# CLAIMING A PIECE OF SKY

## Empowering Urban Vernacular in Chinese Workers' Village

by
Shiying (Sylvie) Wang

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# AUTHOR'S DECLARATION

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

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

# ABSTRACT

When you wander into a workers' village on the outskirts of Shanghai, China, you would see a very unique type of urban vernacular: suspended additions hanging on the facade. They are the inhabitants' attempt to transform the adverse spatial situations of the socialist-style workers' village and to create a viable form of life in contemporary Shanghai by privatizing the public space, even the one in the sky.

Through texts, maps, photographs and illustrations, this thesis explores, documents and develops an understanding of both the mechanisms and physical characteristics of those urban vernacular spaces, to showcase inhabitants' ingenuity in creating innovative spatial praxes as well as their political agenda in seeking a voice within the state-controlled renewal process. It is in this context that this thesis seeks opportunities to re-imagine a inhabitants-led renewal in Tianlin second villages and asks: how can architects turn the political and spatial agency of inhabitants into constructive catalysts and to empower the inhabitants to design, construct and modify their unique extension to suit their current and future spatial needs. In addition, how can the design

build upon the existing innovative spatial praxes and further encourage corridor social interaction to dissolve social barriers between different groups.

This thesis proposes to modify the existing two-stage consultation renewal process into a two-stage co-governance renewal model, influenced by the open building theories of the Dutch architect John Harbraken. As a first stage, “the support” entails establishing a regulatory framework that is negotiated and communicated between residents and authority. In the second stage, “the infill”, each inhabitant can fully engage in the design and construction of their own addition within the framework established in the first stage. There are two systems that facilitate the infill process: the “we-design” toolkit and the “we-build” kit-of-parts. The “we-design” toolkit is an assemblage of physical modular blocks designed to unlock the fine-grain spatial agency of autonomous individuals. Similar to an Ikea furniture, the “we-build” kit-of-part features an easy assembly and disassembly process that allows the inhabitants to  claim a piece of sky by themselves.

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# 1. GROUNDWORK

## INTRODUCTION

This chapter attempts to lay a historical foundation for the examination of suspended additions in one of the workers' villages: Tianlin second village. It traces the development of workers' villages since the 1950s, their dilapidation following the 1980s economic reform, and finally their fate determined by the evolving policies and practices of housing renewal in Shanghai.

## 1949-1978
## THE CONSTRUCTION OF WORKERS' VILLAGE

Since the establishment of the People's Republic of China in 1949, Shanghai has been undergoing a new wave of spatial transformation as a result of fundamental political and societal changes. Space, according to Henri Lefebvre in *The Production of Space*, constitutes a fundamental element of social domination rather than an innocent backdrop.[1] As an example of spatial practice under Chinese Socialism, the spatial production of workers' village needs to be understood from both post-colonial context and Maoist Chinese urbanism where the work unit (Danwei, 单位) was the fundamental socio-spatial unit.[2]

It was a difficult task for the Communists to govern a city that had been shaped by over a century of colonialism when they took control of Shanghai. After the First Opium War and the signing of the Treaty of Nanjing in 1842, Shanghai was transformed from a local port into a center of global capitalism by imperialist powers such as the British and French. A significant portion of Shanghai's urban fabric was shaped by high-rise art-deco buildings and neