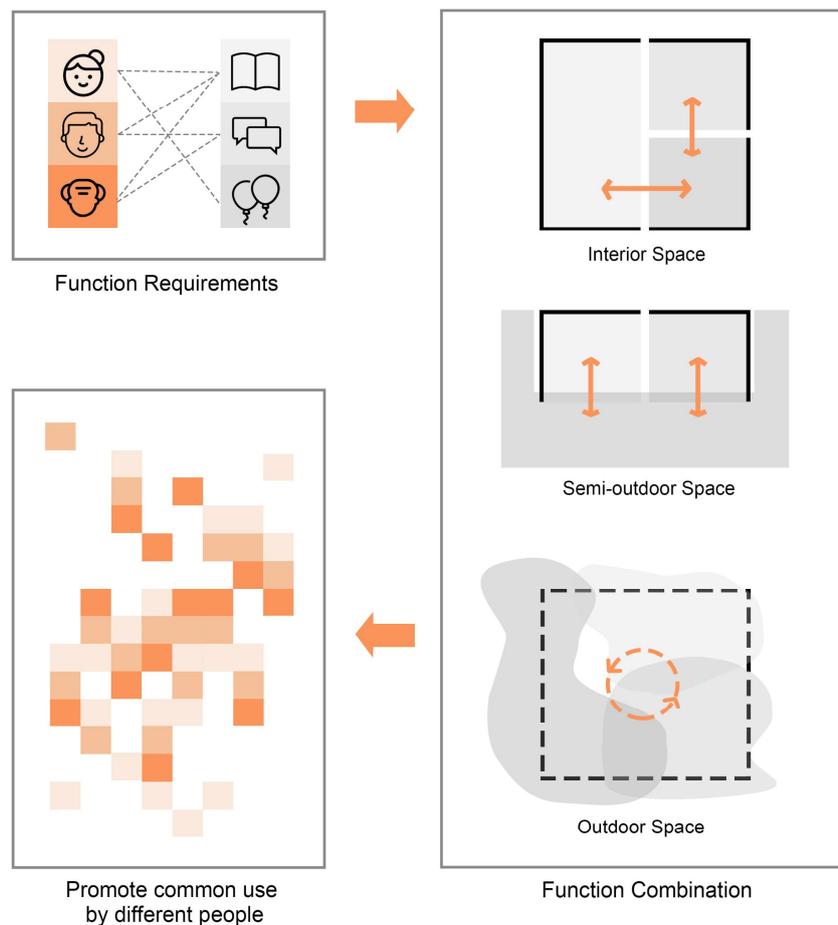
Figure 4-6 Schematic Representation of Functional Integration

(Source: Author's Own Illustration)

Also, based on the functional and activity characteristics, as well as the spatial requirements, a systematic organization and categorization should be carried out. Diverse functionalities should be integrated or further innovated based on spatial characteristics to enhance the compatibility of the site. Composite facilities that are playable, walkable, sit-able, and park-able should be introduced. This allows communities to accommodate a more diverse range of activities within the same area, breaking down spatial usage restrictions and enabling greater participation in the use of space. By maximizing the utilization of spatial resources, residents who previously lacked overlapping trajectories in their daily lives have the opportunity to collaborate and communicate through the shared use of space, thereby reconstructing interpersonal relationships within the community.

Furthermore, from the perspective of modern lifestyle and demand, there is a gradual merging of leisure and recreational spaces with social spaces, leading to the integration of their types and functions in public spaces. Similarly, there are connections and complementarity among activities such as cultural learning, exhibitions, education, and sports, influenced by the concept of shared communities. This fusion of functions allows for a relatively flexible and adaptable internal division and form of space, organizing the site space in a more inclusive and elastic manner. Public spaces become open and fluid, breaking away from the traditional spatial management image of the community. Building on this, it is important to establish reasonable divisions between active and quiet areas and boundaries between public and private spaces, ensuring a layout that is relatively rational and human-centered. This approach not only promotes interaction and shared use of space but also guarantees safety, privacy, and freedom.

(5) Representation of Different Types of Spatial Scenes

The concept of sharing can serve as a powerful catalyst for generating innovative design scenarios and approaches, opening up new possibilities in the field. Its impact and application on different types of spaces can be observed in two primary aspects. Firstly, it drives the integration and reorganization of functions, necessitating the realignment and restructuring of spaces and their corresponding functions. This transformative process encourages a more efficient use of space and a holistic approach to design. Secondly, it revolutionizes the way

users perceive and interact with space, fundamentally altering their usage patterns and interaction styles. This paradigm shift promotes a more collaborative and participatory approach to space, fostering a sense of ownership and shared responsibility among users.

① **Sharing Modes of Streets and Boundaries**

Streets play a multifaceted role in our urban fabric, serving not only as transportation systems but also as vital platforms for social interaction and communication. They function as conduits that facilitate the flow of diverse information within the surrounding areas. Consequently, when formulating redevelopment plans for post-danwei communities, it is imperative to prioritize the creation of shared scenarios within street spaces. These shared scenarios act as crucial dimensions that contribute to the overall transformation and revitalization of the community.
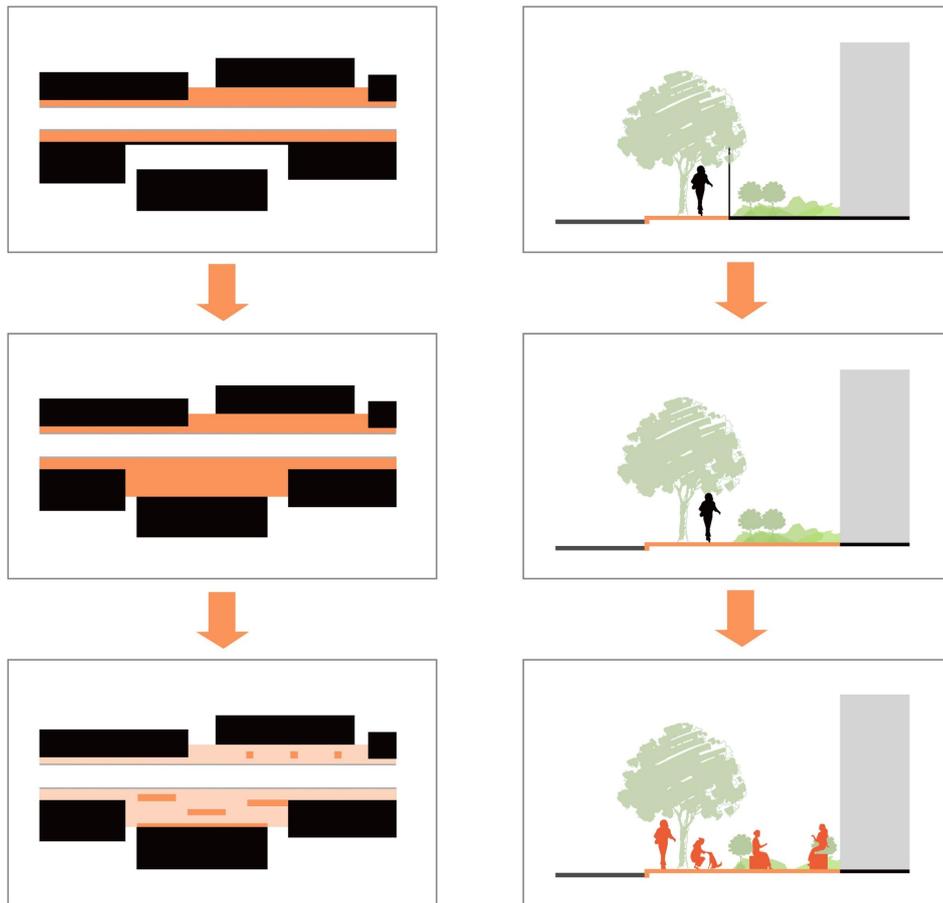
Figure 4-7 Shared Streets With Open Boundaries

(Source: Author's Own Illustration)

From an urban perspective, post-danwei communities often separate street spaces from the internal community through walls, resulting in monotonous and undefined border spaces along urban roads. Depending on the level of community openness and the usage of border spaces, selective removal of some walls or barriers can be considered, along with changes in their forms and enclosures. For example, they can be transformed into semi-open low walls or greenery with a certain thickness, providing a tangible and functional boundary that harmoniously integrates with the urban pedestrian system, enhancing the spatial quality on both sides of the border. Additionally, to create shared scenarios, the focus can be on creating lively streets that are part of the urban shared street concept. This can be achieved by enlarging certain nodal spaces, setting up activity areas, and creating varied interface spaces to increase the enjoyment and experiential aspects of the pedestrian environment. Measures such as changing materials or colors, optimizing street greening facilities, and adding street furniture can be implemented to create a linear active space that is shared by residents and urban dwellers alike (Figure 4-7).

For boundaries that do not have open conditions, promoting mutual understanding and trust can be achieved by providing interactive elements and enhancing visibility and transparency between the inside and outside of the boundary (Figure 4-8). Clever design and creative event planning can increase the spatial vitality and attractiveness of closed boundaries. Closed boundaries on streets can also create appealing environments by offering functionality and interactivity, incorporating greenery and art elements, and fostering community engagement.
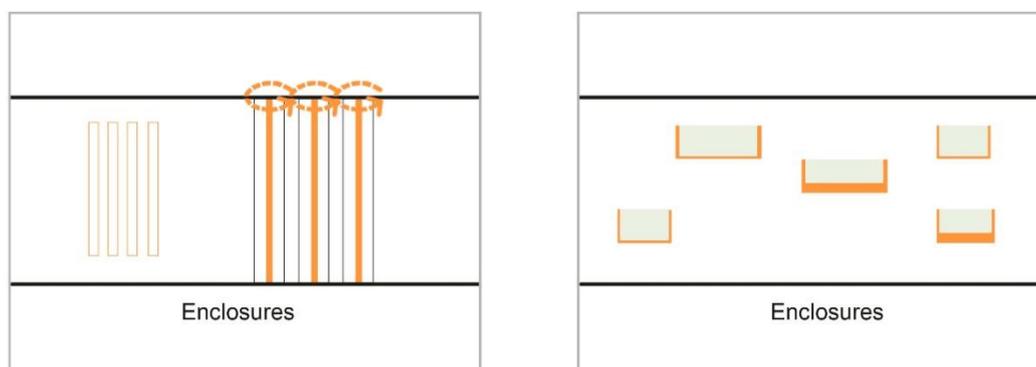
Figure 4-8 Street Reconstruction for Closed Boundaries

(Source: Author's Own Illustration)

From a community perspective, when it comes to internal roads within the community, it is important to consider the compatibility and balance between openness and safety among neighbors. Therefore, in the process of transformation, both openness and enclosure should be taken into account. On one hand, the scope of openness can be modified by selectively opening specific areas based on the existing conditions of the post-danwei community, thereby enhancing connectivity and public accessibility between certain internal roads and city streets. On the other hand, the scope of enclosure can be reduced, transitioning from enclosing the entire perimeter to enclosing clusters of buildings or individual building units, in order to ensure residents' sense of security [80]. The adjacent internal roads can be semi-public or semi-private, maintaining a sense of territoriality within residential spaces. By adopting this approach, it becomes possible to achieve both the organic integration of the post-danwei community with the surrounding urban area and district, while also mitigating certain unfavorable factors through varying degrees of openness and accessibility (Figure 4-9).

To create shared scenarios, it is possible to achieve this by constructing shared street spaces within the community. This can involve optimizing pedestrian environments, connecting square spaces, and organizing street activities, among other initiatives. Consequently, the streets within the community can be transformed into multifunctional and vibrant areas that support shared culture, leisure activities, and community services. Vehicle access can be limited to preserve privacy and a sense of security, with internal arrangements and designated private spaces. Simultaneously, accessibility and permeability can be enhanced.
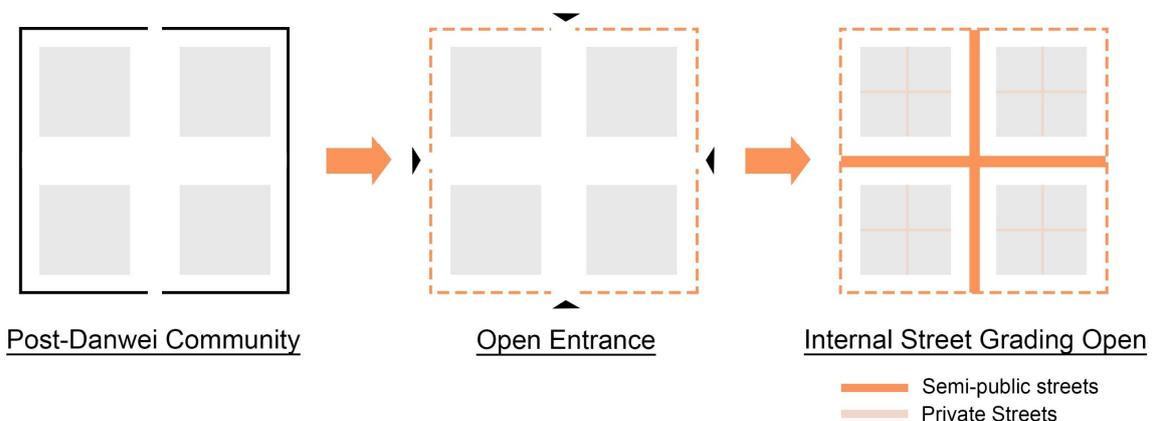
Figure 4-9 Community Street Space Classification

(Source: Author's Own Illustration)

② **Sharing Modes of Square Space**

Limited facilities and diverse population demands pose a challenge for post-danwei communities. To tackle this, designing multi-purpose spaces within squares becomes essential. These spaces should be flexible to accommodate various activities and can include movable or removable facilities for customization.

Alternatively, zoning designs can be implemented to encourage the shared use of different user groups. It is important to prioritize the primary user group while considering the needs of other user groups. Transitional spaces between different functional areas are necessary, serving as connecting spaces that may not have specific functions or clear boundaries but provide activity buffers, extensions, or observation areas. Additionally, the square plays a vital role as outdoor gathering spaces for residents' activities. Therefore, they should be designed to accommodate various events, such as festivals, community movies, markets, and flea markets, offering multifunctional spaces for diverse activities.

Architecture
+
Flexible Facilities

Functional
Zoning

Carrying
Diverse Activities
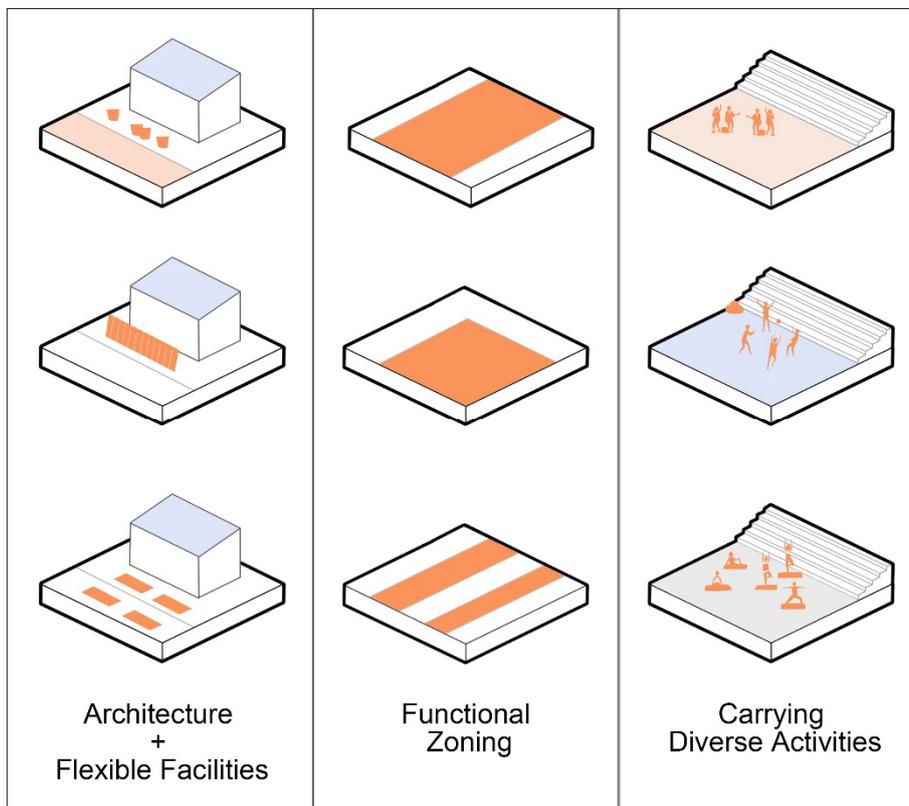
Figure 4-10 Illustration of Shared Modes in Square Space

(Source: Author's Own Illustration)

③ **Sharing Modes of Building and Unit Spaces**

From a more micro perspective, within the functions of building interiors, living spaces such as bedrooms, bathrooms, and dressing rooms require a high level of privacy, while other functions have relatively lower privacy requirements. Due to the early construction of danwei communities, many communities suffer from insufficient domestic spaces or the inability to fully meet the demands of modern living. Therefore, in current residential areas or post-danwei community renewals, shared spaces such as shared living rooms, shared libraries, and shared kitchens can be introduced. These shared spaces can either be separated from individual units or added as new functional types within the community [40]. Also, it is important to increase the flexibility and inclusiveness of indoor spaces by changing display and partition methods to accommodate the diverse needs of different individuals at different times (Figure 4-11).

Function Switching

Shared social and entertainment space
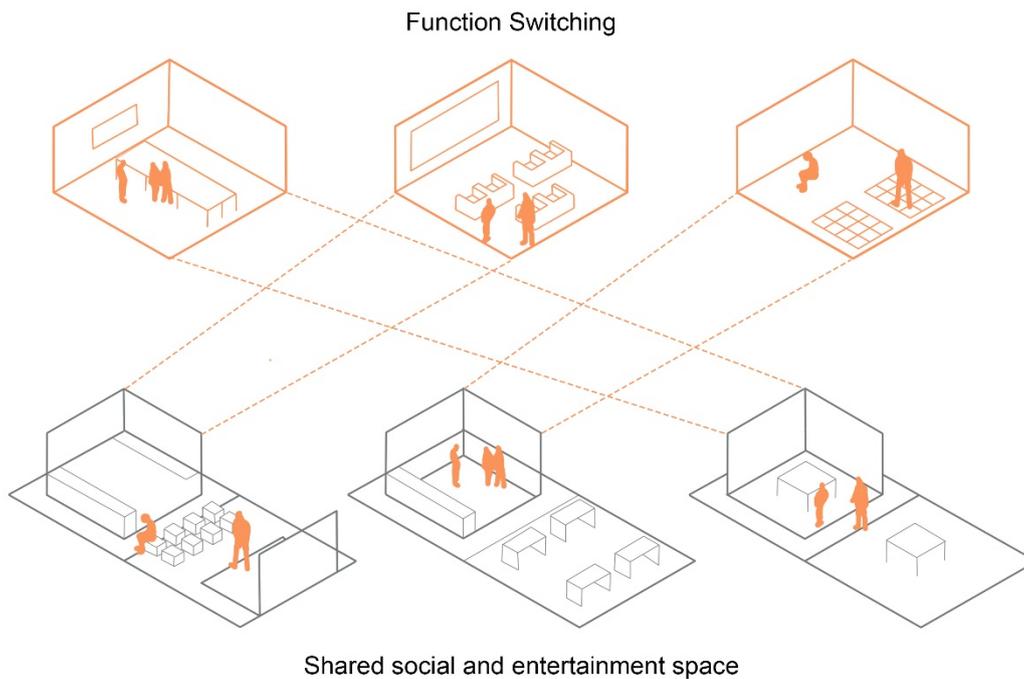
Figure 4-11 Schematic of Building Space Sharing Model

(Source: Author's Own Illustration)

Furthermore, with the change in lifestyle, the existing community facilities and functional configurations are no longer able to meet people's needs. There is an increasing demand for new functions that cater to the modern living of community residents, such as tea houses, cafes, gyms, chess room, and more. These functions can be established in traditional post-danwei

communities, and they possess strong attractiveness and openness. Therefore, there is a strong feasibility in transforming them into shared spaces for communal use.

4.3.2 Sharing of Time Dimensions

One of the important goals of the concept of sharing is to increase the efficiency of resource utilization through common sharing of access rights [81]. In addition to spatial sharing within the community, the concept of time should also be incorporated into the scope of design strategies for space management and utilization. This ensures the comprehensive consideration of the all-day usage of space and maximizes the rational and optimal utilization of resources. Consequently, space usage strategies can be developed by taking into account the lifestyle habits of space users from different age groups or roles. This allows for the organization of space usage functions in a time dimension, providing a range of flexible and interactive spaces. For example, a resting space during the day can be transformed into a place for dancing and exercise at night, or it can serve as a market and gathering space during weekends.
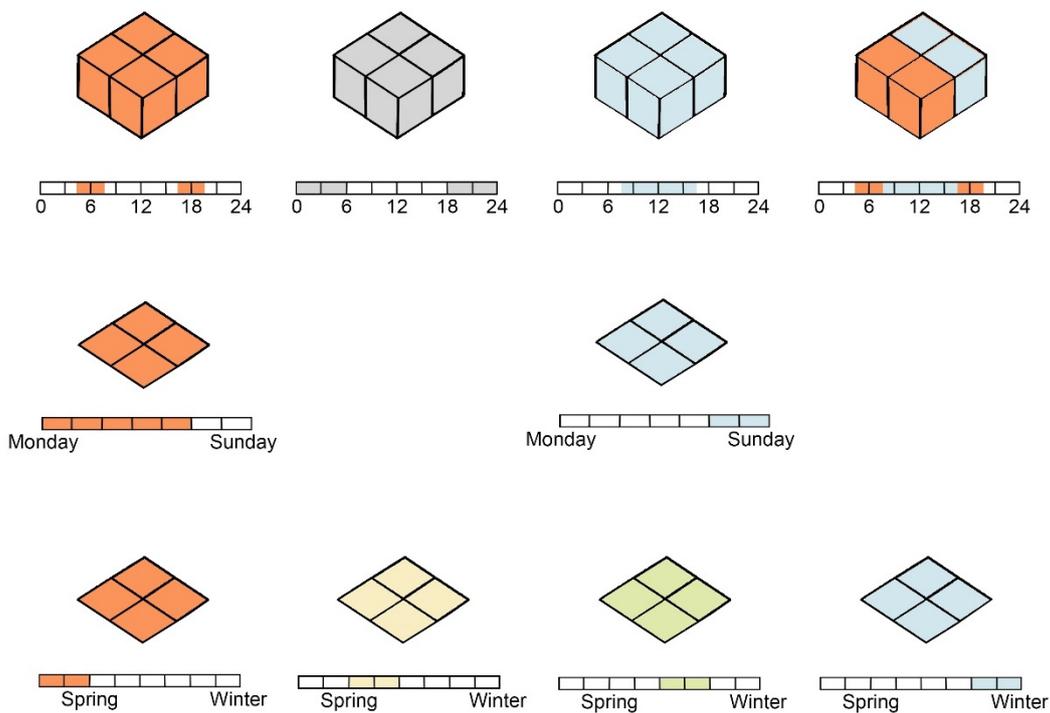
Figure 4-12 Time-sharing Strategy

(Source: Author's Own Illustration)

Therefore, in the time dimension, taking a daily perspective requires considering the use

of the site in the morning, afternoon, and evening. Taking a weekly perspective allows for considering the differences in space usage between weekdays and weekends. Looking at the yearly perspective enables the consideration of the relationship between different seasons and the perception and utilization of space.

4.3.3 Sharing of Governance Dimensions

The creation of community public spaces primarily follows a predominantly bottom-up approach that involves equal participation from multiple stakeholders (Figure 4-13). Among these stakeholders, residents play a crucial role as space builders, resource providers, and beneficiaries. Therefore, for the renewal and transformation of post-danwei communities, it requires not only government and neighborhood committee management and support but also the active involvement, maintenance, and organization of community residents, designers, or business teams. Sharing and co-building have a dialectical relationship, where co-building is the premise of sharing, and sharing is the goal of co-building [82]. Therefore, under the concept of sharing, the renewal of community public spaces entails not only the narrow sense of improving spatial sharing, but also the need to guide local residents to participate in the "co-building" of space renewal and the "co-governance" of space operation and management.
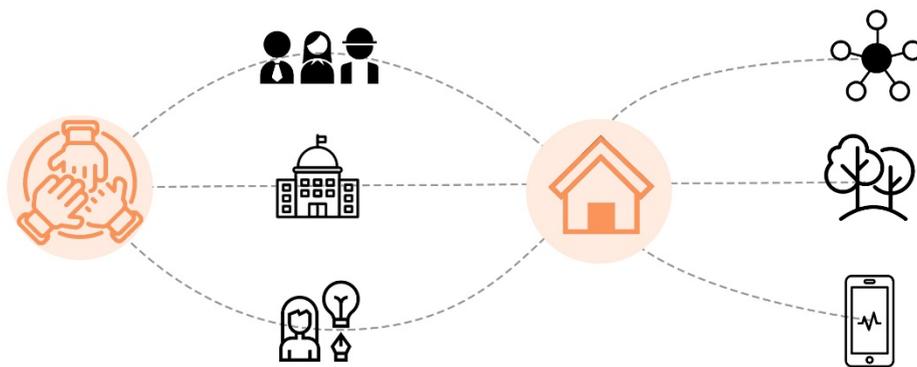
Figure 4-13 Community Governance and Space Operation Strategies

(Source: Author's Own Illustration)

Furthermore, resident participation can enhance community cohesion, a sense of belonging, and positive engagement in space transformation, while also reducing the operational costs of space. Characteristic activities and projects expand the concept of sharing

beyond just physical space and extend it to a shared way of life and interaction, bringing about
changes in people's modes of interaction [79].

In order to ensure the long-term sustainability and effective operation of the community,
it is essential for residents and professional teams to collaborate in creating and maintaining
spatial order and guiding the usage of space by other city residents. By integrating online
operations with offline space management and reflecting space characteristics and usage on
public online platforms, the accessibility and attractiveness of physical space can be enhanced
in sync with the information space. The incorporation of a smart platform introduces new
possibilities for social interaction and intelligent utilization, enabling the community to be
managed in a more humanized and intelligent manner. This enables residents to efficiently,
conveniently, and orderly share community space resources, breaking to some extent the
limitations imposed by physical space.

4.4 Renewal Workflow and Application Ideas

The transformation process of post-danwei communities can be divided into three stages:
the pre-project preparation, the program design as well as the program implementation and
operation (Figure 4-14).
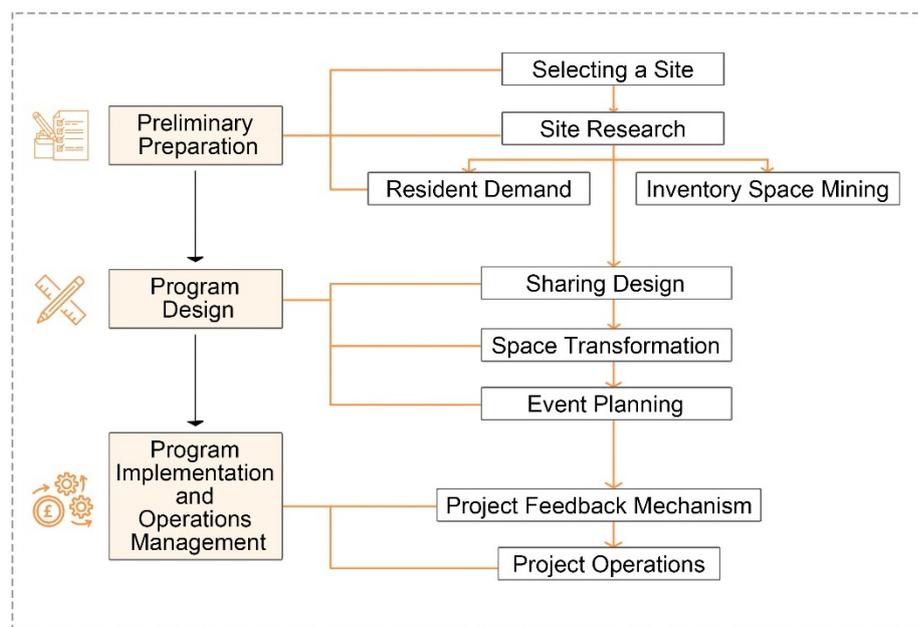
Figure 4-14 Workflow for Shared Transformation of Post-danwei Communities

(Source: Author's Own Illustration)

The pre-preparation stage focuses on researching the site, while the design and implementation stage emphasizes the development of specific transformation plans. The operation stage highlights the sustainability of community management and operations. This workflow aims to create a community environment with a spirit of sharing through the participation and collaboration of residents, fostering community interaction and development.

4.5 Chapter Summary

This chapter primarily presents the methodology for urban renewal of public spaces in post-danwei communities under the concept of sharing (Figure 4-17). This chapter also elaborates on the conditions and application methods of the approach from the aspects of design principles and objectives, application conditions and targets, service recipients, design strategies, and workflow. This establishes the foundation for subsequent applications.
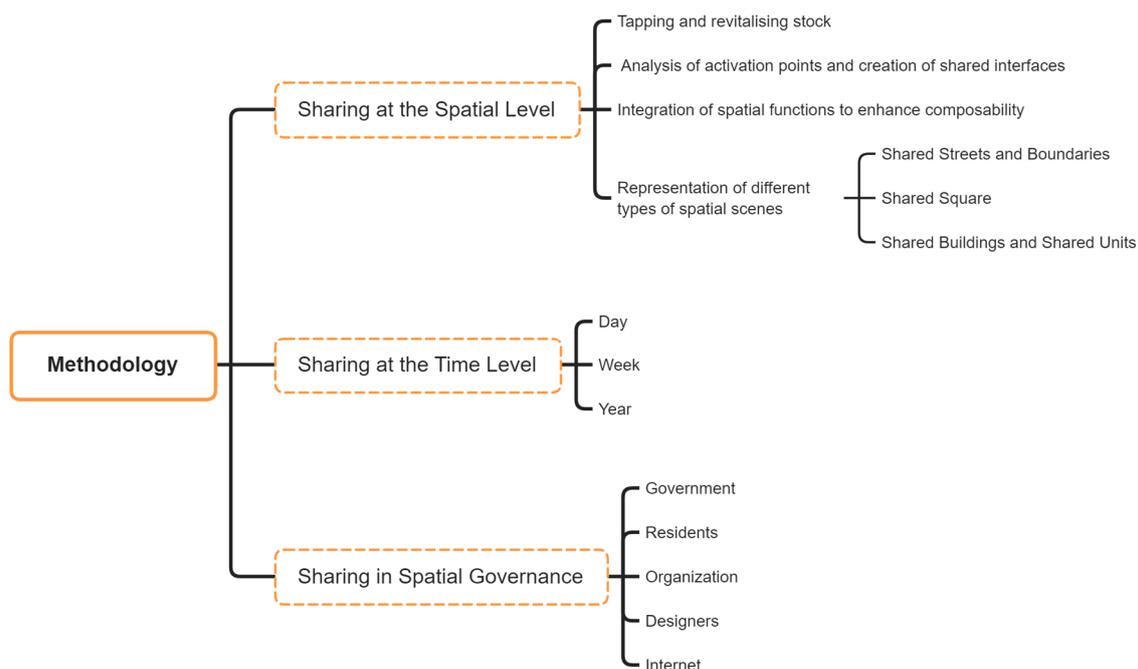
Figure 4-15 A Strategic Framework for Public Space Renewal Based on Sharing

(Source: Author's Own Illustration)

Chapter 5 The Study of Post-danwei Community Spatial Environments and Residents' Behavior Patterns

5.1 Overview of the Research Subject

5.1.1 A Study on the Profile of the Guangzhou Danwei Communities

China currently has numerous danwei-based communities, and there are also many post-danwei communities that have undergone restructuring or changes due to urbanization and housing policies. Influenced by various factors such as economic industries, geography, and climate, these types of communities exhibit both common characteristics and specific regional differences across different provinces and regions in the country. In this research project, taking Guangzhou city as an example can to some extent reflect the development, transformation process, and typical spatial issues of danwei-based communities in the southern region of China.

In the central area of Guangzhou, there are numerous danwei communities. With the rapid advancement of urbanization, Guangzhou has initiated a transformation of its internal spaces. By planning and developing emerging industrial zones in the suburbs, factories are gradually being relocated away from the city center, while residential areas remain within the city. By the end of 1999, the welfare housing allocation system in Guangzhou was completely discontinued. Residents of danwei communities obtained property ownership through housing reform policies, and the purchased public housing can be traded in the market, thereby promoting the development of the housing market.

Yuexiu District, as the oldest and most culturally rich district in Guangzhou, is home to numerous administrative institutions and various types of early danwei communities, making it representative and typical. The post-danwei communities of Yuexiu District are relatively scattered, but they also maintain a certain scale and number (Figure 5-1). Due to reconstruction, renewal, and the unique nature of Guangzhou as a city, the scale and size of danwei communities in Guangzhou are relatively small compared to industrial cities in the northern regions. The community forms are also relatively incomplete. Due to the high rate of danwei restructuring and relocation, most of the danwei communities still retain some characteristics

of the original complexes, but they have also undergone many changes influenced by the times and social environment.
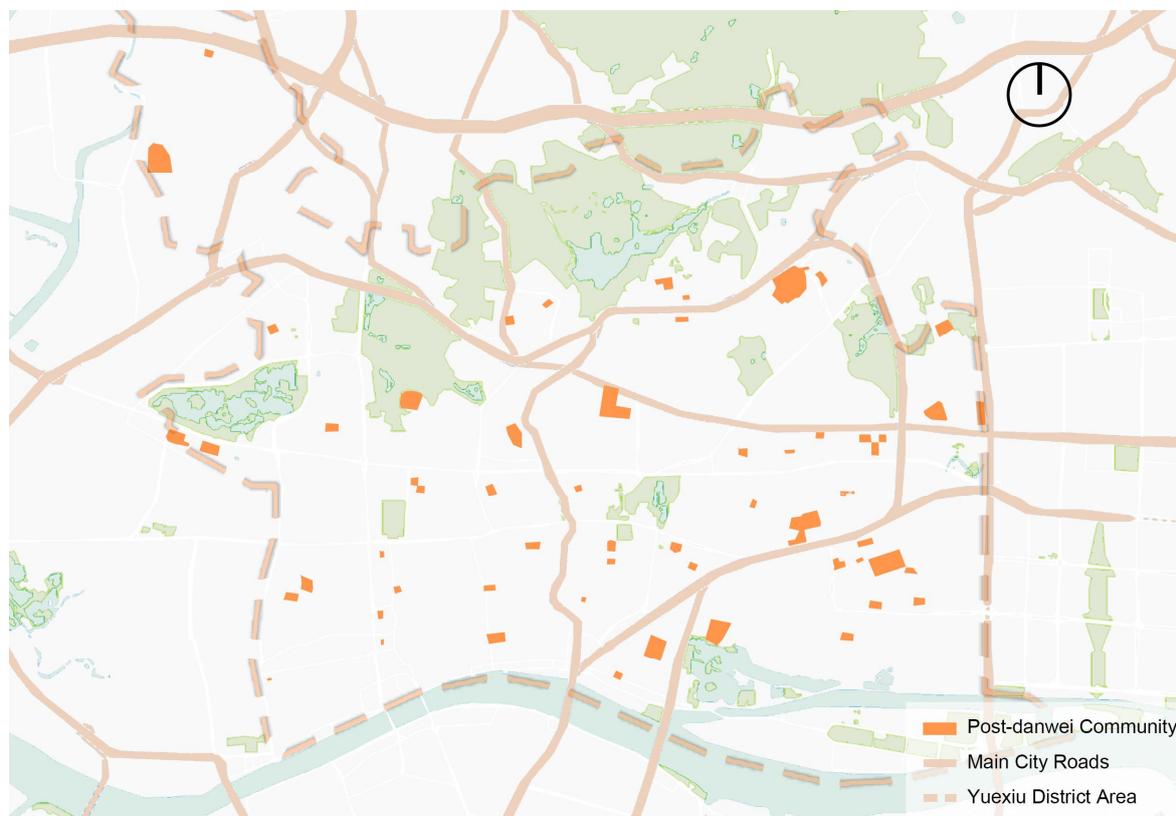
Figure 5-1 Distribution of Danwei Communities in Yuexiu District, Guangzhou

(Source: Author's Own Illustration)

5.1.2 Site Selection

To ensure a thorough investigation of representative research subjects, the author undertook an extensive series of visits to various danwei communities within Guangzhou City. The primary objective was to gain a comprehensive understanding of the prevailing conditions and developmental patterns exhibited by danwei communities in Guangzhou. The preservation and utilization statuses of these communities can be broadly categorized into four distinct classifications (Table 5-1). In the context of Guangzhou, it is noteworthy that the majority of danwei communities remain situated in their original locations, with limited renewals or modifications carried out on the original dormitory areas. This highlights the need for further examination and analysis of the existing state of these communities, in order to explore potential strategies for their future preservation and development.

Table 5-1 Status of Preservation of Danwei Communities in Guangzhou

(Source: Author's Own Illustration)

Type	Current Situation
Relocation and Renewal	Due to the population, transportation and other pressures or relocation of the related danwei, the original danwei courtyard is facing relocation or redevelopment.
Transformation and Renewal	Implemented by the danwei itself or located within the government's renewal project area to promote community quality improvement.
Demolished Type	Demolition of houses due to urban development or housing decline.
Original Site Retention Type	The original spatial texture is well preserved without significant demolition or renewal.

As a residential area for railway unit workers in the last century and a participant in housing marketization, the Gonghe Area brings together multiple former danwei communities and holds a certain level of typicality within Guangzhou. Especially for Gonghecun Community, it has a relatively large scale, and its architectural layout follows the traditional row arrangement (Figure 5-2).
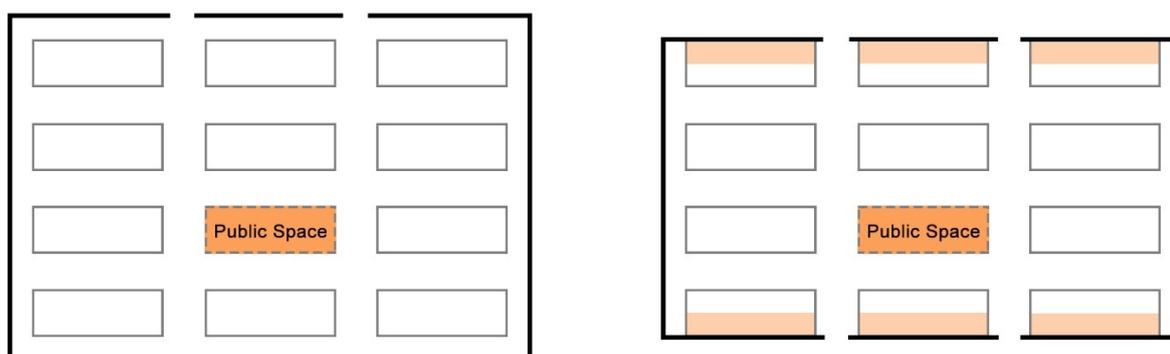
Figure 5-2 Layout of a Typical Danwei Community in Guangzhou

(Source: Author's Own Illustration)

Furthermore, this area is characterized by the presence of numerous public facilities that were originally allocated to danwei, such as hospitals, schools, and more. Therefore, selecting this area as a research subject is advantageous for conducting further targeted investigations on

the transformation of post-danwei communities in Guangzhou, the relationship between communities and the city, as well as the integration and utilization strategies of spatial resources within the area.

5.1.3 Project Background

The Gonghe Area is mostly composed of early railway workers' dormitories and is the place where Guangzhou Railway staff settled. In 1958, the Hengyang Railway Bureau relocated its headquarters to Guangzhou, resulting in a large number of railway personnel and their families migrating southward. The Guangzhou Railway Bureau was established, which served as the predecessor to the current Guangzhou Railway Group. The Railway Bureau requisitioned a portion of land from Yangji Village and Siyou Village, east of Xi Yuangang, to construct staff dormitories. Thousands of railway employees' families settled here. In the area around Gonghe Avenue and Gonghe Road, there used to be the office and residential quarters of the former Guangzhou Railway Bureau. The streets and lanes in this region are relatively narrow, crisscrossing each other. During the early days, the first-generation residents in this area were mostly railway employees. The kindergartens, schools, factories, and other facilities within the streets were predominantly managed by the railway bureau as well. As a result, Gonghecun Community and Xiyuangang Community were also known as the "Railway Bureau Staff Quarters," which aligns with the concept of institutional danwei community mentioned earlier. Although the Railway Bureau's main building has moved out of the Gonghe Area, the majority of the former Guangzhou Railway dormitories are still retained [83].

5.1.4 Location and Surroundings Analysis

The Gonghe Area is located in Yuexiu District, Guangzhou City, Guangdong Province (Figure 5-3). All the communities within the area are under the jurisdiction of Meihua Street and are situated near the new central axis of the city. The research area extends from Gonghe Third Road and Gonghe West Road in the north to Gonghecun Community in the south, Dadao Road in the west, and Gonghe Road in the east, covering an area of approximately 12.9 hectares with a green coverage rate of about 27%.
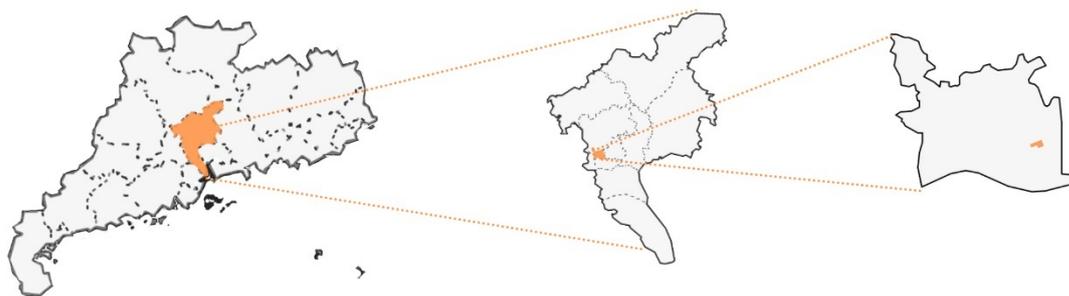
Figure 5-3 Location of the Site Area

(Source: Author's Own Illustration)

In addition, the Gonghe Area is densely populated with numerous residential quarters (Figure 5-5), particularly old and dilapidated communities. Due to the urbanization process and community transformations, the boundaries and distribution patterns of these communities appear fragmented and disconnected. Various community environments are fragmented by walls and fences, rendering many public spaces inactive and problematic.
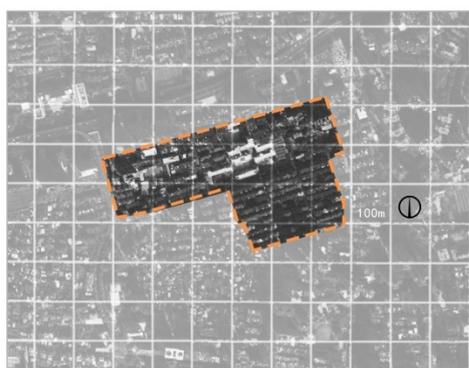
Figure 5-4 Research Scope

(Source: Author's Own Illustration)

Figure 5-5 Surrounding Residential Forms

(Source: Author's Own Illustration)

However, due to the high population density in this area, the supporting facilities within a 15-minute living circle are relatively well-developed, including abundant educational, healthcare, and elderly care resources. Additionally, there are numerous government agencies in the vicinity, such as the Guangdong Provincial People's Congress and the Provincial Meteorological Bureau. The area benefits from convenient transportation, as it is adjacent to Yangji Metro Station on Line 5, with a high coverage of public transportation. It is home to Guangzhou Railway First Primary School, Guangzhou Railway First Kindergarten, and the

First Affiliated Hospital of Guangdong Pharmaceutical University, offering comprehensive living amenities. However, there is a lack of centralized commercial and service facilities.

The area includes several early danwei-based and a few traditional old residential communities, such as Gonghecun Community, Gongheyiyuan Community, Gonghe Second Road Community, Gonghe Third Road Community, and Old Newsstudy Society Community, among others, totaling approximately 1,170 households (Figure 5-6). With the relocation of the Railway Bureau and the marketization of housing transactions, the residential units in the Gonghe area have gradually undergone housing reform. As a result, some housing units within the area have entered the housing market and have been subleased or resold. The varying degrees of subleasing and population mobility have also resulted in tensions in the shared use of public spaces.
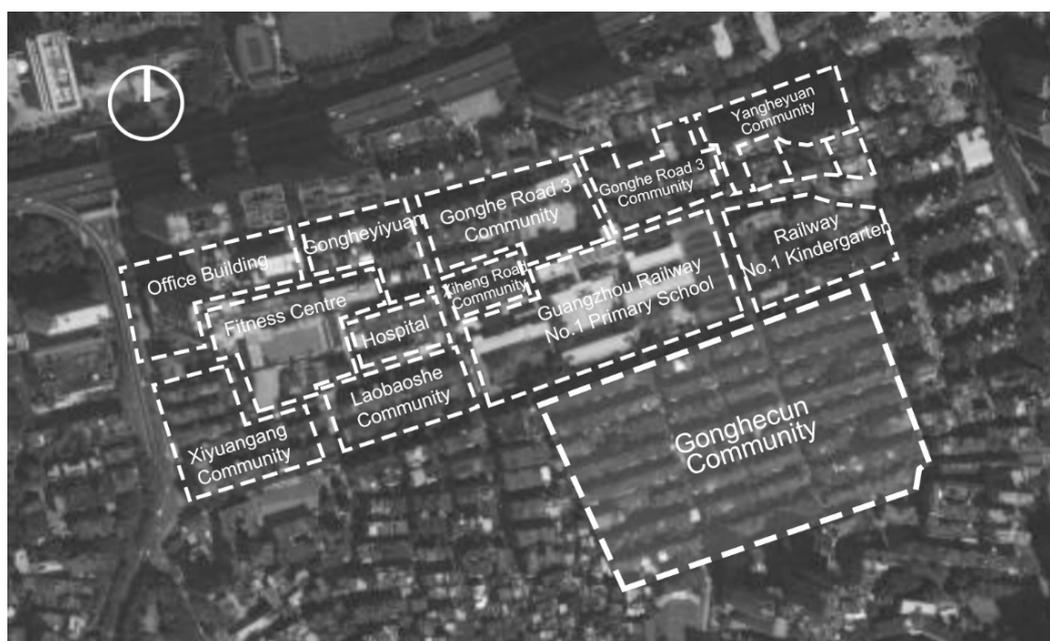
Figure 5-6 Distribution of Communities Within the Design Area

(Source: Author's Own Illustration)

5.2 Spatial Environment Perception of Post-danwei Community Public Spaces

Based on thorough research conducted on the primary categories of community public spaces and taking into account the specific conditions of the site, this article undertakes a comprehensive reorganization of the existing public space system in the area. The main focus

is directed towards the boundary spaces, street spaces, square spaces, and public building spaces present in various communities within this locality. To gain an in-depth understanding of these spaces, meticulous on-site investigations and visits are carried out, allowing for a careful observation of their distinctive features and patterns of usage.

5.2.1 General Overview of the Space

From an overall perspective, through quantitative analysis of the overall data, it can be observed that public spaces in the area account for approximately 65% of the total area. Some communities have relatively sufficient proportions of public spaces. However, when considering the area as a whole, the overall space is relatively constrained (Figure 5-7). Regarding a more detailed classification of public spaces, sports fields have a relatively large proportion, but they are mostly used by elementary schools and kindergartens and are not open to the public. Roads have a higher proportion, while sqaure and green spaces have lower proportions and fewer types, mainly consisting of small squares and areas with fitness equipment. Overall, the proportion of spaces used for commuting and transportation is relatively high in the area, while the proportion of public spaces for residents to stay and engage in activities is relatively small.

Figure 5-7 Types of Public Space on Site

(Source: Author's Own Illustration)

From a architectural perspective, the majority of the site is occupied by residential buildings, with a building density of approximately 35%. Most of these buildings were constructed before 1990, ranging from 5 to 7 stories (Figure5-8). Many of them are still walk-up buildings, although some have been retrofitted with elevators. The overall quality of these buildings is relatively poor. There are also some buildings constructed after 1990, such as Yangheyuan, which is a high-rise building with 30 floors. It has its own private square and green space that is not open to the public.
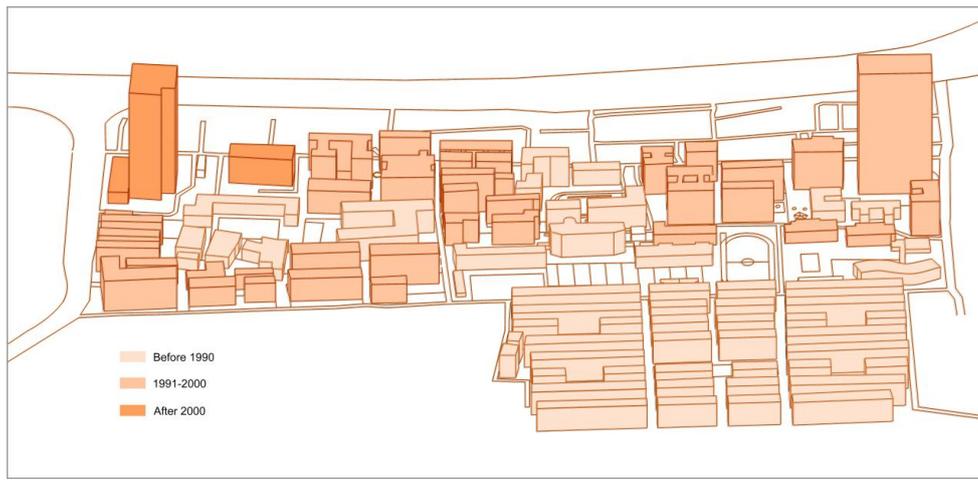
Figure 5-8 Analysis of the Number of Storeys and Age of the Building

(Source: Author's Own Illustration)

Figure 5-9 Functional Analysis of the Building

(Source: Author's Own Illustration)

5.2.2 Boundary Spaces

When considering the administrative aspects of a danwei community and the material aspects of a danwei community, boundaries can be viewed as a positive factor. However, when considering the social aspects of a community and the public aspects of a community, boundaries often become a negative domain[74]. From a broad perspective, boundaries encompass the interface between a community and the city, or the boundaries between different community units.

Due to the early construction periods of most communities in the Gonghe Area and the relatively small scale of each community, the spatial structure and corresponding supporting facilities are not sufficiently developed, resulting in a scarcity of public resources. Daily life in these communities and the behavioral activities of residents are organic and flexible. However, the material boundaries have the potential to hinder social interactions and accessibility of the community's population activities to some extent.

In general, if the renewal considers resource sharing within the area, boundaries become a factor that needs to be taken into account. The majority of residential areas in this area are primarily characterized by rigid boundaries, often in a closed and fragmented state (Figure 5-10). Regarding enclosure media, some ground floors of critical buildings are designated for commercial use, and space is delimited by walls, fences, or the architectural form itself. There is little use of landscaping as a form of enclosure. Walls completely conceal the internal and external spaces, while fences offer a certain degree of transparency. As for community entrances, most of them have gates, although they rarely restrict pedestrian access but rather focus on limiting the parking of external vehicles. In particular, in Gonghecun Community, the community is directly connected to the Bayi Experimental School in Guangzhou. As a result, the community is fully open to the public, and during peak hours when students are leaving or arriving at school, many parents walk through the community to pick up or drop off their children at the school gate. Only a few communities have strict access control measures, such as Yangheyuan Community and Xiyuangang Community, while others are completely open to the public.
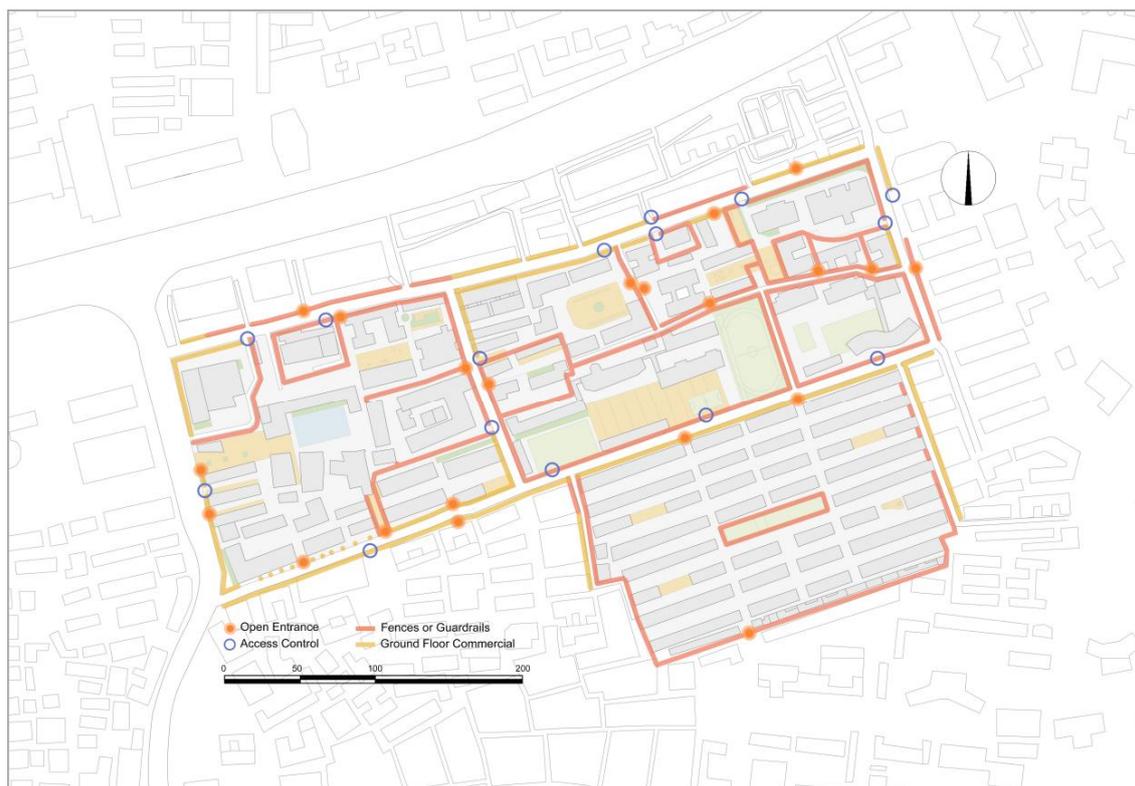
Figure 5-10 Boundary Space Analysis

(Source: Author's Own Illustration)

(1) Fence Boundaries

From the perspective of boundary space utilization, there are some issues with the public spaces on both sides of physical walls. The walls or fences separate the internal green spaces used for resident activities from the external passageways, resulting in negative and disorderly street spaces. This situation leads to low utilization of public spaces within the community and even creates dead corners where residents find it difficult to make full use of the space. Additionally, strict boundary walls can also squeeze the road space.

In terms of community management, clear boundary demarcation is necessary. However, people tend to focus more on the central areas within the community, often neglecting the existence of the peripheral zones between communities. This makes the peripheral zones easily overlooked and prone to becoming neglected and negative spaces. This is one of the overlooked issues in current community planning and space design[74]. It can be observed that similar issues exist in the Gonghe Area, where the spaces on both sides of community boundaries are

informally, chaotically, and negatively utilized (Table 5-2).

Table 5-2 Use of space on Both Sides of the Boundary

(Source: Author's Own Illustration)

	Illustration of Spatial Distribution	Site Conditions
Outside the Wall	○ Advertisements/bulletins ○ Parking ○ Set up a stall ○ Stacking of debris	
Inside the Wall	○ Advertisements/bulletins ○ Parking ○ Set up a stall ○ Stacking of debris	

Based on on-site investigations, it can be observed that a significant portion of the space outside the surrounding walls is occupied by parked vehicles. This has resulted in a rather disorderly arrangement of the street space and, concurrently, has reduced the scale of the transportation area, leading to a suboptimal pedestrian experience. Some fences are used for posting notices or advertisements, but since the content of the notices is outdated, lacks

timeliness, and is not regularly updated, this way of usage not only causes resource waste but also hinders the permeability between street spaces and community spaces. Additionally, some vendors rely on fence spaces to set up fruit and vegetable stalls on the street, but due to excessive extension of their outdoor setups, it to some extent affects the orderliness of the street and creates lingering hygiene issues. Furthermore, some residents or businesses use walls or railings to store personal items, which diminishes the quality of the street environment. Similar utilization patterns can also be found on the inside of the walls or railings, such as parking, storage of miscellaneous items, and placement of equipment, occupying the public spaces along the community boundaries. Moreover, there are instances of privatization of public spaces, where residents living along the bottom of the walls expand their residential spaces by utilizing the space adjacent to the walls, constructing their own gardens, storage rooms, and other ancillary spaces, to some extent occupying the community's public spaces and affecting the permeability and transparency of the community boundaries. The remaining non-privatized public spaces also suffer from low utilization, fragmentation, negativity, and difficulty of use.

Taking into account the aforementioned situations, there are a series of issues regarding the utilization of boundary spaces in many communities within the area, including wall isolation, blurred boundaries, negative disorder, and privatization of use. These problems lead to disorderly street spaces, low utilization rates, and hinder the permeability and transparency of community boundaries. In community governance and planning, boundary spaces are often overlooked, becoming easily neglected negative areas.

(2) Building Boundaries

In addition to walls, some community boundaries in the area are enclosed in the form of buildings. The ground floors of these buildings are mostly used for commercial spaces (Figure 5-11). In terms of commercial formats and spatial distribution, the district's commercial activities primarily revolve around daily-life-oriented businesses that cater to the residents' daily needs. There are two relatively large markets, contributing to the overall vibrancy and convenience of the neighborhood. However, there are fewer entertainment businesses such as KTVs or movie theaters.
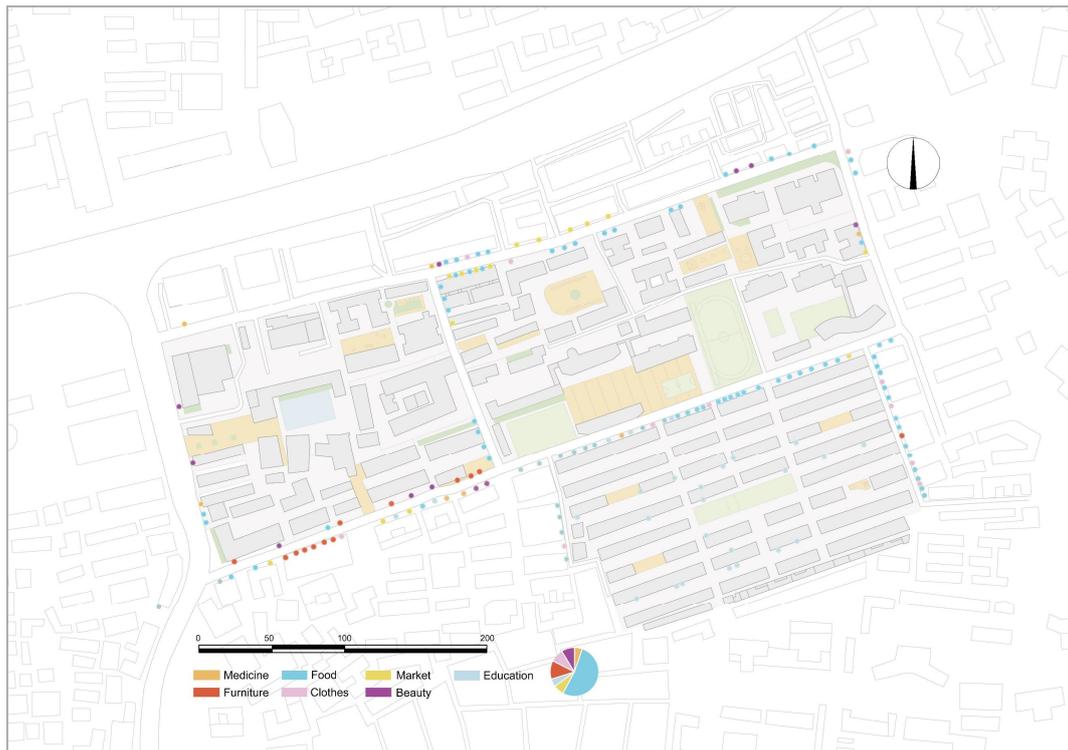
Figure 5-11 Analysis of the Sector's Business

(Source: Author's Own Illustration)

Furthermore, due to the abundance of educational resources in the area, including two primary schools and one kindergarten, the distribution of educational-related commercial facilities is also flexible and extensive. Particularly within the Gonghecun Community, several ground floors of residential buildings have been transformed into educational spaces for daycares, early education, and training classes. These facilities are scattered throughout the community, and as a result, the community is fully open to external visitors, including parents picking up or dropping off their children at school, as well as residents from other communities and students from other schools.

Therefore, the flexible transformation of ground-floor commercial spaces and the spatial distribution of educational industries have attracted a significant amount of foot traffic, unleashing the potential for social interactions among different community groups. This development has laid the foundation for the transformation of older closed-off communities into open and shared spaces.

Figure 5-12 Site Photos of the Commercial Businesses Along the Street

(Source: Photo by the Author)

5.2.3 Street Space

The street spaces in the area predominantly comprise urban branch roads measuring 8-9 meters in width, as well as internal community roads ranging from 2-5 meters wide. Notably, the urban branch roads feature a substantial presence of on-street parking, which hinders the seamless flow of traffic, with Gonghe Avenue being particularly affected. Throughout the year, both motor vehicles and non-motorized vehicles occupy parking spaces on either side of the roads, leading to traffic congestion, especially during peak hours when a significant influx of students from the Guangzhou First Railway Elementary School are entering or leaving the premises.

(1) Urban Branch Road Street Spaces

Various interface forms have a profound impact on the pedestrian environment and walking experience within the street spaces of the urban branch roads (Table 5-3). Within this district, it becomes evident that life-oriented streets primarily emphasize the smooth flow of traffic and the easy accessibility of street spaces, often overlooking the importance of creating inviting spaces for social interaction and leisure. This narrow focus on design leads to constraints in pedestrian areas, ultimately resulting in streets that lack a sense of comfort and fail to adequately cater to the social needs of both residents and pedestrians. As a consequence, the overall urban experience falls short of meeting the desired expectations for a vibrant and inclusive community.

Table 5-3 Street Pedestrian Space Types and Characteristics

(Source: Author's Own Illustration)

Type	Street Cross Section Diagram	Features
Fence Interface A	Architecture / Carriageway Pavement Community	The wall makes the pedestrian street interface rather homogeneous and lacks explosive activity.
Fence Interface B	Architecture / Carriageway+Pavement Community	The wall makes the pedestrian space less flexible and the mix of pedestrians and vehicles reduces the safety of walking.
Architectural Interface A	Architecture / Carriageway Pavement Community	Retail along the street adds vibrancy to the street and provides an extended space for street activities.
Architectural Interface B	Architecture / Carriageway+Pavement Community	A building without ground floor retail is similar to a wall and does not provide a buffer space for pedestrian and vehicular traffic.
Architectural Interface C	Architecture / Carriageway Square Community	A very small number of enlarged plaza nodes along the street exist top provide space for pedestrians to rest and interact.

(2) Street Space Within the Community

The most notable issue regarding the internal streets within the communities is that, due to the limitations of early residential spaces and the lack of construction management, there is a situation where ground-floor expansions encroach upon the streets. In this area, various informal construction activities have emerged, such as residents building their own parking

sheds, drying sheds, private gardens, storage rooms, and so on (Figure 5-13). These activities extensively and disorderly occupy the street spaces within the communities, reducing the circulation and environmental quality of the streets. At the same time, this indirectly indicates that the functional limitations of some residents' housing spaces, the lack of such functional spaces, and provides ideas and breakthroughs for the sharing of public resources.

Figure 5-13 Distribution of Informal Community Building

(Source: Author's Own Illustration)

5.2.4 Square Space

The research on square spaces aims to understand the distribution, types, quantities, and existing functions of various sample space nodes (Table 5-4). Based on observations, it can be noted that the square spaces in the Gonghe Area are all designed as simple and small-scale public spaces, mainly consisting of small community gardens, fitness areas, and open-air resting areas. Additionally, it can be observed that these types of square spaces predominantly feature open-air grounds and lack well-designed and attractive spaces for lingering, resulting in low usage by people. Some of these spaces are even left idle or used for drying clothes, becoming neglected and unappealing spaces. Furthermore, certain spaces are hidden in their distribution, with unclear orientations or directly surrounded by fences. For example, the central playground in Gonghecun Community, which is the largest open space in the entire community, has limited

accessibility with only a few entrances. It also caters solely to the recreational needs of elderly people with its single function of ball games, leading to low space utilization and frequent instances of no one using it. Moreover, there is a lack of consideration for the grading and continuity of space nodes, and the extensive nature of space content and overly rigid modular combinations have severely hindered the development of community diversity [83].

Table 5-4 Spatial Forms of Plazas and Their Characteristics

(Source: Author's Own Illustration)

	Central Open Space	Space Between Gables	Space Between Walls
Plan			
Quantity	4	4	6
Function	Sports Field/ Sitting-out/ Small Garden/ Small Square	Fitness/ Leisure/ Chess	Sports/ Small Square
Photo			
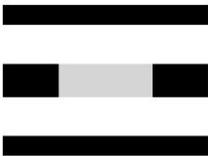
5.2.5 Architectural Spaces

The indoor public spaces in the Gonghe Area mainly include Dongyuan Market, Gonghe West Farmers' Market, Guangzhou Railway Elderly Activity Center, and Guangzhou Railway Staff Fitness Center. Among these places, Dongyuan Market and Gonghe West Farmers' Market attract a large number of nearby residents during the daytime for shopping, resulting in high space utilization. However, there are some issues regarding the usage of space in Guangzhou Railway Elderly Activity Center and Guangzhou Railway Staff Fitness Center.

Firstly, the accessibility of Guangzhou Railway Elderly Activity Center and Guangzhou Railway Staff Fitness Center is affected by the maintenance structure surrounding the buildings, making it less visible to the surrounding residents and reducing their awareness of their

existence (Figure 5-14). Secondly, although both the Guangzhou Railway Elderly Activity Center and the Guangzhou Railway Staff Fitness Center are open to all urban users, the danwei-based background of these buildings results in a bias towards certain users. Through on-site observations, it can be noted that while the internal resources of these two public buildings are abundant, their underutilization has led to a significant waste of spatial resources.

Figure 5-14 Current Use of Public Buildings

(Source: Photo by the Author)

5.3 Analysis of the Behaviour Activity Characteristics of Residents

5.3.1 Population Composition and Changes

Due to the relatively old construction period of housing in the Gonghe area, the quality of buildings and the conditions of public facilities are relatively poor. This has led to some former railway employees or their children choosing to leave the area and instead opt for more desirable residential spaces within the city. However, according to surveys, due to the excellent educational resources of Guangzhou Railway First Primary School within the area, some parents choose to purchase houses in this region to provide better education opportunities for their children. On the other hand, some property buyers and former railway employees choose to rent out their houses to young people who come from other places to work or who work nearby. Additionally, a certain proportion of middle-aged individuals choose to purchase these houses as residences for their parents' retirement.

Therefore, driven by rapid urban development and housing market-oriented policies, the residential structure of the Gonghe area has undergone a transformation from a single group primarily consisting of railway employees to a more diverse group of residents. With the departure of original residents and the influx of newcomers, the existing neighborhood relationships and familiar social networks have also changed. However, due to the lack of new platforms or mediums, the area lacks opportunities to establish and maintain new friendly

neighborhood relationships and social networks.
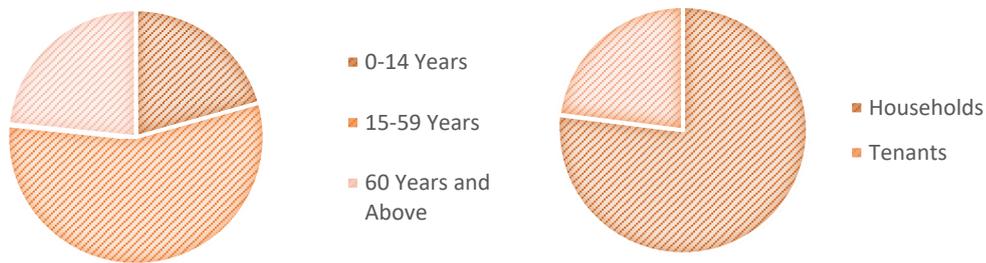
Figure 5-15 Demographic Structure of the District

(Source: Author's Own Illustration)

5.3.2 Characteristics of Human Activities in Public Spaces

(1) Activity Intensity

Through the analysis of Baidu Heatmap, it can be observed that both on weekdays and weekends, there are large and relatively active areas around the study area, providing external conditions for the internal activities within the area (Figure 5-16). However, in comparison, only certain nodes within the study area exhibit a higher level of activity, resulting in an overall lower level of activity and showing some distinct differences from the surrounding areas, indicating a weaker spatial linkage within the study area. The behavior activity surrounding the community exhibits a distinct pattern of being surrounded, with the Gonghe Area and its southeastern residential area, in particular, becoming active "concentric zones". Additionally, it is observed that the Gonghecun Community shows relatively higher activity within the study area, possibly due to its higher degree of openness. The Gonghecun Community is the most open area in terms of management within the study area, allowing external active factors to more easily penetrate into the community. However, despite some communities not imposing restrictions on external personnel, due to having only one entrance with a fence, they exhibit relatively closed characteristics within the urban context, displaying strong spatial isolation. This also leads to a lower level of activity in the internal square spaces of these communities compared to the external street spaces.
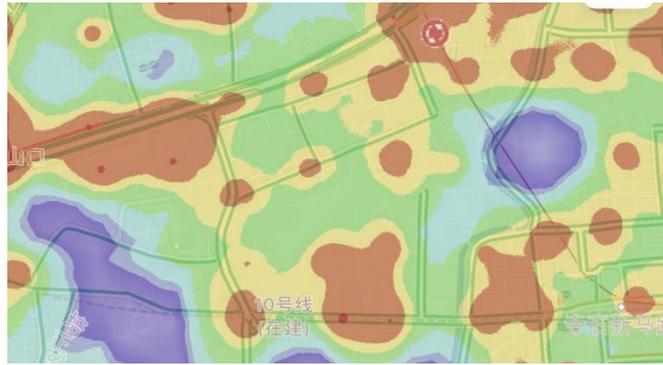
Figure 5-16 Baidu Heatmap Data

(Source: Baidu Maps)

(2) Spatial Distribution of Activities

From observations of the population in the study area during the evening period, it can be seen that within one to two hours after school dismissal, there is a significant flow of people in the boundary areas and streets, mainly consisting of underage students and parents picking up or dropping off their children on foot (Figure 5-17). During non-school hours, the street spaces are also extensively utilized due to the distribution of markets and commercial establishments for daily needs. Therefore, on weekdays during daytime, the mobile spaces attract a large number of people, particularly underage individuals, but also including residents from other age groups.

Figure 5-17 Spatial Distribution of People's Activities

(Source: Author's Own Illustration)

However, for square and other stationary spaces, the utilization rate is relatively low regardless of the time period. Only a small number of children choose to play in the square, while more elderly people opt to stay in these areas during the day. This indicates that squares and similar stationary spaces have low appeal among community residents and are utilized to a limited extent.
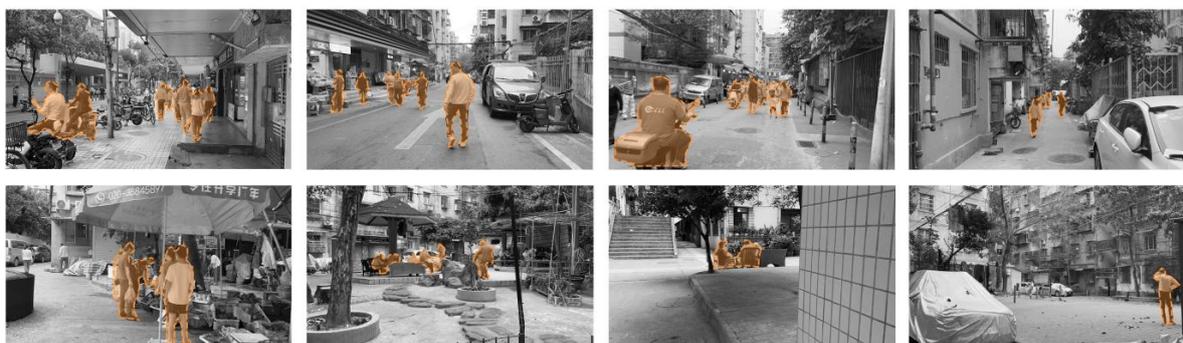
Figure 5-18 Observation of Crowd Activity in Different Spatial Types

(Source: Photo by the Author)
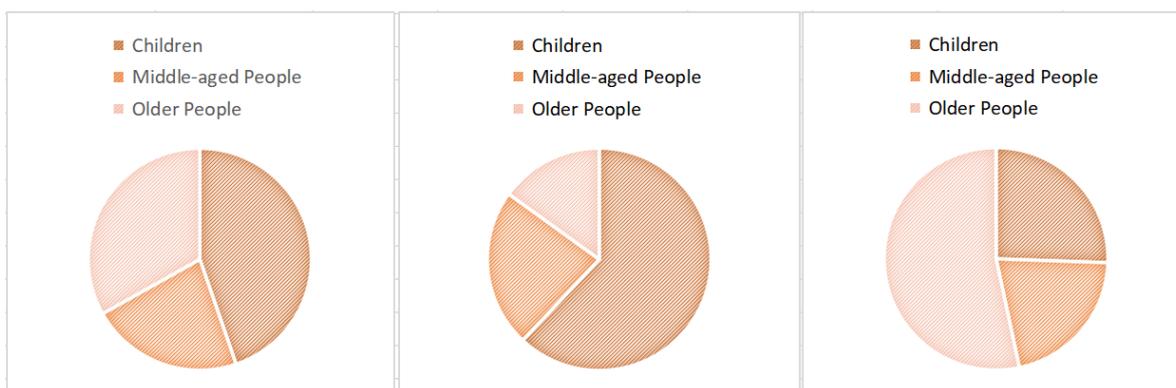
Figure 5-19 Proportion of Age Distribution in Overall, Mobility Space and Staying Space

(Source: Author's Own Illustration)

Based on this observation, it can be inferred that this phenomenon reflects certain characteristics of spatial utilization in the post-danwei community. Mobile spaces such as boundaries and streets attract crowds like students and parents due to their convenience and activity, resulting in concentrated human flow during specific time periods. However, stationary spaces such as squares suffer from low utilization, attracting only a minority of residents, particularly the elderly. This calls for further consideration on how to enhance the attractiveness of sqaures and how to meet the needs of different age groups in mobile spaces, in order to

achieve improved spatial utilization and interactions among different demographics.

(3) Time and Time Distribution of Public Space Use

By combining on-site observations and interviews, it is possible to roughly estimate the usage patterns of different population groups in the public spaces of the area (Figure 5-20). Based on the duration of their stay and usage patterns, it can be observed that people utilize public spaces relatively less frequently. This applies not only to residents within the area but also to surrounding residents and businesses, whose usage is even lower. This situation may be attributed to various factors, such as the lack of attractive facilities and convenient conditions in the space, or it may be influenced by people's own social and spatial usage habits.

Figure 5-20 Characteristics of Time Spent on Public Space by Different People

(Source: Author's Own Illustration)

In this area, the elderly tend to be more active during the daytime, while children and middle-aged adults appear during the morning and evening peak hours due to school and work commitments. For non-residents, other urban residents pass through this area during the daytime for commuting purposes or visit the market for shopping, while vendors are most active during meal times.
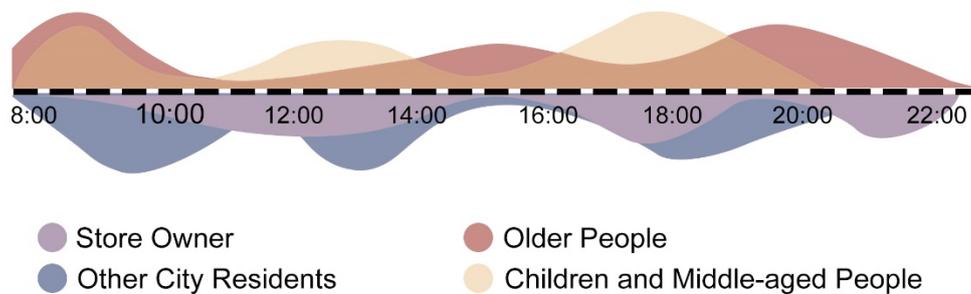
Figure 5-21 Characteristics of the Time Distribution of Human Activity

(Source: Author's Own Illustration)

Therefore, in this area, different population groups tend to use public spaces at different times during the day, avoiding peak usage times and overlapping with each other less frequently. However, there are still instances of activities during morning and evening peak periods, and the period from evening to night is when all types of people are most flexible, available, and likely to engage in social interactions.

5.3.3 Research on Types of Activities

In "Interaction and Space," Jan Gehl categorizes behaviors in public spaces as necessary, spontaneous, and social activities[84]. The quality of public spaces and the activities they offer are closely linked. Well-designed public spaces are attractive and encourage different groups to stay longer, fostering social interactions.

Table 5-5 Table Summarising the Types of Behaviour Research

(Source: Author's Own Illustration)

Type	Age	Frequency	Contents
Necessary Activities	Middle-aged and older people	87	Grocery Shopping
	Middle-aged and older people	5	Hanging Clothes
	Middle-aged and older people	12	Rest
	Middle Youth	21	Cycling
	Teenagers	221	Going to And From School
	All	18	Eating
Spontane-ous Activities	Middle-aged and older people	3	Use of Fitness Equipment
	Middle-aged and older people	5	Walking a Dog
	Middle-aged and older people	12	Read the newsstudy
	Middle-aged and older people	21	Parents Take With Children
	Middle-aged and older people	18	Take a Walk
	Young People	3	Smoking
Social Activities	Middle-aged and older people	12	Chatting
	Middle-aged and older people	7	Dancing
	Middle-aged and older people	10	Playing Cards and Chess
	Teenagers	4	Playing the Ball
	Teenagers	5	Playing Games

Therefore, this study first summarizes the types of activities conducted by residents in post-danwei communities. By integrating the findings from the spatial research of each activity

type and organizing the activity data, the study correlates age information with activity content. This process helps identify the corresponding patterns between different age groups, their daily habits, and activities within the current site. The frequency of activities is recorded based on the number of occurrences within a specific time period. Thus, the frequency of activity can be used to determine the activity characteristics, habits, and preferences of the population in the area.

Based on the summarized information (Table 5-5), it can be observed that the activities conducted by residents in such communities are mostly categorized as necessary activities, with a relatively high proportion, while social activities and spontaneous activities are relatively low. Among the different categories, mobile and transitional activities such as walking and cycling have a higher proportion, while gathering and interactive activities such as playing cards and games are minimal. This indirectly indicates that the public space in the post-danwei communities is poorly designed, which makes it difficult to stimulate social interaction and usage among residents. Additionally, after the transition, the interpersonal network within the area is relatively loose, lacking strong bonds and emotional connections.

From an age perspective, most elderly people tend to engage in static activities, but there are also a few who participate in relatively dynamic social activities within specific domains. In terms of spatial distribution, middle-aged and elderly people, as well as children, are more inclined towards community-based gathering activities, while young people rarely gather. Their behavioral activities primarily occur in open and highly mobile spaces, with very few instances of prolonged social interaction.

Analyzing the spatial distribution of activity types, it can be observed that necessary activities and spontaneous activities occur more frequently in linear spaces such as streets or boundaries, while social activities predominantly occur in punctual or planar spaces such as entrances and squares. Therefore, the area should focus on improving the coupling and interactivity between different scenes and activities, as well as enhancing the spatial quality of each area, in order to further stimulate social interaction and vitality among the population in the area.

5.3.4 Negative Use of the Public Space

Therefore, by considering the overall activity level of public spaces and analyzing the types of activities and their usage, it is possible to identify and extract public spaces within the area that currently have low utilization rates or potential for optimization. These spaces mainly include underutilized squares with low vitality and boundary areas and pedestrian walkways that are not being utilized effectively (Figure 5-22).

Figure 5-22 Spatial Distribution of Negative Squares and Negative Boundaries

(Source: Author's Own Illustration)

5.4 Human Needs Analysis

5.4.1 Stakeholder Analysis

Community renewal projects need to consider the ideas and involvement of various social stakeholders throughout the process. In the case of the Post-danwei community, taking the example of the Gonghe Area, the analysis of stakeholders' interests can be obtained through interviews, surveys, and a combination of relevant research (Figure 5-23). It is important to consider whether the government has relevant policy support and promotion, as well as the impact of previous policies on the district. At the same time, although designers have the ability to directly influence the transformation outcomes, they need to integrate the promotion from the neighborhood committee and the opinions of local residents. Therefore, in the transformation of such post-danwei communities, the needs and opinions of residents are also crucial.

Figure 5-23 Stakeholder Cycle Diagam

(Source: Author's Own Illustration)

The Power-Interest Matrix (Figure 5-24) helps urban designers identify the target population they want to serve and prioritize stakeholders to consider during the design process. The matrix shows that local residents are the core group that designers need to serve, while the government and neighborhood committees have the most power to support and promote the implementation of the transformation. Therefore, it is necessary to consider how to improve residents' quality of life while promoting urban development and achieving a win-win situation at a broader urban level in this project.
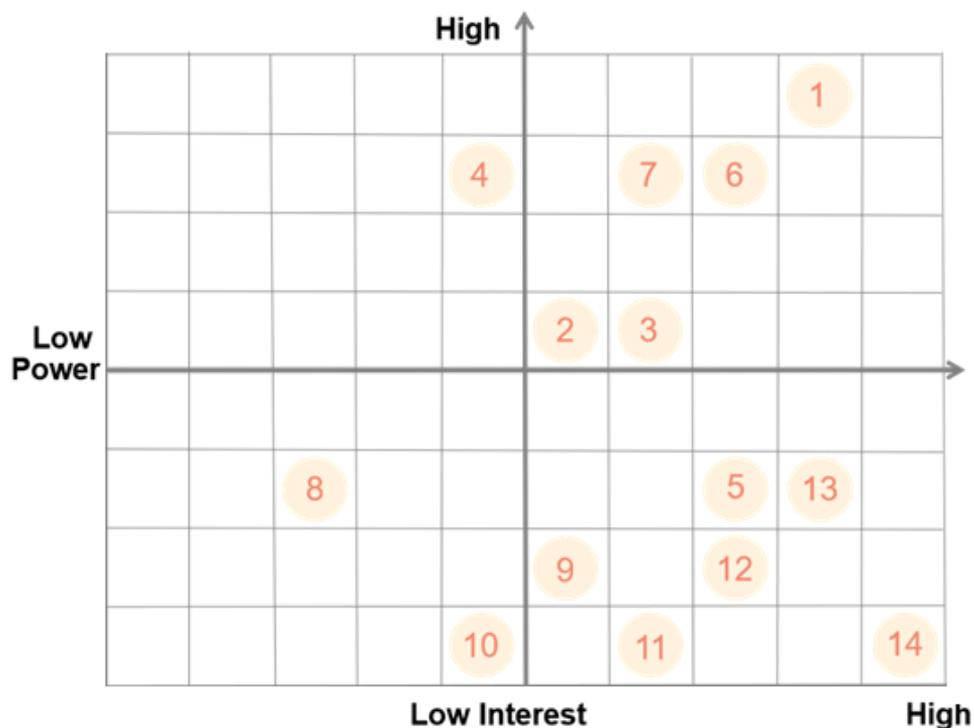
Figure 5-24 Power - Interest Matrix

(Source: Author's Own Illustration)

5.4.2 Function Requirements Analysis

During the interviews, it can be noted that while the facilities and spaces within the community are able to meet the needs of some residents, a significant portion of residents from different age groups have put forward new demands and expectations for the community's public space functionality (Figure 5-25). This indicates that there is potential for improvement in the spatial quality of the community, which can be enhanced through renewal and transformation to provide a more enriched lifestyle for different demographics. Additionally, promoting the multifaceted use of spaces can facilitate interactions among diverse groups of people.
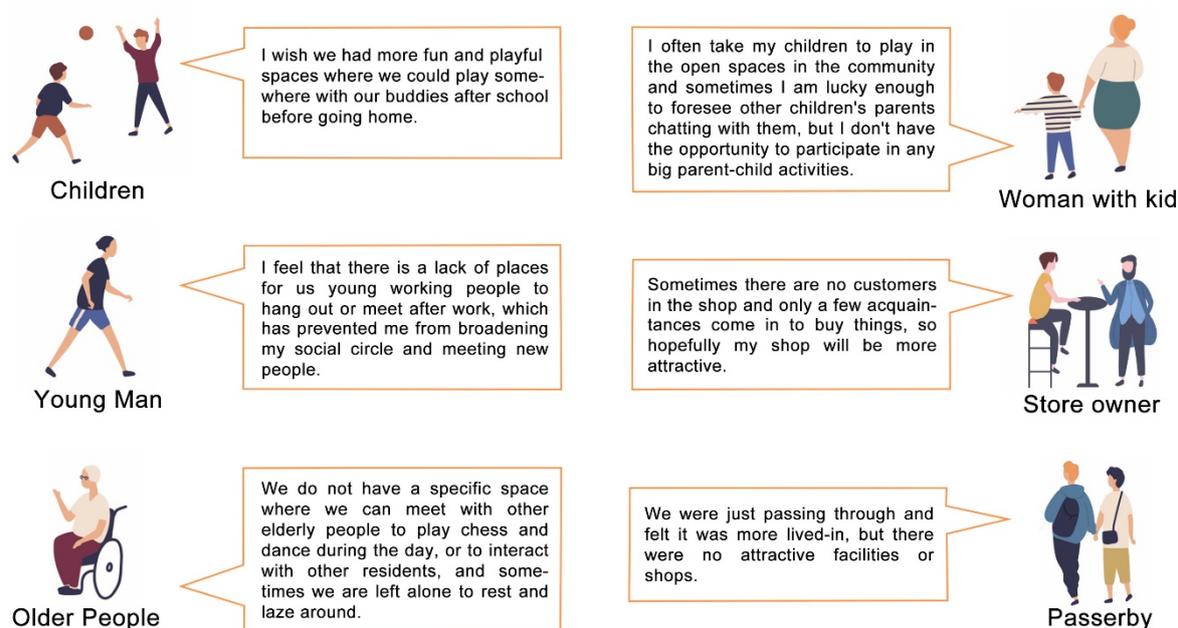
Figure 5-25 Collective Needs Interview Transcript

(Source: Author's Own Illustration)

Based on the survey results, it can be seen that the majority of residents hope for improvements in community activities and neighborhood assistance. They desire the community to provide space and platforms to facilitate communication among residents. Additionally, they also expressed a need for additional convenience facilities or supplementary spaces for households, such as storage areas, drying zones, etc., to meet their needs. These spaces can also serve as areas for leisure, social gatherings, and food sharing, providing convenience and enjoyment for community residents. These survey results indicate the

residents' demands for community functionality and communication spaces, providing important reference points for the renewal and design process (Figure5-26 and Figure6-27).
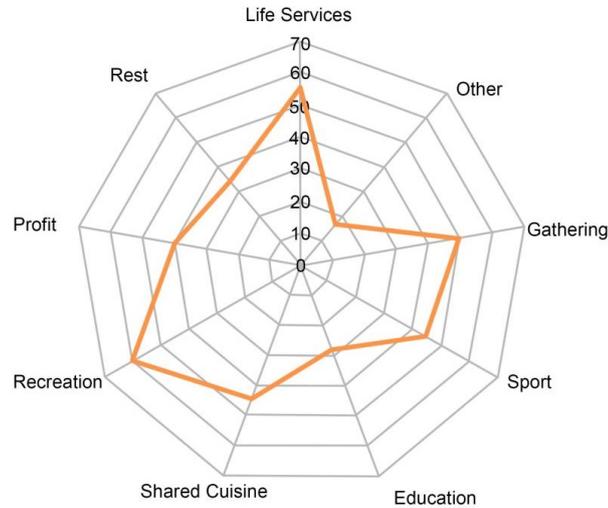
Figure 5-26 The Purposes of Residents' Use of Space

(Source: Author's Own Illustration)
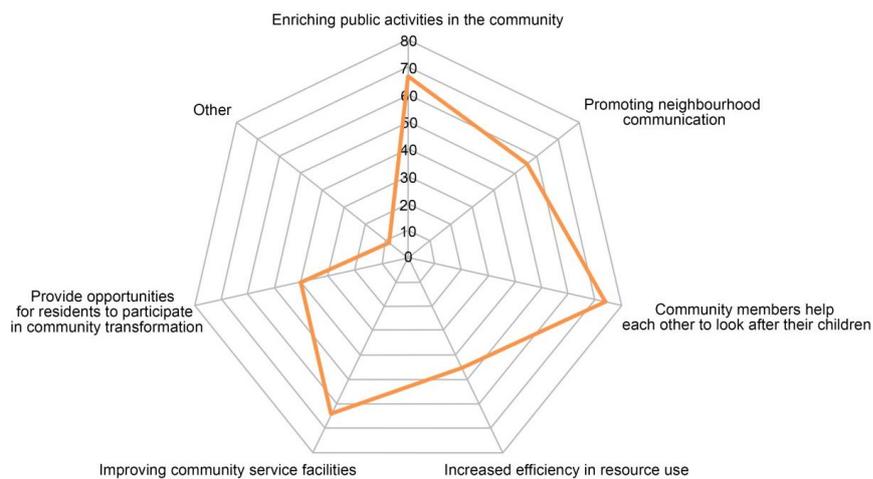
Figure 5-27 Spatial Function Demand Tendencies

(Source: Author's Own Illustration)

5.5 Chapter Summary

The above research is synthesised to summarise the problems of the Gonghe Area at four levels: spatial, temporal, social relations and community governance.

(1) From a spatial perspective, the post-danwei community in this area has deficiencies in the construction of the urban public space system. Specifically, there is a lack of effective linkage between the public spaces at the community level and the city's street spaces and other

community public spaces. The functionality and visual interaction are also insufficient. In addition, the distribution of public spaces is scattered and lacks effective layout and connectivity, making it difficult for residents to form a cohesive community network. In the community-level public spaces, there is a notable lack of integration, resulting in a rather scattered and disordered allocation of already limited spatial resources. Additionally, the construction of pedestrian-friendly infrastructure is insufficient, leading to lower comfort and safety levels on certain street segments, thereby failing to establish a coherent and high-quality pedestrian network.

Secondly, public spaces suffer from issues such as irrational functional layout, insufficient facilities, low quality, and low utilization rates. In some communities with early construction periods and high building density, they are also affected by road occupancy for parking and informal structures, resulting in the occupation of street spaces within the community, further exacerbating the shortage of space in terms of area and quantity. Additionally, the design of some squares and boundary spaces, as well as the target user types, tend to be single-minded, lacking diverse activity types and failing to meet the needs of users from different age groups. This reflects the lack of functionality, as it fails to effectively promote social interaction among residents and the establishment of neighborhood relationships. As a result, many public spaces have low utilization rates, leading to negative or idle phenomena.

From a more microscopic point of view, the public space nodes lack high-quality construction and reasonable functional division. Specifically, the environmental quality of the spaces is low, lacking well-designed areas for people to rest and points of spatial memory. At the same time, there is a lack of clear boundaries between public and private spaces, resulting in disorderly and chaotic environments.

(2) From a temporal perspective, there is a lack of a well-established mechanism for the effective use of public spaces, and the inefficient utilization of time leads to certain public spaces being idle or underutilized during specific time periods. The combination of low spatial quality contributes to the common phenomena of low utilization, idle spaces, and abandonment of public spaces, failing to meet the needs and activities of residents. Therefore, the area lacks flexibility and diversity in time planning, unable to accommodate the time demands and

lifestyles of different resident groups, and it also restricts opportunities for residents to engage in various types of activities.

(3) From a social relationship perspective, there is a lack of active social interaction and awareness of space sharing within the community., and the communication and neighborhood relationships among residents are relatively weak, resulting in a lack of community cohesion and a sense of belonging. The disintegration of the danwei community breaks the closed network community structure, and the mobility of spaces reshapes residents' lifestyles while generating new social relationships. As a result, there is limited interaction between people from different backgrounds and different age groups, and there is a lack of intergenerational communication and mutual assistance, leading to limited social relationships within the community.

(4) From the perspective of community governance, the study area lacks effective management mechanisms. Due to the withdrawal of the certain danwei, some communities currently lack new institutions willing to take over the management of community properties, resulting in a governance vacuum. This leads to inadequate community management, making it difficult to maintain and improve public spaces, further exacerbating the deterioration of community living conditions. Moreover, the spatial governance entities in the study area are relatively singular, with low levels of resident participation. The lack of awareness of collective management and participation in decision-making has an impact on the overall development and improvement of the community.

In conclusion, the post-danwei community, exemplified by the Gonghe Area, faces various challenges, including spatial inadequacy, low time utilization efficiency, weak social relationships, and inadequate community management. Addressing these issues requires improvements in the layout and design of public spaces, providing diverse activities and services to promote social interaction and intergenerational communication within the community. Additionally, strengthening community management mechanisms and fostering residents' awareness of participation and cooperation are essential to enhance the overall quality of life and community development in the post-danwei community.

Chapter 6 The Practice of Public Space Renewal in Gonghe Area Based on the Sharing Strategy

6.1 Rationale for the Design Strategy

The design strategy based on the concept of sharing is a problem-oriented and context-specific approach derived from the analysis of issues in the Gonghe Area. It involves proposing shared patterns for optimizing public spaces in response to site-specific problems. This strategy takes into consideration the functional requirements, adaptability, and feasibility of the site to ensure that the proposed design is implementable and aligns effectively with users' needs. By optimizing resource allocation and enhancing the sense of sharing and identification, the design aims to foster a stronger sense of community and belonging.
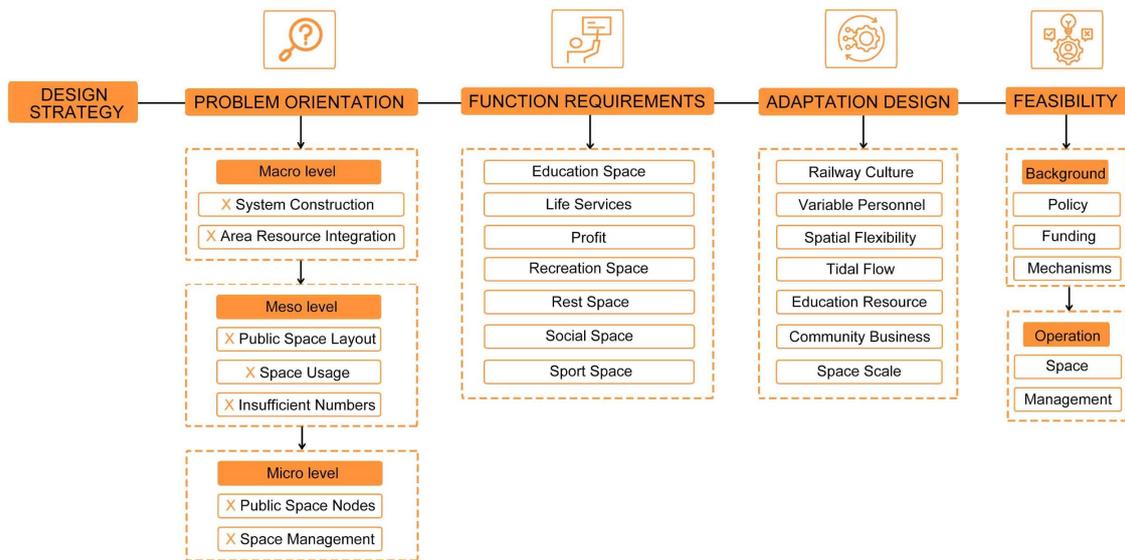
Figure 6-1 Framework for the Rationale of the Design Strategy

(Source: Author's Own Illustration)

6.2 Life Circle Level: 15-minute Living Circle Sharing

6.2.1 Sharing of Facilities to Complement Internal Needs

Due to the predominantly residential function of the Gonghe Area, the existing facilities on the site are inadequate. However, considering the scarcity of land and the complexity of land use changes, the possibility of adding additional large-scale public facilities within the site is limited. Therefore, it is necessary to address the deficiency of facilities from a more

macroscopic perspective, focusing on the living circle surrounding the Gonghe Area.

An inventory should be conducted of existing public service facilities within a 15-minute radius of the Gonghe Area, such as healthcare, elderly care, education, and more. Based on the usage and current status of these facilities, a facility map should be created, connecting the facility network and providing a multifunctional urban space for residents in the surrounding areas. In the process of macro urban planning and design, the demand for resource sharing should be fully considered. Public facilities and resources should be distributed rationally within the community, ensuring that residents can meet various needs within a 15-minute walking distance. Through proper layout and planning, the convenient accessibility of these facilities within the community is ensured. This approach promotes the efficient utilization of resources, reduces waste, lowers the living costs for each resident, and improves the convenience and comfort of life within the living circle.
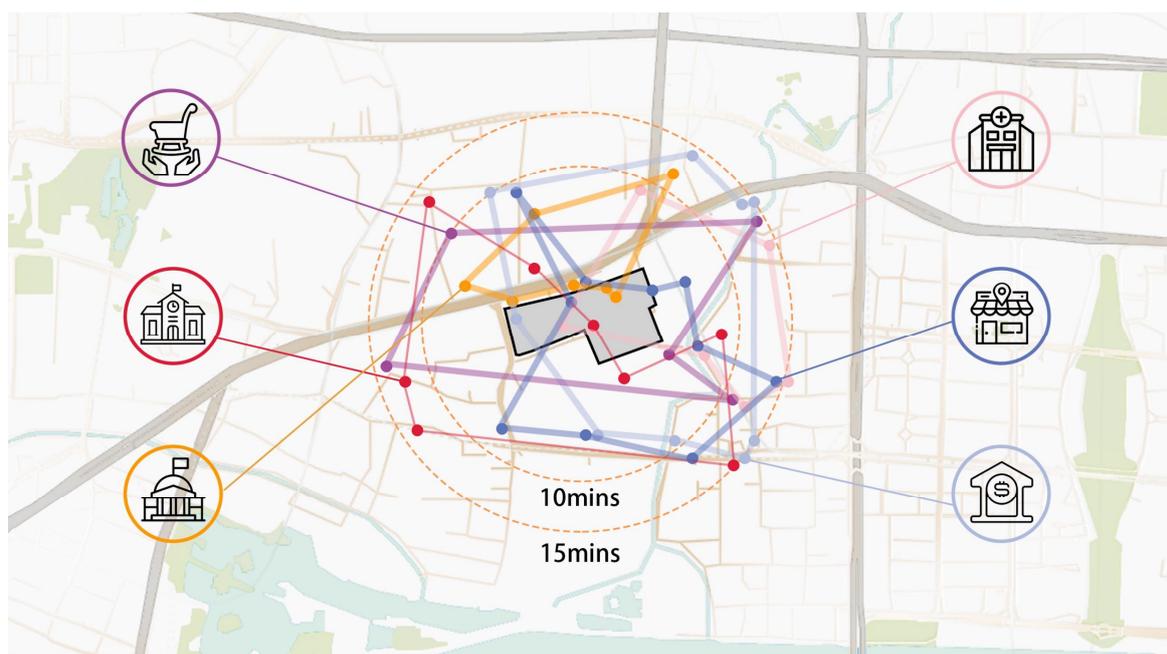
Figure 6-2 Shared Community Public Service Facilities

(Source: Author's Own Illustration)

Furthermore, according to the research findings, it is evident that the Gonghe Area is largely facing insufficient parking spaces. However, due to the existing constraints on public spaces and the aged construction of buildings within the site, the possibility of adding new parking facilities, either on the surface or underground, is limited. Therefore, a more viable

approach would involve exploring and sharing parking resources within walking distance. Based on the usage patterns of surrounding parking lots and the site's characteristics, establishing certain public parking lots can be considered.

To facilitate effective sharing and management of parking spaces, the community can establish corresponding management mechanisms and rules, including reservation methods, time restrictions, and sharing guidelines. By promoting the sharing of parking spaces within the living circle, wastage and underutilization of parking spaces can be reduced, leading to improved efficiency in the utilization of parking resources. This approach helps alleviate parking difficulties and provides residents with a more convenient parking experience.
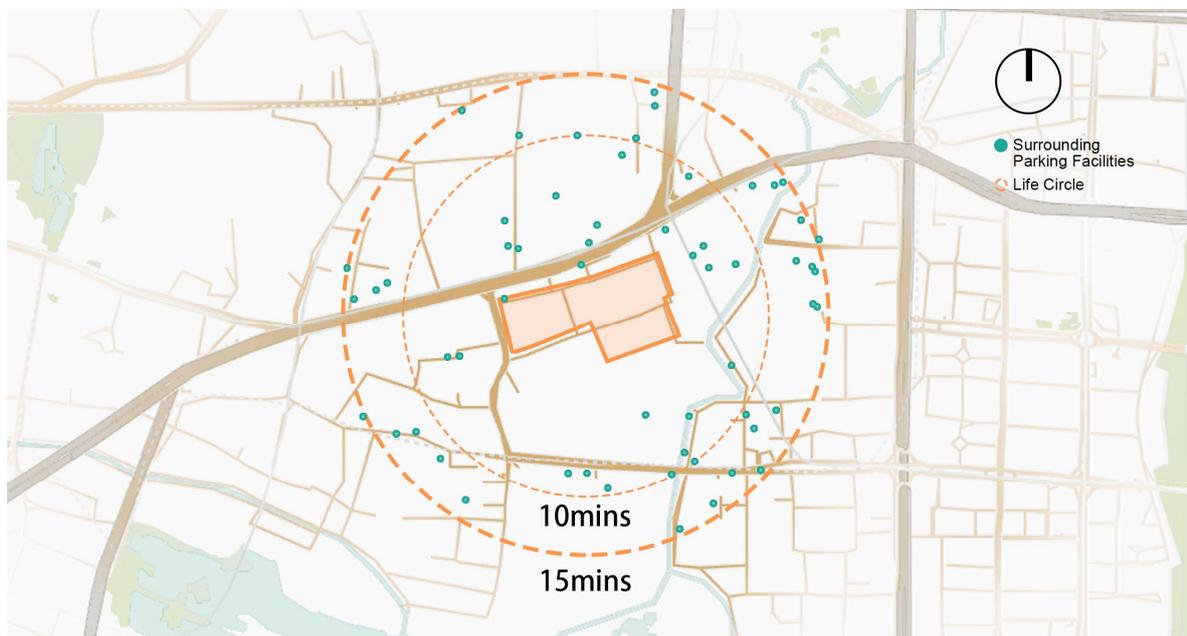
Figure 6-3 Mining and Sharing of Parking Resources Within the Community Lingving Circle

(Source: Author's Own Illustration)

6.2.2 Additions to the Function, Responding to External Needs

The functional design of the internal public spaces within the site takes into consideration the supplementation of missing functions in the surrounding areas. Given the presence of numerous aging residential communities in the vicinity, which lack certain centralized public facilities, the proposed design intends to address the surrounding demands. Within the design scope, there are plans to provide high-quality educational resources and childcare facilities, social and cultural venues, markets and commercial spaces for daily needs, as well as sports

and fitness facilities. This array of amenities aims to offer diverse entertainment, leisure, and cultural experiences, thereby fostering interactions among the residents within the living circle. These facilities will serve as shared resources for the neighboring residents, reducing resource wastage and redundant construction. Improving the quality of life for the surrounding residents, these amenities will offer more opportunities for social and cultural activities while enhancing the vibrancy of the area.
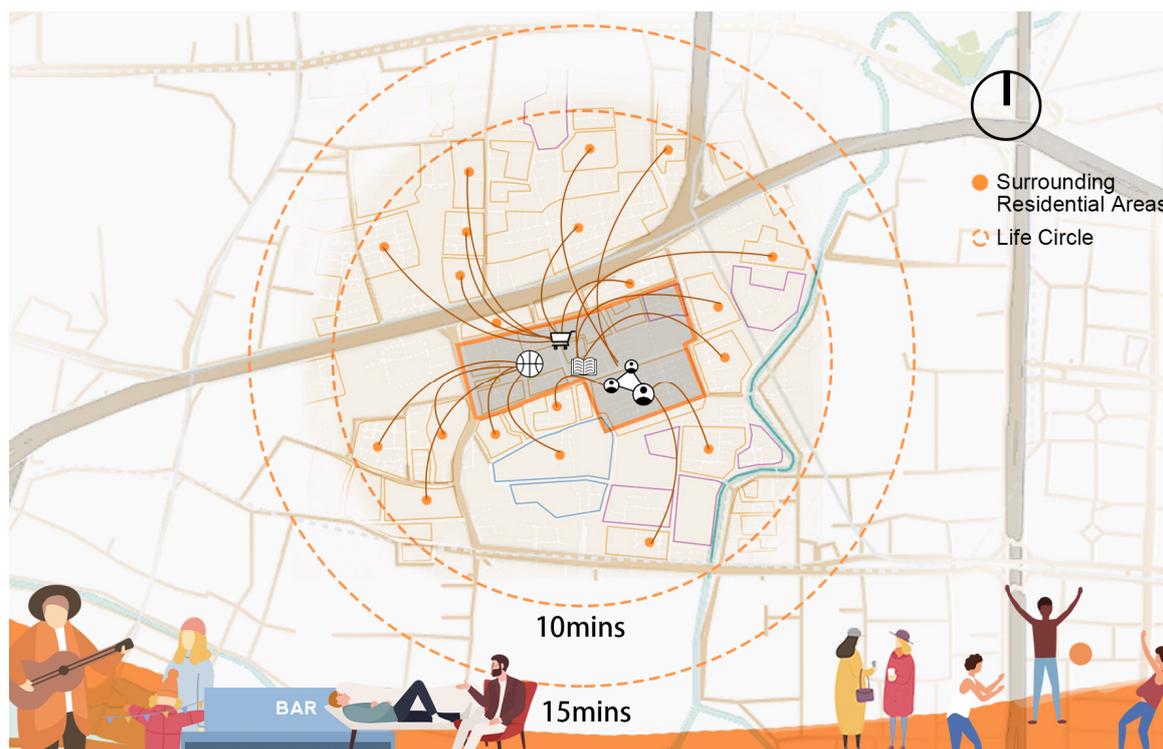
Figure 6-4 Planning the Functions of the Area in Response to External Demand

(Source: Author's Own Illustration)

6.3 Area Level: Analysis of the Potential for Community Space Sharing

6.3.1 Sorting Out the Community Stock and Clarifying the Location and Scale of Sharing

Based on detailed research conducted on the Gonghe Area as mentioned earlier, it has been observed that the underutilized public spaces within the community's built environment, including indoor, above-ground, and open spaces, constitute valuable existing community assets. These spaces can be revitalized through renewal and transformation. Evaluation should be conducted based on their current usage to identify spaces that are either unused or utilized

in a suboptimal manner but hold potential for shared utilization. These identified spaces become the target for spatial renewal and transformation. These spaces can be categorized into three levels based on their scale and location: district-level, community-level, and building-level. The identified existing resources primarily consist of medium to small-scale spaces. These spaces have strong potential for transformation and are relatively easy to work with (Table 6-1). They are distributed over a wide range and involve fewer stakeholders, making their implementation less challenging.

Table 6-1 Sorting Space Resources

(Source: Author's Own Illustration)

Levels of Sharing	Shared Space	Spatial Characteristics
District Level	Shared Streets	Larger and More Communal
	Shared Service Facilities	
	Shared Square, Green Space	
Community Level	Shared Internal Streets	Fragmented Spatial Distribution, Rich and Differentiated in Size and Type, Both Inward and Outward Spatial Characteristics
	Shared Parking Spaces	
	Shared Green Space	
	Shared Event Space	
	Shared Facilities	
	Shared Boundaries	
Building level	Shared Community Activity Center	Focused on the Interior Architectural Space and Building Accessibility
	Shared Ground Floor Space	

According to Figure 6-5, the existing spaces available for renewal in the Gonghe Area primarily include the square spaces within Gonghecun Community, certain border spaces, outdoor activity areas within Gonghe Yiyuan and Gonghe Sanlu Communities, as well as street corner sites around the Lao Baoshe Community. In terms of buildings, the focus is primarily on the spatial renewal and functional transformation of Guangtie Elderly Activity Center, Guangtie Staff Fitness Center, the unrented commercial spaces on the south side of Gonghexi Market, and the underutilized low-rise buildings on the south side of Gonghecun Community.

Figure 6-5 Stock Resource Exploration

(Source: Author's Own Illustration)

6.3.2 Clarification of Requirements, Combination of Functions

(1) Define Space Requirements

In this area, there are five main groups of space users, including residents of different age groups, ground-floor commercial tenants, and neighboring residents. The design aims to identify their functional requirements and corresponding spatial needs. Through research, it is evident that different types of space users exhibit certain tendencies and overlaps in their spatial demands.

Through the analysis of Sankey diagrams, it becomes evident that different demographic groups universally exhibit social and recreational needs (Figure 6-6). By assessing the degree of overlapping demands and their respective magnitudes, one can ascertain the proportion of spatial allocation for specific functions and identify the potential for shared usage and interaction among diverse users within different public spaces. By comprehensively understanding and recognizing these needs, more effective spatial design and planning can be achieved to cater to the requirements of various population groups and create appropriate environmental spaces.
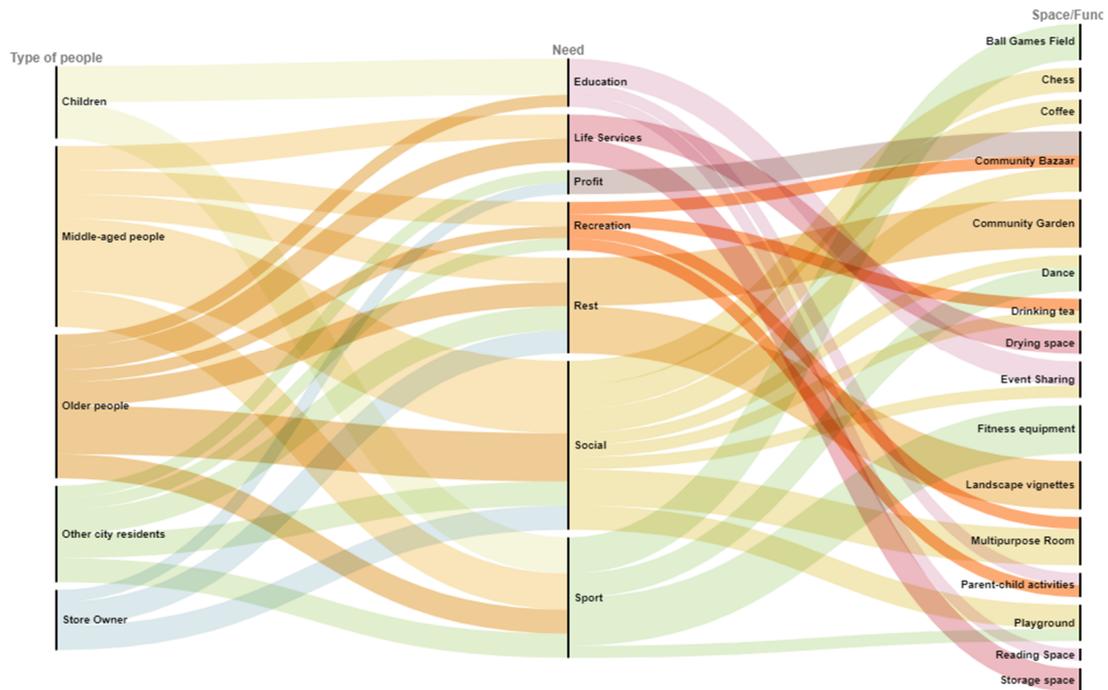
Figure 6-6 Crowd-Demand-Space Matching

(Source: Author's Own Illustration)

(2) Function - Space Combinations

By matching different types of requirements with corresponding spaces, it is evident that spaces with distinct functionalities can be combined based on their characteristics. In this manner, diverse user groups can utilize these spaces simultaneously or at different time periods, thus meeting their respective needs. The functional combinations primarily consider the following three aspects:

From the perspective of functional interrelationships, it is essential to ascertain the connections and complementarities among various functional zones. For the Gonghe Area, given the abundance of educational resources, there is a substantial demand for spaces dedicated to parent-child activities and community children's activities. Therefore, combining and merging children's activity areas with parent-child spaces in spatial arrangements facilitates concentrated play for children and allows residents to mutually supervise children's activities, thus fostering a sense of community through neighborly assistance. Additionally, there might be associations between leisure and entertainment zones and temporary activity areas in terms of the nature and content of the events. By considering these interrelationships, different

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functional zones can be effectively integrated.
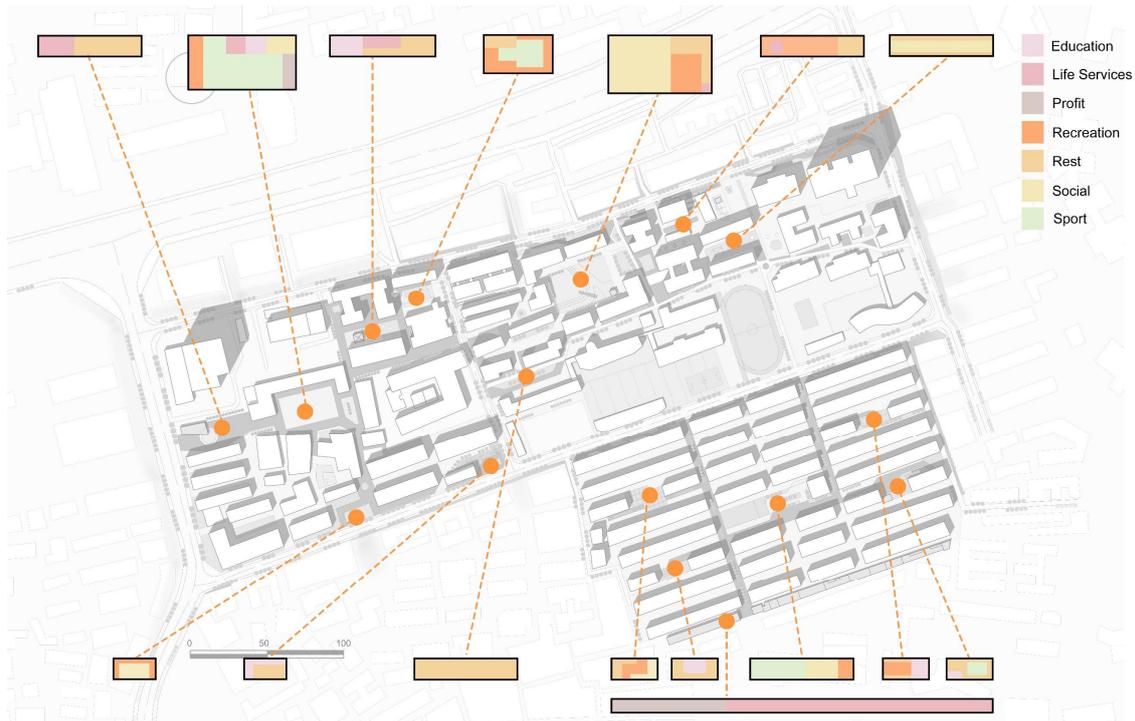
Figure 6-7 Combination of Functions and Spaces in Gonghe Area

(Source: Author's Own Illustration)

From the perspective of spatial scale and allocation, it is important to allocate and plan the site space rationally based on the characteristics and spatial requirements of different functional zones. Certain areas might necessitate larger spaces, such as sports areas or event venues, while others might only require relatively smaller spaces, like leisure zones or cultural and artistic areas. Effectively combining and allocating these zones would be beneficial.

From the perspective of spatial hierarchy and structure, considering the spatial hierarchy and structure between different functional zones is crucial. Areas within the community designated for children's play or fitness activities require more open and spacious settings, while other zones may require more private and tranquil spaces, such as leisure areas or reading zones. Through appropriate spatial layout and hierarchical design, different functional zones can harmoniously coexist and achieve overall balance.

6.4 Spatial Strategy: Function Combination

6.4.1 Overall Design

(1) Public Space System Generation

Before undertaking the overall spatial and site layout design, it is crucial to analyze and determine the access points and boundaries that can be opened to the public for each neighborhood or unit based on site management, spatial utilization, and exploration of existing stock resources. This process helps establish the shared interfaces within the district and the city's public pathways. Simultaneously, to conserve spatial resources, certain community walls will be removed based on residents' preferences and research findings, leading to the merging of smaller-scale communities. This action releases previously fragmented boundary spaces alongside the existing walls, facilitating their integration into more comprehensive and sizable public spaces, thereby enhancing the transformation potential and utilization value of the spaces. Additionally, considering the need for significant parking spaces in the Gonghecun Community and Yanghe Community, it is essential to re-plan the pedestrian and vehicular entrances to avoid pedestrian-vehicle conflicts within the community, thereby improving the walking experience within the public space.

Additionally, to save space resources, some dividing walls between communities can be demolished based on resident preferences and research findings. Several smaller-scale communities can be merged, freeing up fragmented boundary spaces along the original walls and integrating them into more cohesive and sizable public spaces, enhancing the potential for spatial transformation and usability. Furthermore, for Gonghe Village and Yangheyuan, as they involve a certain scale of parking space, it is important to redesign pedestrian and vehicular entrances to avoid mixing pedestrian and vehicular traffic within the community, thereby improving the pedestrian experience in shared spaces.

Ultimately, based on the determination of open boundaries and the reorganization of community boundaries, the creation of public interfaces is established. In addition to city-level roads, multiple street and alley spaces are created, including the area north of Guangzhou Railway First Primary School, south of Yangheyuan Community, within the Gonghecun

Community, and east of Xiyuangang Community. These spaces are interconnected through important nodes such as community markets, community squares, landscape and recreational spaces, and fitness centers.

STEP1
Analysis of openable entrances and boundaries

STEP2
Community mergers, resource consolidation and realignment of human and vehicle entrances

STEP4
Creating nodal spaces and linking shared systems

STEP3
A system of public spaces in tandem to create a public interface

Figure 6-8 Scenario Derivation

(Source: Author's Own Illustration)

(2) Scheme Generation - Master Plan

In the final design of the site, emphasis is placed on the interaction with the surrounding environment and the creation of multi-functional public spaces within the district that are interconnected, fostering community activities and communication. These public spaces include community street corner parks, inner courtyards, community gardens, and outdoor recreational facilities, among others. Furthermore, considering the diverse needs of different age groups and interests, a variety of activity options are provided, such as shared children's play areas, fitness facilities, and cultural activity venues. The overall planning design is

illustrated as follows.

01 Convenient Facilities	06 Convenient Facilities	11 Community Garden	16 Commercial corridors	21 Parent-child interactive space
02 Swimming Pool	07 Leisure Plaza	12 Linear Park	17 Children's World	22 Shared Living Room
03 Cultural Square	08 Vibrant Street Corner	13 Shared Living Room	18 Community Learning Corner	
04 Fitness entrance plaza	09 Shared Coffee	14 Shared Chess	19 Multi-purpose square	
05 Corner Square	10 Multi-purpose square	15 Linear Park	20 Community Recreation Plaza	

Figure 6-9 Master Plan

(Source: Author's Own Illustration)

(3) The Impacts Generated by the Spatial Sharing System on the Surrounding Area

The generation of spatial sharing systems within the Gonghe Area not only provides its residents with an array of activity venues and abundant opportunities for social interaction, but it also significantly enriches the vibrancy of community life, infusing the entire area with a captivating charm and invigorating vitality. As a result, the allure of the Gonghe Area intensifies, drawing in residents from neighboring regions who eagerly partake in the utilization of these public spaces and actively engage in the diverse community activities.

Beyond its direct impact on the Gonghe Area, the establishment of spatial sharing systems also reverberates positively throughout the surrounding urban spaces. By enhancing the accessibility and sustainability of urban areas, these systems ensure that residents can easily access and enjoy various amenities and services. The spirit of effective collaboration and cooperation fostered by these renewed spaces facilitates a seamless integration and optimum utilization of urban resources, elevating the overall image and attractiveness of the city to new

heights.
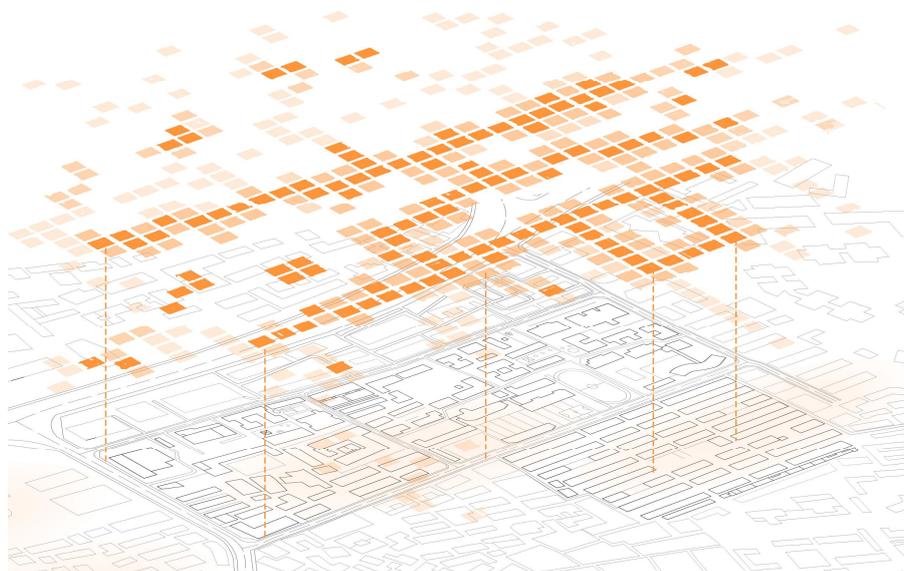
Figure 6-10 The Activation Effect of Sharing

(Source: Author's Own Illustration)

6.4.2 Street Space Sharing Model

(1) Hierarchy of Street Systems

Creating community street spaces and optimizing the degree and mode of sharing can be classified into levels based on the public, semi-public, and private nature of the streets (Figure6-11).

For streets with a strong public nature, it is recommended to create spacious public streets in the core areas of the community or along major transportation routes to accommodate pedestrian, bicycle, and motor vehicle traffic. These streets should provide ample sidewalks and be equipped with appropriate traffic signals and facilities to ensure the safety of pedestrians and cyclists. Public streets should have ample activity spaces, such as leisure areas, cafes, and shops, to encourage community interaction and social activities.

For semi-public street spaces, it is recommended to designate them between communities or within the community, with certain restrictions on vehicular traffic, in order to provide more space for pedestrians and cyclists. These semi-public streets will feature rest areas, green spaces, and public artworks, offering residents opportunities for relaxation and social interaction.

As for private streets, they are located near buildings and aim to ensure privacy and safety for residents. These streets can employ measures such as block-scale design or other controls to safeguard residents' privacy.
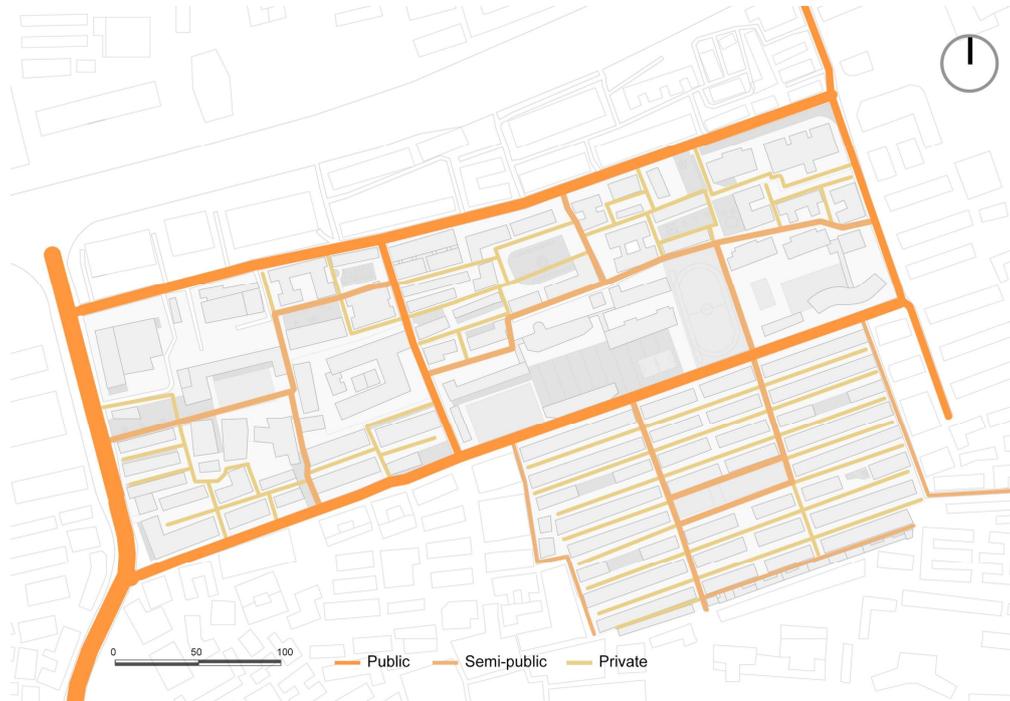
Figure 6-11 Street Hierarchy Design

(Source: Author's Own Illustration)

By categorizing streets into public, semi-public, and private levels, the shared streets in the Gonghe Area can meet the diverse needs of different resident groups, striking a balance between openness, sociability, and privacy. This enables residents to enjoy a vibrant community interaction, a healthy lifestyle, and sustainable transportation choices.

(2) Street Public Interface Creation

Based on the previous analysis, since the majority of communities in the area already have a certain level of openness and allow free access for urban residents, the design can incorporate an open and sharing concept for some communities, encouraging the integration of the community with its surrounding environment. This can be achieved by transforming traditional enclosed walls into open entrances and flexible boundaries, connecting the community more closely with the external environment.

For the boundaries that can be opened, promoting interaction and communication between

the community and its surroundings can be achieved by opening up the community borders and releasing boundary spaces (Figure 6-12). This creates an open, inclusive, and vibrant public interface. By utilizing the community boundary spaces, the spaces can be created for both community residents and neighboring residents to enjoy.
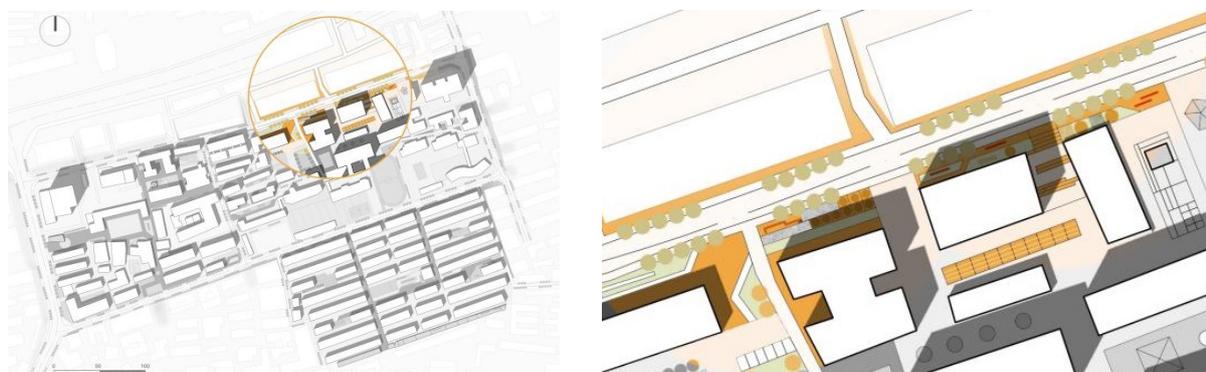
Figure 6-12 Plan View of the Creation of the Public Interface in the Street

(Source: Author's Own Illustration)

For example, rest areas, cultural and artistic displays can be set up at the community boundaries, providing leisure and entertainment venues for residents and enhancing the cultural atmosphere of the community (Figure 6-13). Additionally, information devices and digital displays can be added at street interfaces to provide pedestrians with useful information and entertainment.
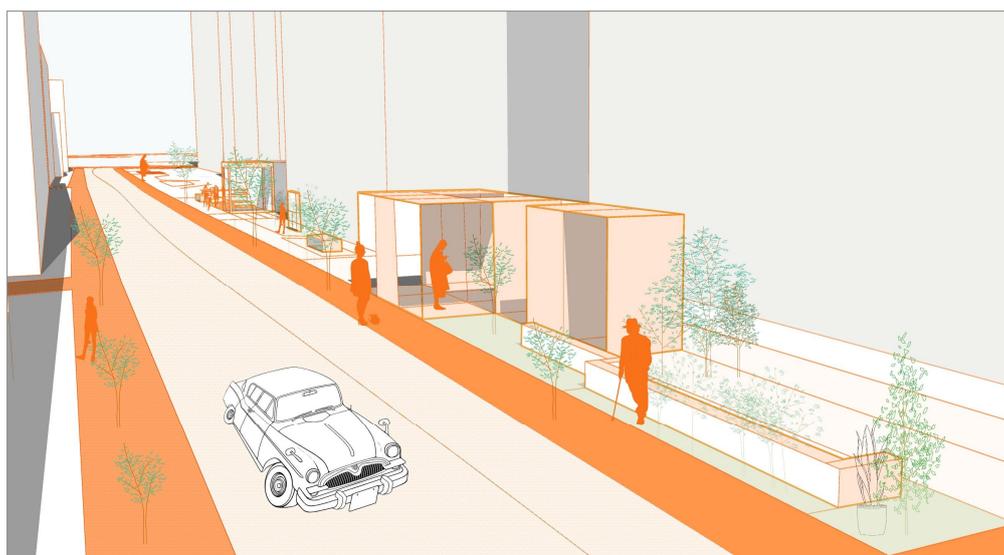
Figure 6-13 Spatial Effects of Creating Public Interfaces in Streets

(Source: Author's Own Illustration)

Furthermore, within the site, due to early construction and inadequate management, there

is a lack of well-designed sidewalks. Taking Gonghe Road 3 as an example, both sides of this road lack pedestrian spaces, which poses a certain level of risk for students when they pass through this road during their commute to and from school. Moreover, the border spaces of the adjacent communities along the street are rarely used or passed by during the day. So the design integrates the underutilized border spaces with the existing dilapidated sidewalks, aiming to improve pedestrian friendliness, space utilization, safety, and convenience, based on the actual conditions (Figure 6-14).

To enhance safety for students walking, curb stones are installed at the edge of the sidewalk to separate it from the roadway. A buffer zone is also designed, which preserves a certain level of privacy for community residents while promoting interaction within and outside the neighborhood. Furthermore, pedestrian-friendly facilities are added to the sidewalk, facilitating shared use by pedestrians on both sides.

Figure 6-14 Comparison of Before and After Street Boundary Improvements

(Source: Author's Own Illustration)

For gated communities or school boundaries that require closed interfaces, it is not recommended to directly open them up. Take the public alleyway north of Guangzhou Railway First Kindergarten as an example, where the kindergarten is enclosed by a school wall, and the other side is a walled community. The road in this area originally offered a poor walking experience, and the boundary space was poorly utilized, resulting in few people passing through.

To promote street vitality and encourage sharing, the design incorporates murals and community advertisements on the wall surface to enhance visual appeal. Additionally, vertical gardens or green installations can be added to introduce natural elements and a green environment to the closed interface (Figure 6-15).

Figure 6-15 Comparison of Before and After Closed Interface Modification

(Source: Author's Own Illustration)

(3) Placement of Shared Nodes

Based on the characteristics of the Gonghe Area and the needs and feasibility assessment of the residents, corresponding street node spaces are incorporated into the design. The design primarily focuses on providing social interaction spaces, creating squares, outdoor resting areas, outdoor cafes, and other social spaces for residents to relax, communicate, and socialize. These areas can be equipped with facilities such as seating, tables, canopies, and greenery to create a comfortable environment. Additionally, temporary activity spaces are reserved on the site to facilitate the sharing of different street activities. By using mobile devices and movable furniture, these spaces can flexibly adapt to different activity needs and be restored to normal traffic spaces after the activities, maximizing the vitality and flexibility of the community block.

Taking the Lao Baoshe Community in the site as an example, the design transforms the existing street corner spaces into recreational areas for the passing residents and other city dwellers, incorporating street greening, including trees, flower beds, lawns, etc., to provide residents with places to rest, relax, and enjoy nature. Public art installations are also added,

injecting vitality into the shared node spaces (Figure 6-16).
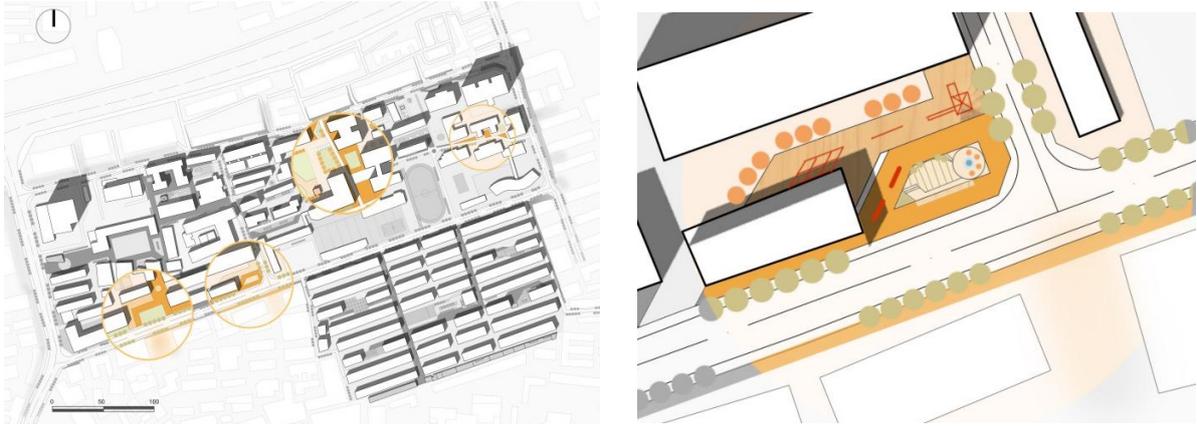
Figure 6-16 Street Shared Node Plan Illustration

(Source: Author's Own Illustration)

Additionally, the design aims to create public street and alley spaces by transforming the existing passive spaces along the community boundaries into shared nodes and connecting them (Figure 6-17). These shared nodes will serve as gathering places for nearby residents to interact and engage, promoting community cohesion and vitality. Furthermore, while providing spaces for residents' leisure and enjoyment, the design also considers the multifunctional use of these spaces. The site can be interconnected to host community markets and street exhibitions, thereby enhancing the cultural and entertainment atmosphere of the community.
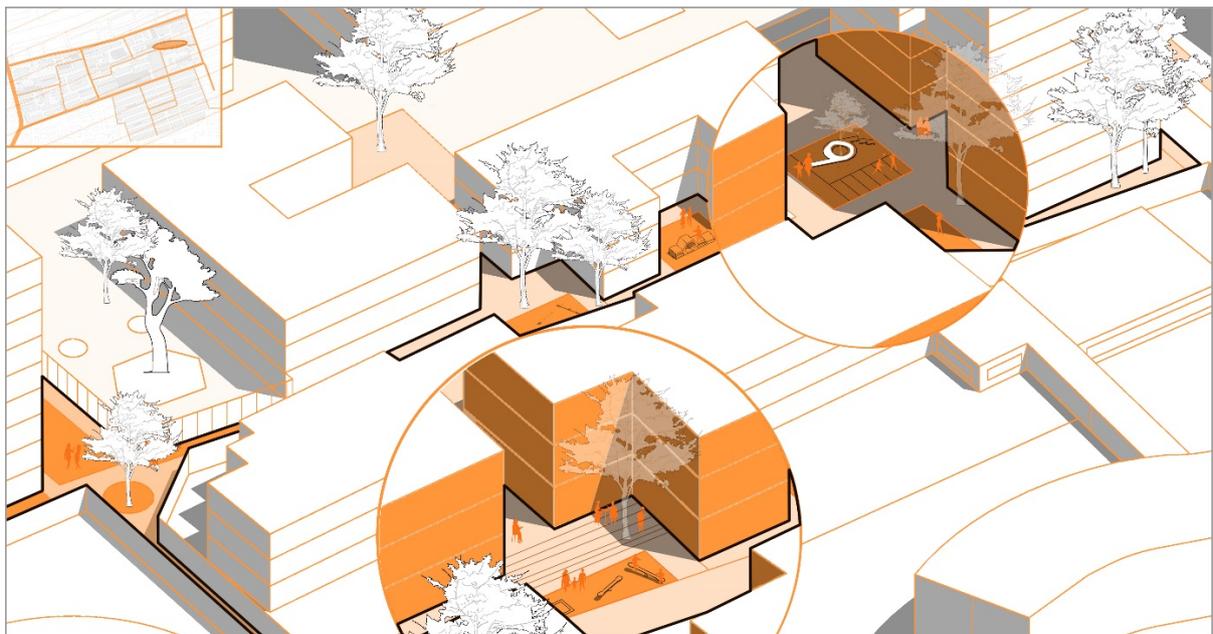
Figure 6-17 Public Street Shared Nodes

(Source: Author's Own Illustration)

6.4.3 Square Space Sharing Model

(1) Square Planning

The design of shared squares in the area is primarily determined based on the actual usage of internal spaces within the Gonghe Area and the level of openness of existing communities and their squares. The majority of the squares are easily accessible and usable (Figure 6-18). The selection of locations and the renewal of spaces take into consideration the surrounding pedestrian and vehicular traffic, as well as the needs of the community, while maintaining an open and inviting atmosphere.

Furthermore, the design determines the main functions of each shared square based on previous research and surveys regarding the needs of both internal and external residents. These functions include social gathering areas, children's play areas, leisure areas, green spaces, etc. By effectively integrating the different functions and desired spatial characteristics of the area, the design ensures a logical division of different functional zones and ensures their connectivity and coordination. Adequate space and facilities are provided to accommodate various types of activities and needs, making the squares the vibrant hubs of community life.

Figure 6-18 Shared Square Distribution Plan

(Source: Author's Own Illustration)

(2) Functional Zoning Design

The design of the square spaces in the Gonghecun Community is based on the residents' behavioral patterns and spatial needs. The main focus is on providing leisure areas with comfortable seating, shade facilities, and green landscapes. Additionally, facilities suitable for children's play and education, such as playground equipment, sand pits, and children's reading corners, are incorporated to provide families with dedicated spaces for children's activities. Furthermore, larger public activity areas are designated for community sports events, gatherings, large-scale activities, and cultural performances.
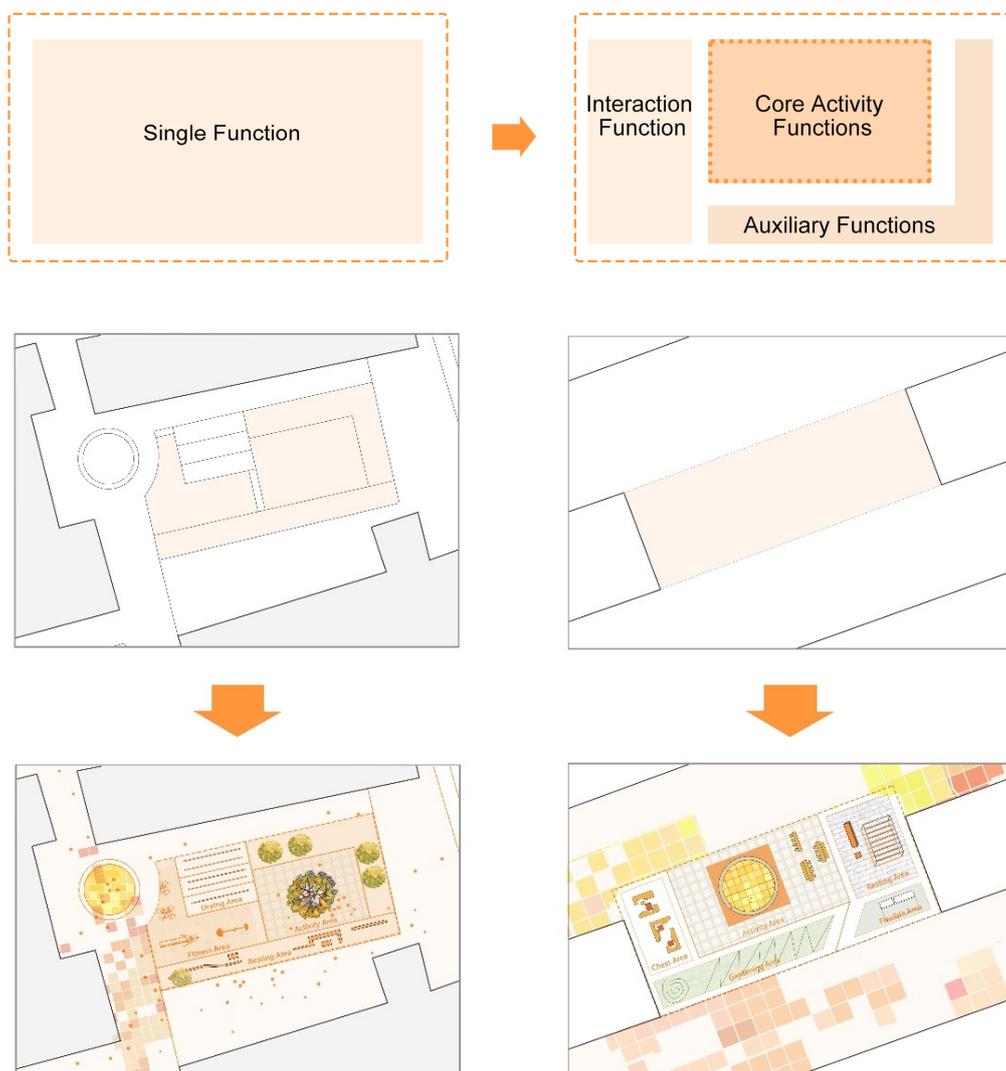
Figure 6-19 Square Space Plan Zoning Design

(Source: Author's Own Illustration)

Taking the Gonghecun Community and Gongheyiyuan Community as examples, the

shared square spaces are divided into different zones (Figure 6-19). The activity zone serves as an open area and the center of the square, hosting various community activities, performances, and serving as a space for seniors to participate in square dancing. When there are no specific activities, it offers comfortable seating, resting areas, and spaces for social interaction. The fitness and sports zone provides outdoor fitness and sports facilities, encouraging residents to engage in physical exercise and fitness activities. In addition, there are leisure and entertainment areas for elderly individuals to play chess and cards, as well as drying areas for communities facing space constraints to concentrate outdoor clothes drying.

The design takes into consideration the functional zoning within the sqaure, using the example of the children's activity sqaure in Gonghecun Community (Figures 6-20 and 6-21). The design expands the existing square space, extending it into the street space to enhance its attractiveness and accessibility. Inside the square, a combination of functional zones and composite design is adopted. The main function is dedicated to children's activities, while rest areas and interactive spaces are distributed on both sides. The division between active and quiet areas is connected by transitional spaces, allowing for the rest and supervision of middle-aged and elderly people, and promoting communication and relationships among different members. By incorporating seating areas and outdoor recreational facilities in resting spaces, individuals can easily interact with their neighbors, fostering the formation of community cohesion.
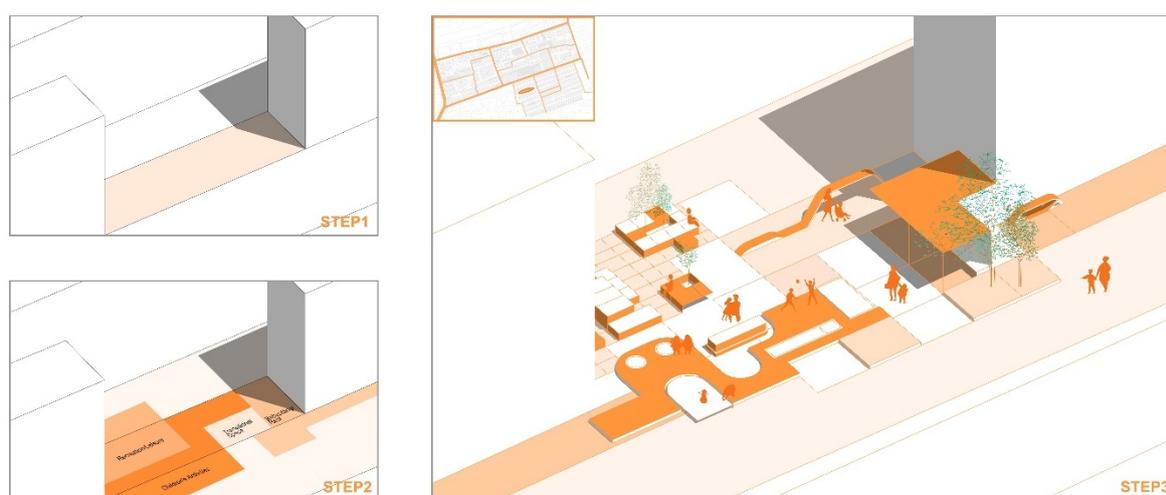
Figure 6-20 Square Space Zoning Design

(Source: Author's Own Illustration)
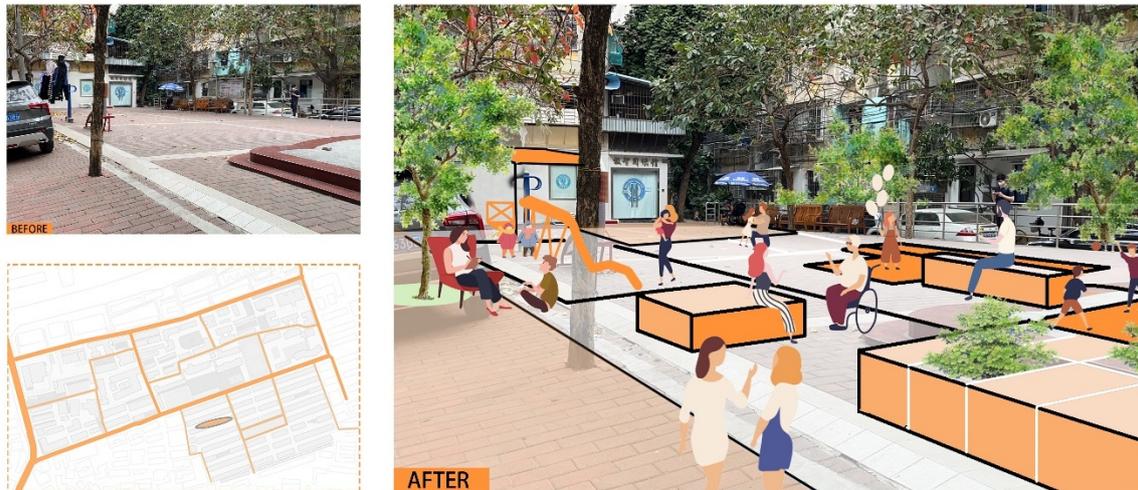
Figure 6-21 Comparison of Before and After Renewal of the Children's Activity Square

(Source: Author's Own Illustration)

Therefore, the Gonghe Area utilizes functional zoning design to promote community vitality, increase social interaction, shape a healthy lifestyle, optimize space utilization, improve the living environment, and foster a cultural and artistic atmosphere within the limited sqaure space. This approach helps create a livable and pleasant community environment, enhancing residents' quality of life and sense of happiness.

(3) Variable Design of Functions

The design considers mobility and versatility by incorporating movable and multi-functional design elements to adapt to changing functional needs. For instance, the use of movable furniture, temporary installations, and activity equipment allows the space to be adjusted and reconfigured according to different functional requirements. This flexible design approach effectively combines different functions within the site and accommodates changes in activities and needs.

Taking the internal square space in Gonghe Second Road Community as an example, the design incorporates movable leisure and entertainment facilities to create a community relaxation space(Figure 6-22). This design allows for phased adjustments and transformations based on community feedback, enabling changes in the space's functionality. It also provides the flexibility to accommodate community activities by freeing up space when needed.

Figure 6-22 Variable Design of Internal Community Squares

(Source: Author's Own Illustration)

6.4.4 Building and Unit Sharing Model

(1) Shared Educational and Cultural Space

In the community center, different functional areas are designated to meet the diverse needs of community residents. For example, in the Gonghe Area, the community activity center provides residents with spaces for work, relaxation, socializing, and learning. The design employs flexible interior spaces to accommodate various usage needs and activities. Elements such as movable partitions, adjustable furniture, and folding tables and chairs are utilized to allow the space to be adjusted and reconfigured according to the requirements (Figure 6-23).
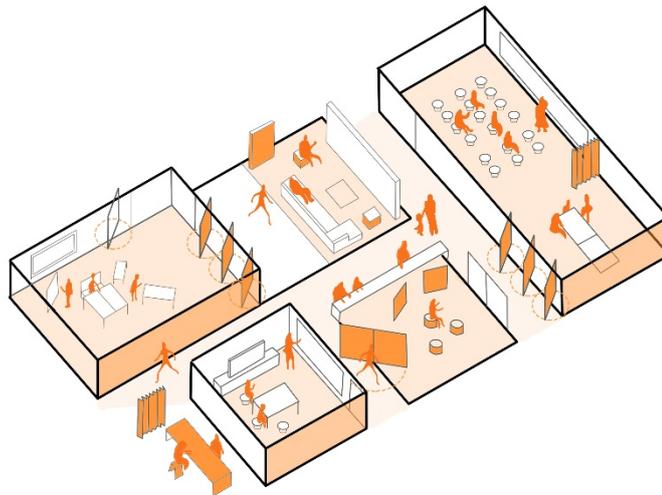
Figure 6-23 Design of Shared Educational and Cultural Spaces

(Source: Author's Own Illustration)

(2) Shared Social Space

Design social and interactive spaces to promote communication and interaction among community residents. The design involves the transformation of the unused space on the south side of the Gonghexi Market (Figure 6-24 and 6-25). Through spatial design, it serves as a transitional social space connecting the residential area on the south side and the market on the north side. Flexible resting areas, cafes, and social activity areas are established, providing a comfortable environment and facilities to encourage communication and collaboration among community members. Additionally, the design minimizes space renewal costs by only making necessary demolition and modifications to the existing structure.
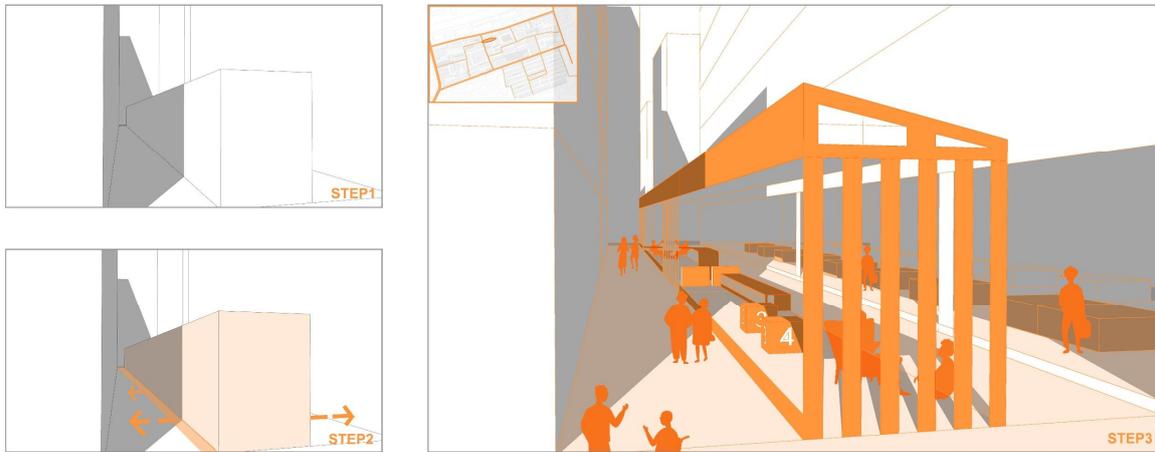
Figure 6-24 Shared Social Space

(Source: Author's Own Illustration)

Figure 6-25 Comparison of Before and After Shared Social Space Transformation

(Source: Author's Own Illustration)

(3) Shared Convenience Facilities

After communicating with the community residents, the design can organize and transform the informal constructions occupying part of the street space within Gonghecun Community. It involves consolidating and supplementing the laundry drying and storage spaces that residents need for their homes, creating shared convenience facilities and additional domestic spaces tailored to the community's needs (Figure 6-26 and 6-27). These shared facilities can reduce resource wastage and prevent informal constructions resulting from limited domestic space, thereby improving the quality of life for the community residents.
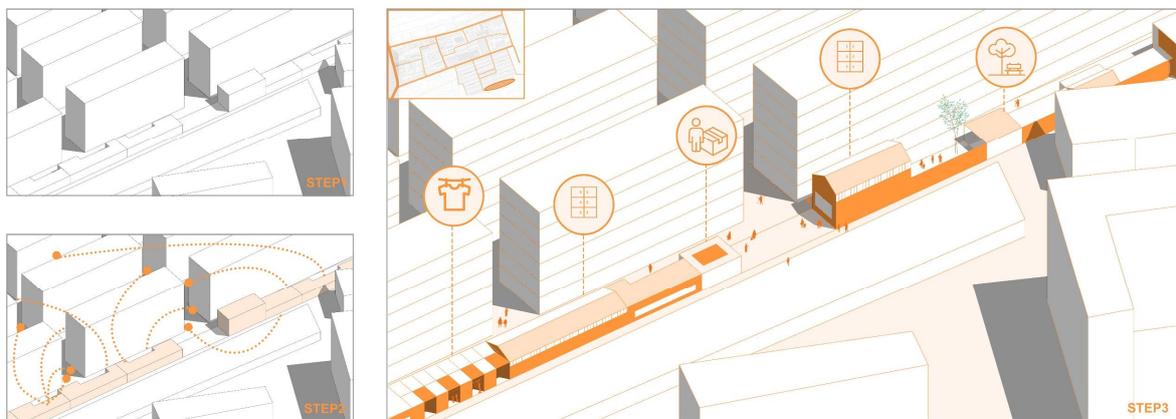
Figure 6-26 Shared Convenience Facilities

(Source: Author's Own Illustration)

Figure 6-27 Comparison of Before and After Renewal of Shared Convenience Facilities

(Source: Author's Own Illustration)

6.5 Time Strategy: Time Sharing

6.5.1 Time Sharing of Street Space

(1) Activity Time-sharing

Taking time on a daily basis, the study considers Gonghe Avenue and Gonghe West Road as examples (Figure 6-28).
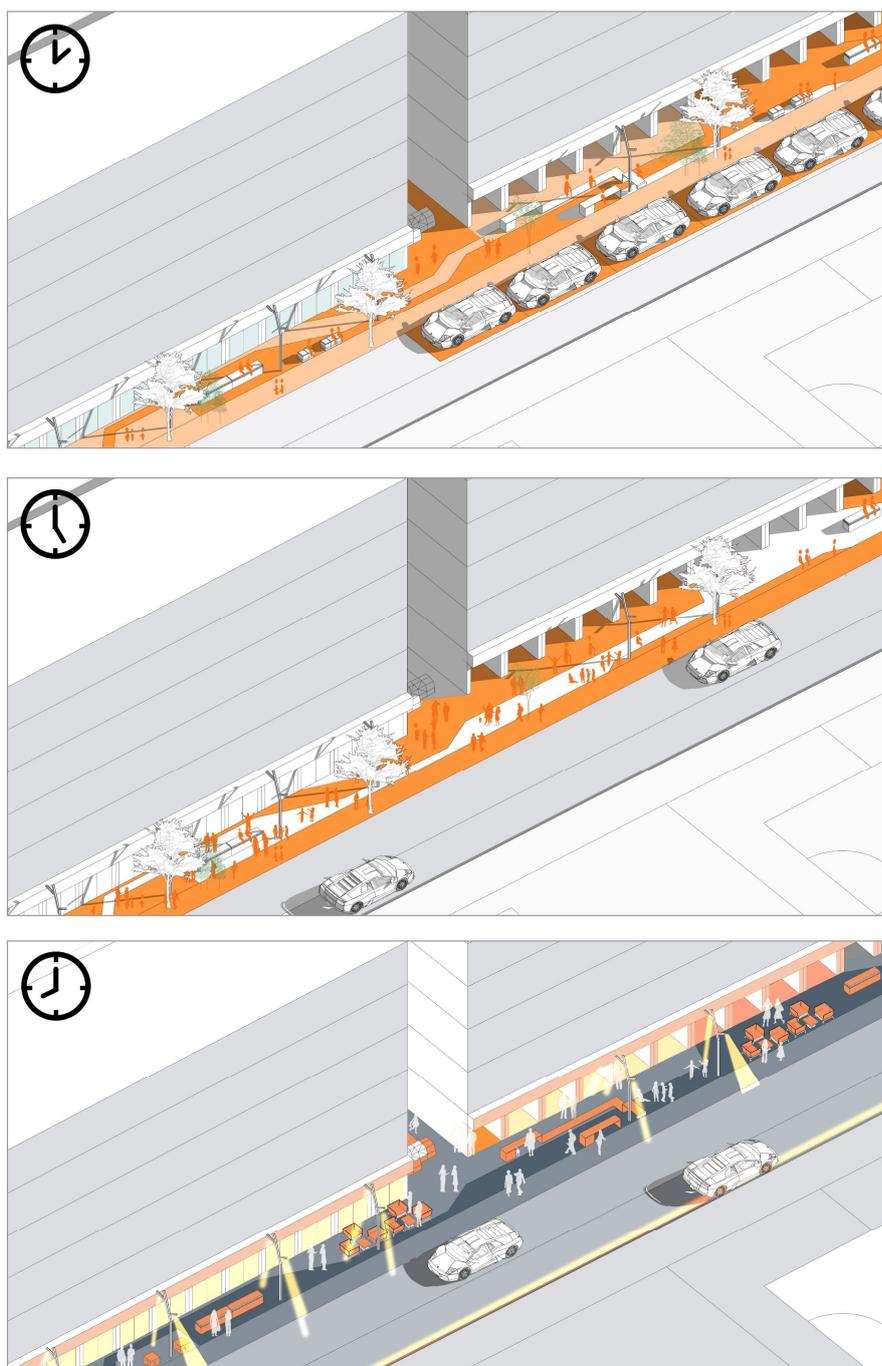
Figure 6-28 Gonghe Street Daytime Timeshare

(Source: Author's Own Illustration)

Due to high pedestrian traffic during peak hours in the morning and evening, it is advisable to minimize the outdoor commercial spaces. However, during periods of low pedestrian traffic at night, certain dining and coffee spaces can be expanded outdoors to enhance business operations and increase the liveliness of the streets. Also, temporary resting and activity areas can be designated on the streets, providing pedestrians with places to rest, socialize, or accommodate temporary facilities such as temporary seating, green flower beds, or small event spaces. These resting areas can be open during specific time periods and shared by community residents. Additionally, incorporating children's play spaces at key nodes along the streets can serve as daytime activity areas. These spaces can also be utilized by senior citizens for outdoor activities during school hours or at night, allowing for time-based usage by different groups of people.

Looking at time on a weekly basis, the design focuses on designating a portion of the street as temporary activity spaces, such as hosting street markets, cultural performances, or outdoor sports events. Through a reservation system, community residents or organizations can reserve and use these spaces for specific time periods to conduct activities. For example, weekend street events such as street concerts, markets, or sports activities can be organized. These centralized markets and social events can address the issue of disorderly stalls and clutter in the boundary spaces of the area to some extent. Simultaneously, they provide entertainment and social opportunities for community residents while regulating the use of space (Figure 6-29).
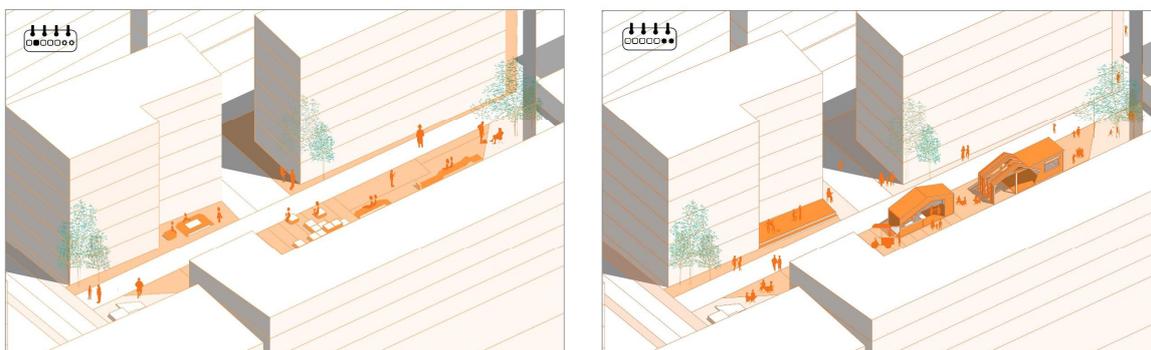
Figure 6-29 Public Streets Time-shared During the Week

(Source: Author's Own Illustration)

(2) Shared Parking Space Time-sharing

Due to its long history of development, the Gonghe district suffers from a shortage of parking spaces and a lack of proper parking space planning, resulting in frequent instances of disorderly parking. The design focuses on the concept of shared parking spaces in the street network. Certain streets that experience minimal congestion are designated as shared parking areas, which can be opened to other users during off-peak or low-demand periods.

Taking Gonghe Street as an example, due to the influx of students and parent pick-up during school dismissal time, the street experiences tidal flows of pedestrians and vehicles. During this period, it is recommended to temporarily suspend the shared parking on the road surface to widen the carriageway, considering the high number of parents coming to pick up their children. However, during other time periods, shared parking spaces can meet the temporary parking needs (Figure 6-30).
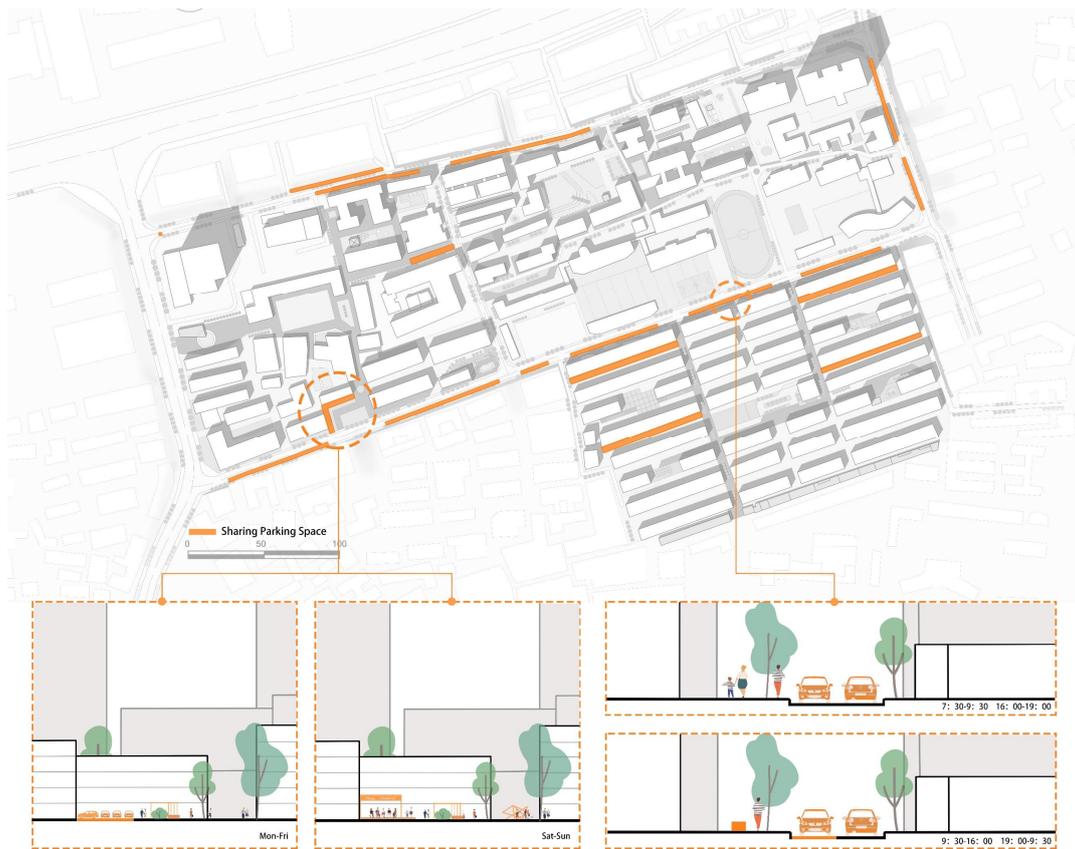
Figure 6-30 Shared Parking Space Time-sharing

(Source: Author's Own Illustration)

For street nodes like the sqaure in front of the shared fitness center, a time-based parking

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plan can be implemented on a daily basis. During weekdays when there is less pedestrian traffic in the node space, a portion of the area can be utilized as shared parking spaces. On weekends when community activities are organized in the front sqaure, the space can be released for temporary event hosting.

6.5.2 Time Sharing of Square Space

From the perspective of spatial activities, suitable activity types can be further divided for each time period. For the Gonghe Area, the design aims to create a multifunctional activity square within the area, based on the residents' needs and activity habits (Figure 6-31). In the morning, the square can be utilized for activities such as morning exercises, yoga, and other fitness activities. Due to its proximity to the market and the higher pedestrian traffic on weekends, daytime events like community markets, exhibitions, and other community activities can be organized in collaboration with the market. Additionally, in the evenings or on weekends, cultural and entertainment events such as community celebrations, performances, and outdoor movies can be held. By accurately defining the types of activities, the efficiency and diversity of the sqaure's utilization can be enhanced.
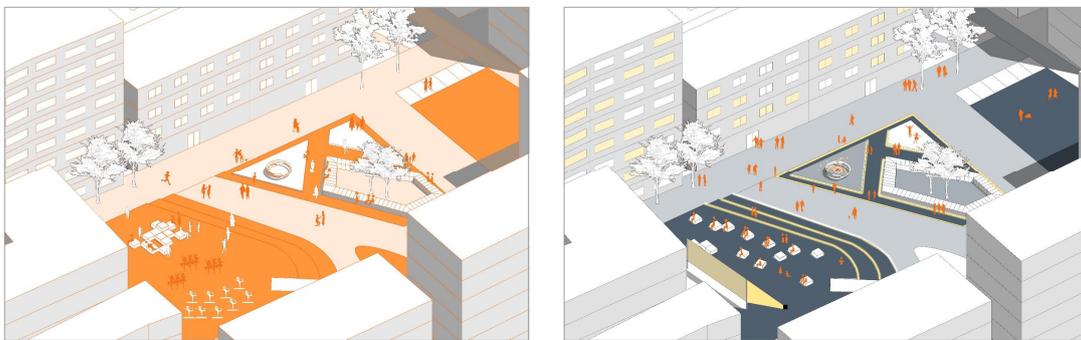
Figure 6-31 Gonghe Road 3 Community Sqaure Under Time-Sharing Strategy

(Source: Author's Own Illustration)

6.5.3 Time Sharing of Building Space

From the perspective of space functionality, according to the survey of space needs of residents in the Gonghe Area, the original Guangzhou Railway Staff Fitness Center and Senior Activity Center buildings will be reconfigured to transform the idle indoor spaces and venues into multi-purpose halls. These halls can be used for various activities such as conferences,

symposiums, celebrations, and concerts. Residents can reserve the time slots to organize community events and interactive games.

CULTURE

Nignt-Work   Weekend-Meeting   Workday-Reading   Weekend-Education

SOCIAL

Exercise·Fitness Room   Play·Recreation Room   Play Music·Music Room

LEISURE

Morning - Gardening   Afternoon - Afternoon Tea   Evening - Relax
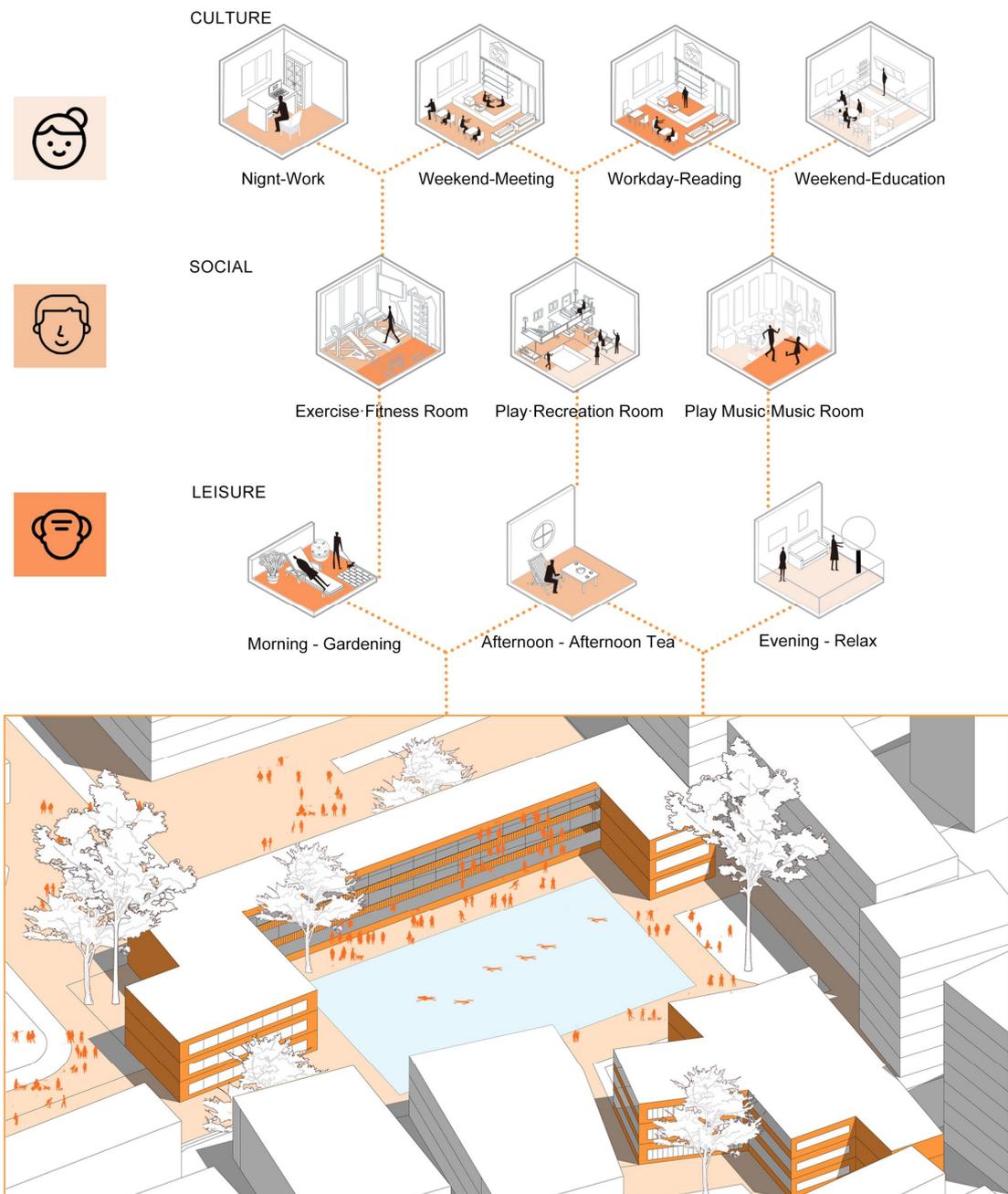
Figure 6-32 Community Centre Building Function Time-sharing

(Source: Author's Own Illustration)

From the perspective of user types, based on the previous research, it is known that residents in the area and its surroundings belong to different age groups and have differences in daily routines, habits, and schedules. Therefore, the active time periods for using the space vary among these age groups. Accordingly, the space functionality can be adjusted and adapted to

the corresponding user groups based on their activity time characteristics. For example, in the interior design and planning of the building, a flexible arrangement of tables and chairs can be set up. This area can be used by young people and office workers for work or study, and it can also serve as a place for elderly people to read and have tea during the day. Furthermore, on weekends, it can be used as a supplementary classroom for children's training classes, maximizing the utilization of space during different time periods.

6.5.4 Time-sharing Management Mechanism

(1) Establishing Principles and Time Allocation for Sharing

During community surveys and needs analysis, it is possible to gain insights into the preferences and requirements of community residents regarding space utilization. By employing observation and interviews, valuable information can be obtained regarding the residents' habits of spatial usage and their future needs and intentions. Based on the results of the community survey, sharing rules and time allocation plans for the space can be formulated. Consideration should be given to the diverse functional requirements during different time periods, ensuring a reasonable distribution of time and fully meeting the varied needs of the community. Additionally, it is important to incorporate some flexibility into the schedule by reserving certain periods of free time. These time slots can be utilized for diverse activities, large event reservations, unforeseen emergencies, or urgent needs. The inclusion of flexible time enhances adaptability and allows for greater responsiveness.

Figure 6-33 Mechanisms for the Management of Space Time-sharing

(Source: Author's Own Illustration)

Taking the multi-functional square in Gonghe Road 3 community as an example, during weekdays in the daytime, the main users of the space are elderly individuals, as young adults

need to work and students need to attend school. Based on interviews with local residents, it has been found that the elderly enjoy participating in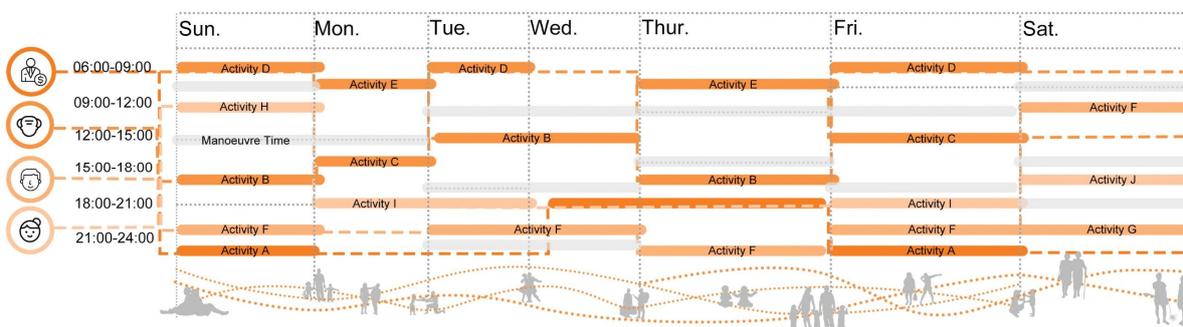 square dancing in the morning, while children prefer engaging in ball games in the square after school in the evening. On weekends and during the nighttime, different groups of people are more likely to engage in activities in the public space. Therefore, it is possible for the neighborhood committee or residents to organize community events such as outdoor movies to enhance community cohesion. Considering the preferences and future needs of the users, a time allocation plan for space usage can be established to facilitate space management during different time periods. This approach is beneficial for smoothly transitioning the core functions of the multi-functional square during different time slots.

(2) Establishing a Reservation and Management System

For effective time slot management of the flexible-use space, it is advisable to establish a reservation and management system that allows organizers to book specific time slots and areas of the square (Figure 6-34). This ensures fairness and transparency in the reservation process. Additionally, it is important to appoint designated personnel or a team responsible for coordinating activities and ensuring safety management.

The reservation system can provide real-time information on space availability, enabling users to conveniently choose suitable time slots. Particularly, some indoor spaces can be used for leasing, generating revenue to support community management, maintenance, and operations. Reasonable fee structures can be established based on the duration of use and space type, allowing for hourly billing or charging based on time periods. User participation and feedback should be encouraged, and user satisfaction surveys and community meetings can be conducted regularly to understand user needs and improve the quality of space services. Users should be allowed to adjust or cancel their reservations as needed to provide greater flexibility. However, it is important to ensure fairness and reasonableness, avoiding frequent changes or cancellations that may negatively affect other users.
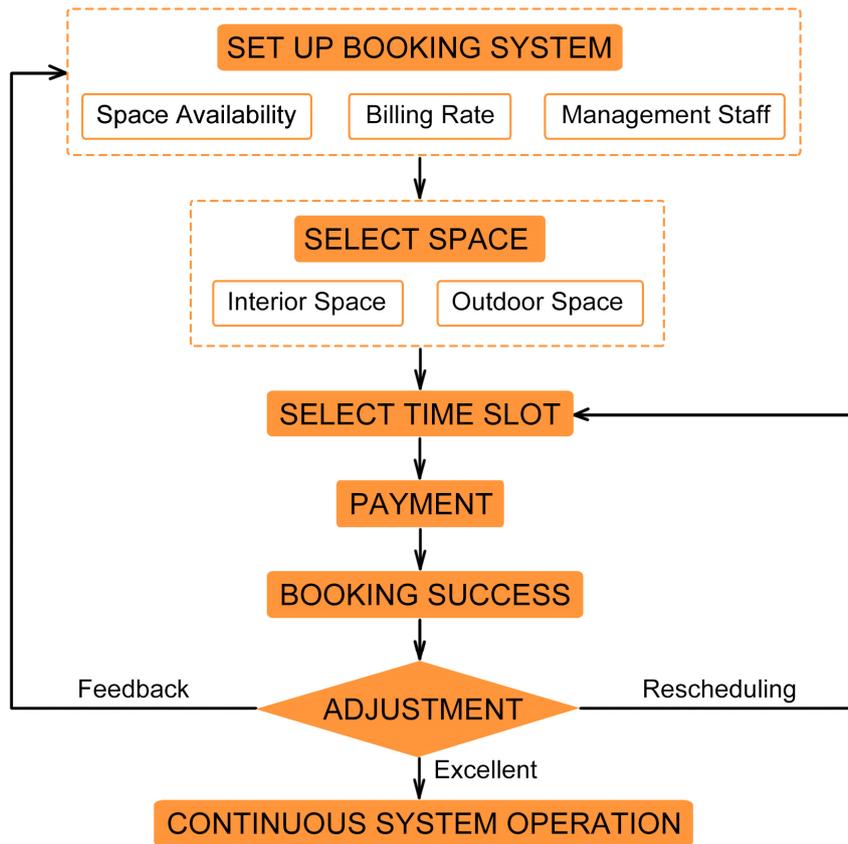
Figure 6-34 Space Management Mechanism

(Source: Author's Own Illustration)

6.6 Management Strategy: Co-building and Co-governance

6.6.1 Community Event Planning

(1) Event Organisation Strategy

The development issues of post-danwei communities not only involve the modernization and transformation of physical spaces but also require attention to the cultivation of the core of community spirit in order to promote the formation of modern urban community. Therefore, community renewal based on the concept of sharing should not only consider the needs of differentiated activities during the spatial planning and design stage but also continue to operate activities based on the renovated spaces to ensure the long-term vitality of the renewal results. Community activities mainly involve various types such as culture, education, communication, and public welfare, and should be reasonably planned in accordance with the characteristics of the community and the conditions of the venue and personnel.
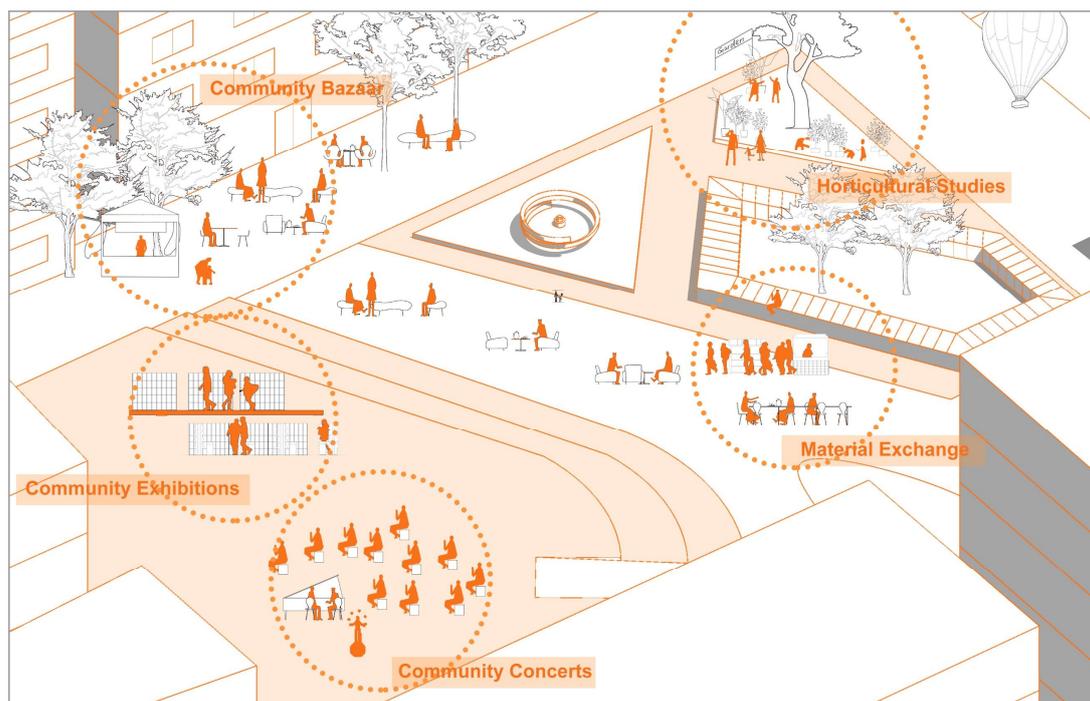
Figure 6-35 Illustration of Community Square Activities

(Source: Author's Own Illustration)

By using Gonghe Area as an example, a wide range of community activities centered around the concept of "sharing" can be organized in the community's multi-functional square. These activities aim to enhance community cohesion, promote the sustainable utilization of resources, foster mutual assistance and support among residents, encourage community participation, and facilitate democratic decision-making processes. Furthermore, these activities contribute to the improvement of spatial construction and governance within post-danwei communities, as well as the development of stronger social network relationships among community members.

Community can organize various activities and gatherings, such as hosting shared cultural events and participating in the collaborative design of community gardens. Regular community problem-solving workshops and discussion sessions can be organized, enabling residents to collectively address community issues and collaboratively seek solutions. Additionally, a resource exchange market can be established, where residents can share unused items, books, household goods, etc., fostering a more sustainable community environment [85].
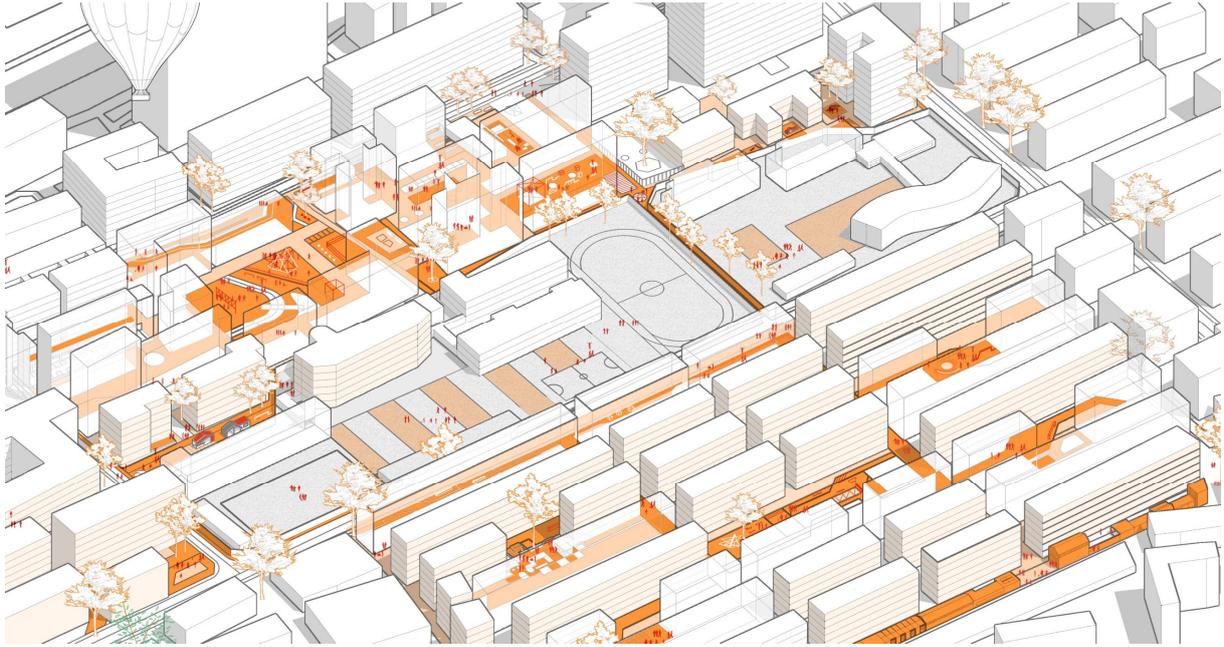
Figure 6-36 Life Scenes After the Sharing Transformation of the Area

(Source: Author's Own Illustration)

(2) A Community Facilitated Engagement Model Based on the Concept of Sharing

By transforming public spaces, community residents gain access to shared resources and participate in communal activities, thereby enhancing the potential for establishing connections among residents and cultivating common interests and values, leading to increased interaction and cohesiveness within the community (Figure 6-37).
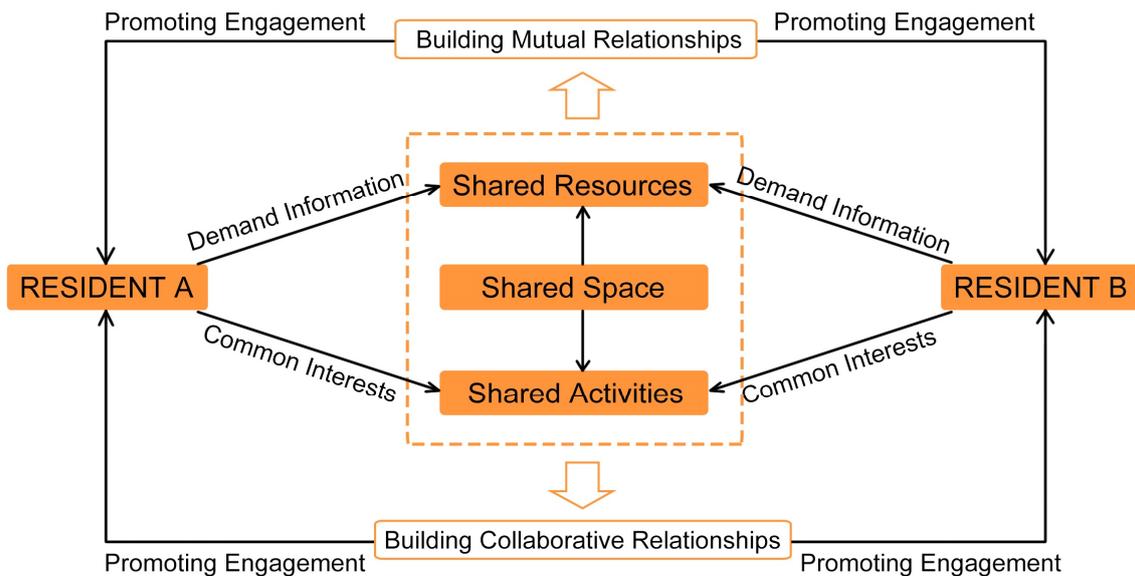
Figure 6-37 Promoting Engagement Based on the Concept of Sharing

(Source: Author's Own Illustration)

By organizing community activities and reshaping the living environment, a more interactive and shared environment can be created. As a result, residents of post-danwei communities will be more willing to share and care about each other's lives within the community space. This change will foster a harmonious and intimate community atmosphere, encouraging residents to actively participate in community life and establish deeper emotional connections among neighbors.

Figure 6-38 Neighbourhood Sharing Life

(Source: Author's Own Illustration)

6.6.2 Analysis of the Dynamics of Post-danwei Community Co-building and Co-governance

The community governance driving mechanism refers to various factors and mechanisms that encourage community residents to participate in community governance and actively engage in community affairs. They can provide motivation and incentives to encourage residents to participate in decision-making, problem-solving, and improving community life. The more a community can provide relevant common interests and meet the needs of its residents, the greater its attractiveness and the stronger the residents' dependence on the community [86].

In the governance and renewal of post-danwei communities, corresponding policies serve as the fundamental driving force for community renewal and governance. Simultaneously, providing extensive and diverse opportunities for participation to post-danwei community

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residents and other stakeholders is an important factor in motivating their active involvement in community affairs. Alongside this, improving institutional design can involve seeking residents' opinions on negotiation issues, procedures, participants, etc., establishing a relatively comprehensive system, and forming a closed institutional chain to regulate the negotiation process. In addition, the involvement and assistance of designers, as well as the establishment of corresponding incentive mechanisms, can inspire residents to actively participate in community governance.
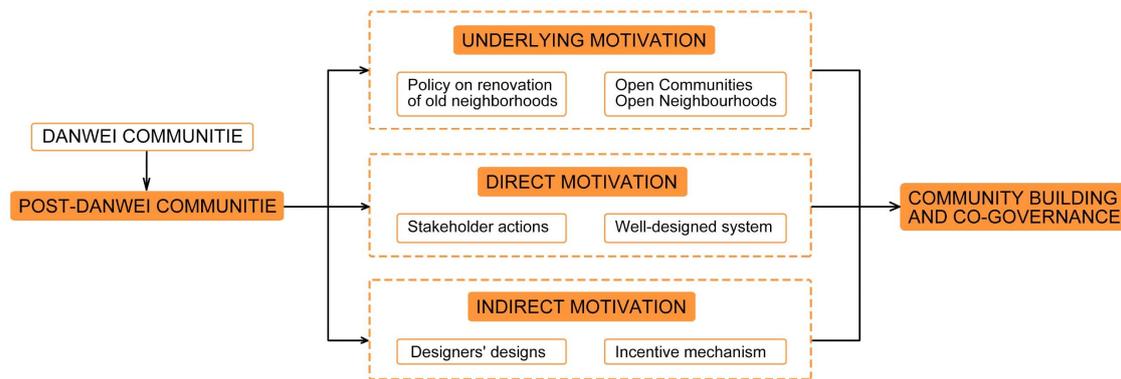
Figure 6-39 Mechanisms of Governance Dynamics in Post-danwei Communities

(Source: Author's Own Illustration)

6.6.3 The Participation Forms of Different Stakeholders in Community Renewal

In the renewal and transformation of the Gonghe Area, multiple stakeholders are involved, and different stakeholders can take corresponding actions to play their roles in project implementation, which also serves as an important supporting condition for community renewal under the concept of sharing.

(1) Government Level

The city government represents broad public interests and aims to ensure that all members of the city share the benefits of reform and development. Currently, China's urban government is moving towards modern governance, gradually changing the past dominant position and excessive burden of affairs in the process of community renewal. The government is gradually transferring responsibilities that should not be borne by it to the market or social organizations,

with a more prominent role of providing services, guidance, and supervision. In the process of community renewal based on the concept of sharing, the following are some suggested measures at the government level:

Formulate policies and regulations and provide policy support. Ensure the development of relevant policies and regulations in the co-building and co-governing of community public spaces and supervise their implementation. Establish relevant legal frameworks and policies to provide a legal basis for renewal and transformation projects, promoting smooth project progress. These policies and regulations can cover aspects such as the planning, design, usage rights, and maintenance of spaces to promote the co-building and co-governing by residents [87].

Seek residents' opinions to enhance policy acceptance. Government department leaders can actively cooperate with community residents, community organizations, and stakeholders, solicit their opinions and suggestions, and engage them extensively in the process of policy and regulation formulation. This ensures that the policies and regulations truly reflect the needs and interests of community residents, increasing their sense of identification and compliance with the policies.

Supervise and enforce the law to maintain spatial management order. The government should establish appropriate supervision mechanisms to monitor the implementation of policies and regulations for co-building and co-governing community public spaces.
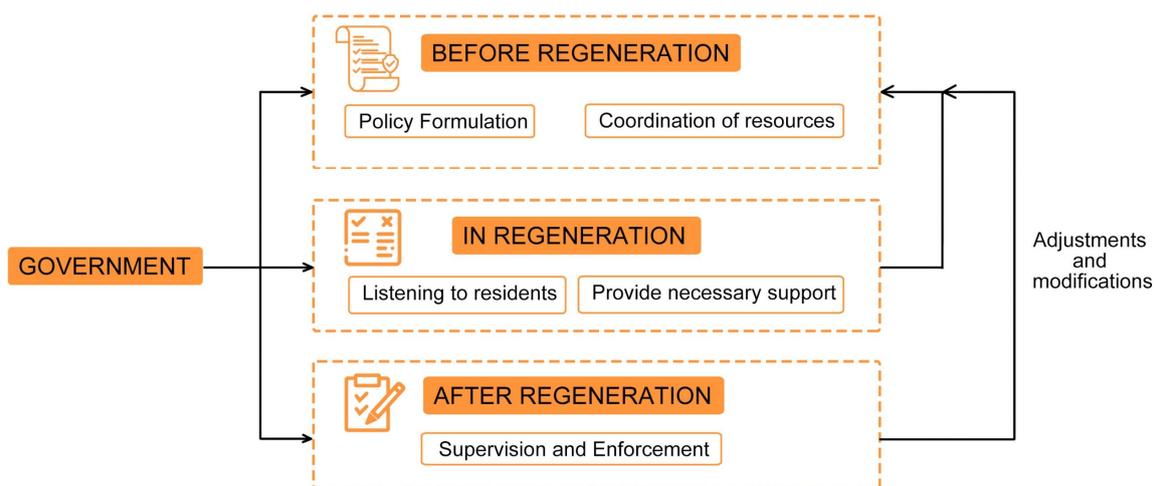
Figure 6-40 Forms of Government Involvement

(Source: Author's Own Illustration)

Coordinate resources, promote rational allocation. Support project implementation and ensure the rational allocation of resources. Additionally, when necessary, provide relatively comprehensive funding, talent, and technical support to post-danwei communities.

(2) Community Resident Level

In community renewal based on the sharing concept, residents should not only participate in the spatial decision-making process but also be guided to engage in the design, construction, and management of the spaces. Only when residents transition from being mere users of spaces to becoming decision-makers, builders, and managers of the spaces, can the true realization of sharing of spaces be achieved.

Regarding community renewal design, residents can participate in the spatial design and planning process, actively engage in planning meetings and public hearings, and provide their opinions and suggestions. They can offer input on the functionality, layout, and design elements of public spaces, thereby increasing residents' sense of identification and desire to use the spaces and ensuring that renewal projects maximize overall interests and satisfaction.

During the implementation of renewal projects, residents can oversee the progress and execution, ensuring fairness, transparency, and quality. They can actively participate in the implementation and construction of community renewal projects, engaging in voluntary work, participating in community-based projects, and contributing to the construction and improvement of the spaces.

Regarding post-project management and operation, residents can participate in the daily management and operation of community public spaces. They can form voluntary management teams specific to the community and take responsibility for maintaining the safety and order of public spaces, even in the absence of formal property management. Establishing effective feedback mechanisms allows residents to provide feedback and opinions, engaging in continuous improvement of community space management and operation. Additionally, residents should be involved in community fund management, centralizing the profits generated from renting shared spaces for subsequent space renovation and maintenance expenses.
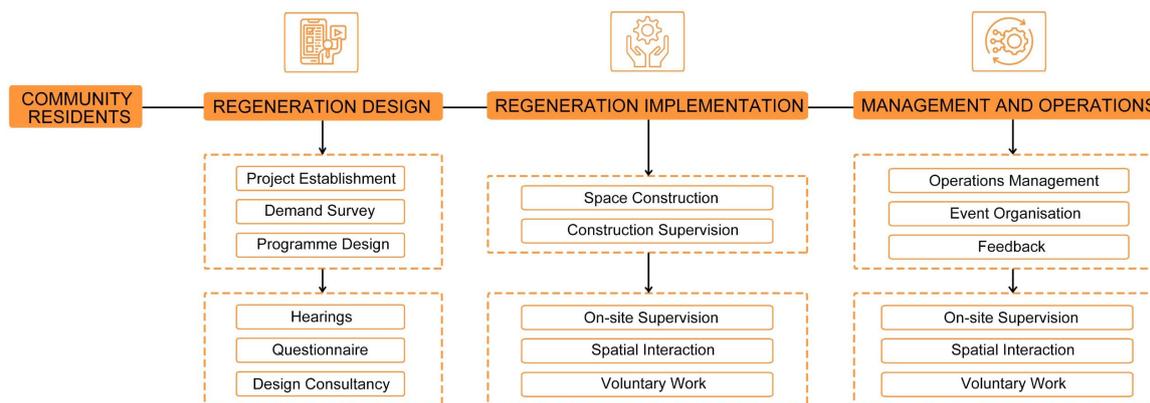
Figure 6-41 Forms of Community Resident Participation

(Source: Author's Own Illustration)

(3) Architect and Design Team Level

Taking Guangzhou City as an example, the Guangzhou Urban Planning and Natural Resources Bureau actively promotes the work of community designers throughout the city, comprehensively promoting the system of community designers, and forming the Guangzhou Model, which is universal and participatory. In the case of renewal design and spatial governance in post-danwei communities similar to the Gonghe Area, a targeted community designer system can be established based on the principle of "one district, one strategy."

Firstly, as professionals, community designers can provide specialized design knowledge and skills to assist in community planning and spatial layout. They can collaborate with community residents and relevant stakeholders, gather their needs and opinions, and incorporate them into the design proposals.

Secondly, the community designer system can encourage residents to actively participate in the governance of community spaces. Residents can express their needs and expectations for community spaces through workshops, discussions, and public engagement activities organized by community designers. Designers can listen to residents' voices and incorporate them into design decisions to ensure that the design proposals align with the interests and needs of the residents.

With the assistance and active engagement of the neighbourhood committee, community designers transcend their traditional roles as technical professionals and embrace multifaceted

responsibilities as organizers, coordinators, and communicators. By assuming these diverse roles, they play a pivotal role in facilitating the formation of a collaborative network that brings together community designers, government officials, neighborhood committees, residents, and construction companies. This network establishes an effective mechanism for encouraging the involvement and participation of multiple stakeholders in the governance of community spaces. Through their expertise and efforts, community designers foster cooperation, communication, and negotiation, ensuring the equitable and sustainable planning and spatial governance of the community.
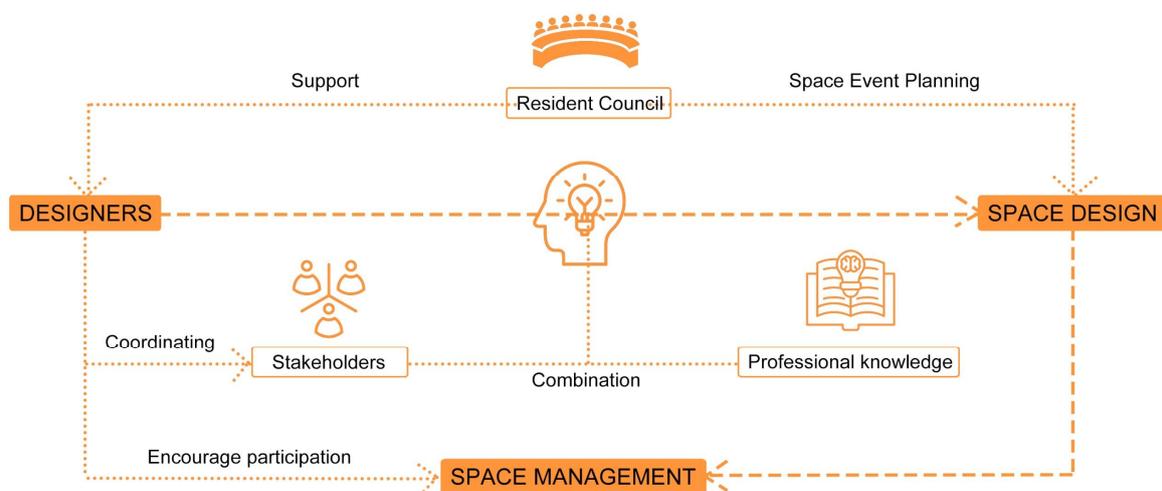
Figure 6-42 Forms of Designer Involvement

(Source: Author's Own Illustration)

(4) Community Organisations and Non-profit Organisations

In different stages of community renewal, community organizations and non-profit organizations can play different roles. In terms of organizing and coordinating activities, it is important to emphasize the coordination and organization of various community events, cultural festivals, and volunteer actions to promote community residents' participation and interaction. Regarding providing training and education, it is important to consider offering relevant training and educational opportunities to community members, aiming to enhance their capacity and awareness in participating in the governance of public spaces. Community members can strengthen their understanding and skills in public space governance, enabling them to actively engage in the management and operation of public spaces. In representing the

interests of residents, it is crucial to actively collect residents' opinions, represent them in decision-making processes, and assist community designers in facilitating multi-party communication and implementing residents' needs.

(5) Schools and Educational Institutions

Due to the abundant educational resources in the Gonghe area, schools and educational institutions can play a significant role in community renewal (Figure 6-43). They can organize various community activities such as public lectures, cultural exhibitions, and artistic performances to facilitate interaction and communication among community residents. These activities contribute to the creation of a shared community space with a sense of belonging and cohesion, fostering understanding and connection among residents. It is also essential to emphasize the cultivation of civic awareness and community responsibility. During holidays, the use of a time-sharing mechanism can be fully utilized to provide school facilities, venues, and other resources for the use of community members, enabling the organization of community education and cultural activities.
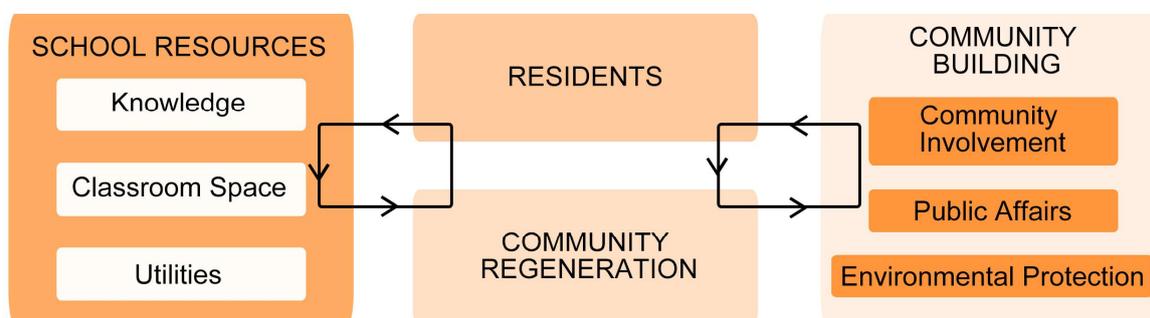
Figure 6-43 Forms of Involvement of Schools and Educational Institutions

(Source: Author's Own Illustration)

6.6.4 Elastic Mechanisms Based on Characteristics of Post-danwei Communities

(1) Flexible Space and Decision-making Mechanisms

In addition, post-danwei communities, such as Gonghe Village, have certain social relationship peculiarities. Due to the unique nature of these communities and their demand for surrounding public amenities, there is a relatively higher frequency of turnover among residents

and space users compared to general communities. This frequent turnover is caused by changing needs in different stages. As a result, these post-danwei communities often have heterogeneous populations, with differences in backgrounds, needs, and behaviors among community members.

Therefore, the design and participation in space management should take into account the turnover of individuals in the community, allowing for flexible spaces and mechanisms to accommodate the needs of new community members (Figure 6-44).
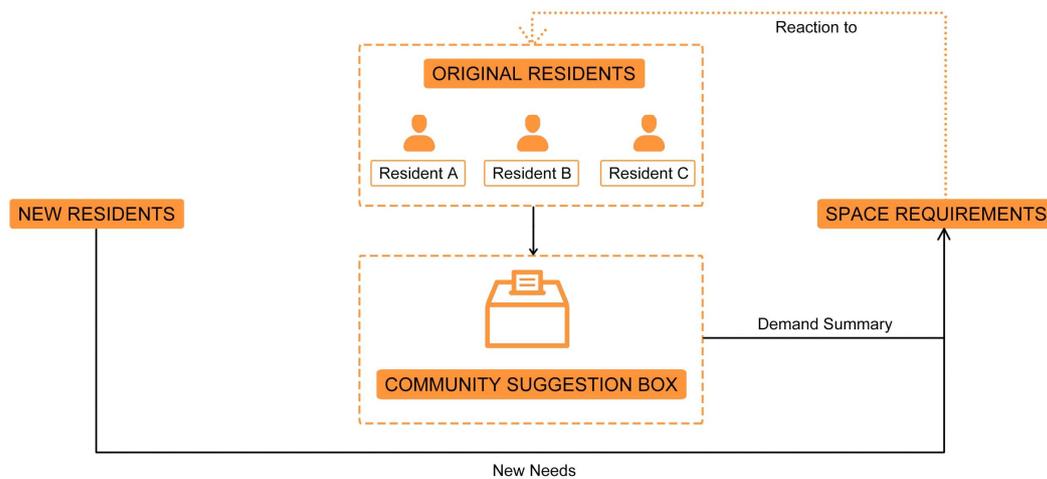
Figure 6-44 Spatial and Decision-making Mechanisms for Resilience

(Source: Author's Own Illustration)

(2) Flexible Incentive Mechanism

Establishing a flexible reward mechanism can incentivize active community participation and enhance residents' motivation to engage in community governance and management. One approach is to use the rental income generated from shared spaces for the community's ongoing maintenance and renewal expenses, as well as to reward residents who actively participate in community management. Additionally, granting participating residents the right to use shared spaces free of charge can serve as an additional incentive to encourage their involvement in community affairs.

To facilitate the effective management of rental income from shared spaces, a dedicated fund should be established. Transparency in fund management, maintenance of financial records, and the implementation of oversight mechanisms are essential. The fund can be

managed by a committee elected by community residents or appointed by the community management organization. This committee will make decisions on rewards and subsidies, ensuring fairness and equity in the allocation of funds.
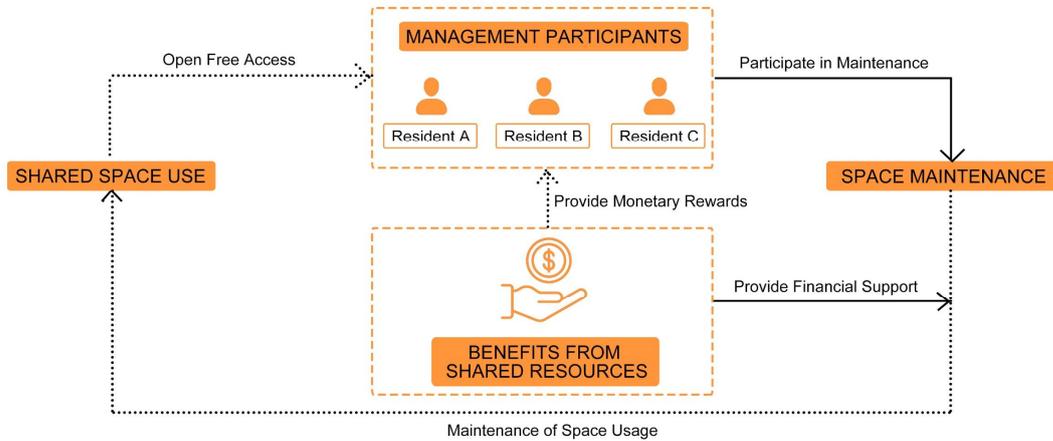
Figure 6-45 Flexible Incentive Mechanism

(Source: Author's Own Illustration)

6.6.5 Use of Internet Technology

(1) Social Media Platform

Residents can use platforms such as Weibo, WeChat public accounts, and other social media platforms to share information regarding community renewal, public space issues, and event announcements. This can facilitate interaction and cooperation among residents. Community organizations can also utilize social media platforms to communicate with residents, gather opinions and feedback, and enhance community engagement and governance.

(2) Online Voting and Surveys

Through online platforms, residents can express their preferences and opinions regarding public space renewal plans. This direct participation and voting method can better reflect residents' desires and increase the democracy and transparency of decision-making.

(3) Community Shared Cyberspace

Residents can utilize the community shared network space constructed by technology professionals using Internet technology (Figure 6-46). These network spaces provide diverse services, covering various resources and functionalities that residents need in their daily lives.

Through these platforms, residents can quickly access information, exchange experiences, and share resources, enabling a more convenient and closer community life.

The community shared network space is not merely a unidirectional service platform, but also an open and interactive platform for community co-construction and co-governance, breaking the limitations of time and space in traditional community settings. It plays a role in resource sharing, allowing residents to share their idle belongings, skills, and time with other community members for mutual benefit. This mode of resource sharing not only helps to reduce wastage but also fosters closer community relationships, enhancing community cohesion and the spirit of mutual assistance.
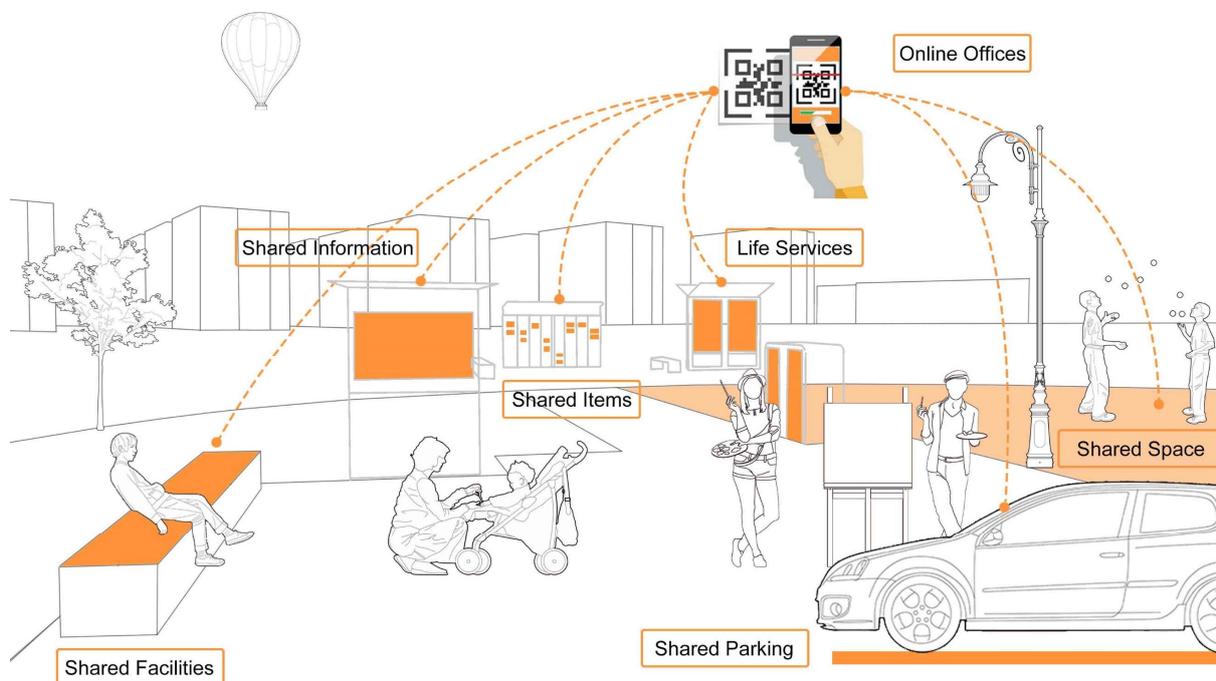
Figure 6-46 Application of Community Shared Network Space

(Source: Author's Own Illustration)

6.6.6 Summary of the Model: Clear Lines of Authority and Responsibility

In summary, residents, government, designers, and neighborhood committees should establish close collaborative relationships in the co-building, co-governance, and sharing of post-danwei communities (Figure 6-47). As the core of the community, residents can provide opinions, suggestions, and demands, participate in the decision-making process, assist in formulating community plans and policies, and collectively maintain community order and

environment. The government, as a supporting and regulatory body, has the responsibility to provide necessary support, resources, and guidance, and is responsible for formulating relevant laws and policies. Designers provide professional planning and design expertise and serve as a link to facilitate collaborative construction among multiple stakeholders, working together with neighborhood committees in communication and coordination with the government, construction entities, and residents. Their collaboration and interaction will promote the sustainable development of the community and improve the quality of residents' lives.
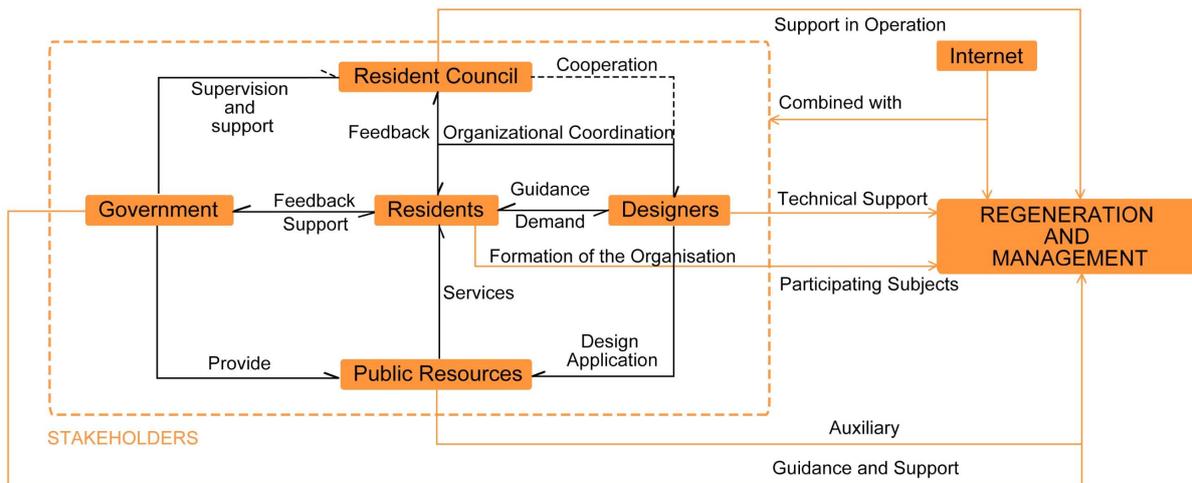
Figure 6-47 The Structure of the Responsibility and Relationship

(Source: Author's Own Illustration)

In addition, the sharing of public resources and the application of technology are also crucial. These elements collaborate with each other to promote community development and enhancement, creating a shared, participatory, and sustainable community environment. This, in turn, facilitates multiple stakeholders' participation in the reuse of public resources, transformation of public space sharing patterns, and innovation in community space governance, thus achieving the transition of communities from a "discrete" to a "reorganized" state.

6.7 Chapter Summary

Based on the analysis in the previous chapters, this chapter proposes the renewal strategy for public space in the Gonghe Area of Guangzhou City under the concept of sharing. Firstly, the strategy is established based on design principles, and a sharing strategy is proposed from the perspective of the community's 15-minute living circle. The problems of the design subject

are addressed at a broader level for preliminary exploration and resolution, taking into account whether the design subject meets the needs of surrounding residents and interacts with the urban spatial segment it belongs to. Next, the focus is placed on the existing resources and spatial demands within the design scope, and a new round of resource and functional integration is carried out. Subsequently, transformation strategies are proposed from three dimensions: space, time, and management. The main focus is to optimize the design of different types of public spaces in the area, improving the quality and utilization of the spaces. A sound mechanism and platform are established to facilitate social activities at the community level, creating a healthy social ecosystem. At the same time, the governance rights and responsibilities of the community in the area are clarified, and the typical spatial governance issues in post-danwei communities are addressed through the approach of "co-building, co-governing, and sharing." This ensures the guarantee of the transformed spaces in their future use.

Conclusion and Outlook

Research Conclusions

This study addresses the problems of post-danwei communities formed under the transformation of the domestic social environment after the reform and opening up as well as the change of the danwei, and researches the method of renewing the public space of the post-danwei communities under the concept of sharing, so as to provide new ideas for the renewal and governance of the post-danwei communities. The main research includes the following four points:

In the aspect of background research, this study highlights the unique backgrounds and characteristics of post-danwei communities compared to other types of communities. These characteristics include economic transformation, the disintegration of the danwei-based system, the opening of access or boundaries, the blurring of invisible boundaries, inadequate integration and utilization of resources, and changes in social structures. These specific features present new requirements and challenges for public space renewal and community management in post-danwei communities, necessitating targeted measures and approaches to address them.

In the aspect of case studies, this research thoroughly summarizes and analyzes well-experienced international cases of community transformations. It examines their adaptability to the renewal and transformation of post-danwei communities in China. Furthermore, the study analyzes the existing issues in domestic practical projects, providing a solid foundation for formulating strategies and recommendations.

In the aspect of spatial practice object research, this study offers valuable guidance for the renewal of public spaces in post-danwei communities based on the concept of sharing. Specifically, the renewal of public spaces should prioritize the active involvement and shared participation of community residents to foster a sense of community identity and enhance community cohesion. Additionally, this research pays special attention to the community's context, spatial characteristics, and the needs and preferences of residents to cater to the diverse requirements of different groups.

In terms of design strategies, this research proposes a comprehensive design methodology

to transform and manage public spaces from multiple dimensions. At the spatial level, it advocates for inclusive design, incorporating elements such as the exploration of existing resources, flexible and multifunctional design, and alignment of different spatial characteristics with respective functionalities. These efforts aim to facilitate social connections among users and enhance the shared value of spatial resources. At the temporal level, effective space management mechanisms and flexible time arrangements are established by considering the temporal usage habits and activities of different user groups within the same space. At the community governance level, special attention is given to diverse participation mechanisms involving community residents, community organizations, and government departments. Furthermore, the establishment of feedback mechanisms and incentive systems tailored to the characteristics of post-danwei communities can effectively foster active resident engagement in community governance. These mechanisms aim to clarify the rights and responsibilities based on existing property conditions, residents' preferences, and organizational structures.

In summary, this study addresses the challenges faced by post-danwei communities, such as the lack of operational mechanisms, neglect of social issues, and obstacles to revitalization. Based on the concept of sharing, it proposes a corresponding strategy system and transformation plan, giving full consideration to the challenges and practical factors of the contemporary environment in community space creation, social network construction, and revitalization practices. The research findings are expected to improve the quality of public spaces, promote efficient utilization of community space resources, enhance community cohesion, and contribute to the sustainable development of post-danwei communities.

Innovations of the Study

(1) Innovation in Research Subjects

Existing literature and designs mostly focus on the research of traditional aging communities in China, with limited explorations specifically targeting the adaptability of danwei-based communities in the contemporary era. As a special product of China's socialist economic system, post-danwei communities represent an important period in the development of urban living patterns in China. Their distinctive spatial structure, social organization forms,

and characteristics of the times have significant research value.

(2) Innovation in Research Topics

In China, the integration of the sharing concept into community space renewal remains a relatively new and challenging topic. This study conducts a comprehensive review and analysis of relevant literature to accurately grasp the current research trends and development dynamics both domestically and internationally. It also examines mature and cutting-edge foreign case studies to summarize practical experiences related to community renewal and transformation towards sharing. Based on these findings, the research formulates more targeted and adaptable strategies for planning, spatial shaping, and other transformation approaches that suit China's national conditions and social background.

(3) Innovations in Case Studies

Different from traditional internet and literature searches for relevant cases, this study incorporates the author's experiences of studying and living in Europe. It conducts on-site investigations of various types of community spaces' development in foreign countries, deeply explores cases relevant to the theme of this research, and provides more applicable strategies for the revitalization of post-danwei communities in China.

(4) Innovations for Practical Exploration

Based on the concept of sharing, this research formulates detailed renewal paths and practical solutions more tailored to the actual situation for the revitalization of post-danwei communities. It provides new insights for addressing the development issues of post-danwei communities, demonstrating the feasibility and applicability of the sharing concept in their revitalization.

Research Gaps and Outlook

This study primarily employed methods such as literature review, case analysis, and survey research, but it still has certain limitations. Future research can incorporate more quantitative research methods, such as data analysis, constructing evaluation systems, and empirical studies, to provide more specific and objective data support. Additionally, for the sake of targeted

research, this study focused on research samples and design objects in the Guangzhou area, gaining a deeper understanding of the spatial structure and resident behavior patterns of post-danwei communities in Guangzhou. However, comparatively, institutional changes do not necessarily imply identical social changes, and spatial transformations are not mere replicas of the same patterns. The presence of local variables leads to regional variations in the production of danwei spaces. Post-danwei communities in different cities in China may exhibit certain differences, and the particularities of different regions and communities may have varying impacts on design. Therefore, further research and practice are needed to verify the adaptability, feasibility, and transformative effects of these methods in different regions and communities.

Therefore, the author expects that the subsequent research work can still carry out more detailed exploration in the following aspects:

(1) Comparative Study of Post-danwei Communities in Chinese Cities

By conducting comparative analysis of the spatial forms and resident behavioral characteristics of danwei-based residential communities in different cities and regional environments in China, a more comprehensive understanding of danwei-based residential communities is formed, along with a deeper insight into the factors influencing post-danwei communities. This helps provide further guidance for the design of transformation plans to enhance the quality of communities, resident satisfaction, and the applicability of the proposed solutions.

(2) Consideration of Other Practical Factors

The study did not adequately consider the impact of property rights and relevant laws and regulations on the sharing of public spaces in post-danwei communities. In future research, it would be beneficial to include discussions on relevant legal frameworks such as property law and land use rights, exploring how to promote the sharing of public spaces in post-danwei communities within a more comprehensive understanding of real-world constraints. For instance, examining the influence of property rights on shared spaces or exploring the requirements of laws and regulations for public space planning and management. By comprehensively considering the interplay between real-world constraints and the objectives of

sharing, we can better achieve the goal of sharing public spaces in post-danwei communities.

(3) Research on Architectural Renewal Strategies in Post-danwei Communities Under the Concept of Sharing

This study primarily focuses on the research of public space renewal strategies in post-danwei communities, predominantly from the perspective of urban design strategies. However, it does not fully delve into specific architectural design solutions but rather provides guidelines and strategies. Nonetheless, the formation of a sharing community requires improvements in both architectural spaces and open spaces. Therefore, in future research, further exploration can be conducted on how to promote the sharing of public spaces in post-danwei communities through well-designed architectural interventions. This includes considering the flexibility of architectural forms, the usability and attractiveness of public spaces, and the relationship between spatial layout and social interactions. By addressing these aspects, it will be possible to better achieve the goal of sharing public spaces in post-danwei communities.

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Appendix

Gonghe Area Community Space Needs Questionnaire

Hello, I am a postgraduate student studying architecture and I am currently engaged in research related to the transformation of post-danwei community spaces. I hope you can spare a little time out of your busy schedule to cooperate with us in completing the research questionnaire with the researcher, which will be conducted on an anonymous basis. The survey data will be used for research purposes only and will be kept confidential. Once again, thank you for your support and cooperation!

Basic Information

1. Your age?

A <20   B 21-30   C 31-40   D 41-50   E 51-60   F 60+

2. Your gender?

A Male   B Female

3. Which of the following groups do you belong to?

A Households   B Tenants   C Shop tenants along the street   D Neighbourhood residents   E Passers-by on the way to the area

Survey on Space Usage and Intention

1. How open do you think the neighbourhood you live in is now?

A very open   B relatively open   C relatively closed   D completely closed

2. Acceptance of the degree of openness of the community (multiple choice possible)

A Accept open to vehicular traffic   B Accept open to pedestrian traffic   C Accept open to time-of-day traffic   D Accept open without access control   E Do not accept open

3. What are the community factors that you are willing to accept for open sharing? (multiple answers possible)

A Parking   B Fitness and play facilities   C Small roads   D Square green areas   E Community service centres F Reluctant

4. Are you satisfied with the quality of the space in your neighbourhood?

A Very satisfied   B Satisfied   C Fairly satisfied   D Dissatisfied E Very dissatisfied

5. The spatial environment that you think needs to be improved in the district is (multiple choice)

☐ Road traffic ☐ Car park construction ☐ Greening and landscaping ☐ Public facilities support ☐ Rainwater and sewage pipe renewal ☐ Street lighting ☐ Activity space (children/youth/elderly) ☐ Others

6. If the public space in the area were to be renovated as a whole, what would you most like to gain from this renewal?

☐ Participate in more community activities ☐ Promote neighbourhood exchanges ☐Neighbours help each other with childcare ☐Improve space utilisation ☐Improve convenience of living ☐Increase residents' participation in community transformation ☐ Other

7. What functions would you like the public space in your community to provide?

☐ Lifestyle services ☐ Gathering place ☐ Sports space ☐ Education ☐ Shared kitchen ☐ Recreation ☐ Leisure ☐ Profit-making operation ☐ Others

8. Do you spend money in the businesses on the ground floor of your neighbourhood?

A Yes ☐Restaurant ☐Retail ☐Convenience services ☐Cultural education ☐Health and physiotherapy ☐Other

B No Reason_____

9. Do you think there is a need to supplement some other types of business?

A Yes ☐ Café & Bar ☐ Family & Children ☐ Leisure & Entertainment ☐ Clothing & Boutique ☐ Lifestyle & Home ☐ Others

B No Reason_____

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Here, my words cease, and my pen takes its final rest; after making a grand spectacle, I depart silently. My journey as a student draws to a close, and as I reflect upon each step taken throughout these years, a clear and interconnected path emerges. This world, from time immemorial, has held an enduring beauty, but all too often, people remain ensnared in their own sorrows, reluctant to step beyond their comfort zones. Yet, I made the bold choice to venture forth, to embrace rainbows and storms, to encounter charming souls, and to partake in more enchanting tales. Thus, with a heart brimming with gratitude, I express my profound thanks to all the people and experiences I've encountered during these past two years.

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The world is an ever-shifting tapestry, replete with mountains, rivers, lakes, and seas. You arrived by traversing the Milky Way and set sail on distant horizons. How does this world appear? I acutely sense that time is dwindling, and cherished moments are receding into a hazy distance. I often wistfully reminisce about the past, even deeming the version of myself from those days as the 'finest.' However, the past is irrevocable, and the future invariably awaits. I

shall bid a fond farewell to the past and persist in cherishing myself while ardently anticipating the morrow. For, as the saying goes, "You make but one voyage to this earthly realm; you must cast your eyes upon the sun." This adage has long been my creed and remains the path I tread. The second stanza of this poem will be composed on some yet-undiscovered day. Regardless of the future's course, I aspire to continue embracing fortune and hope, whether as an adult exuding childlike innocence or a child who embodies mature composure.

In closing, I wish all those who cherish me and those I hold dear the best of luck and happiness!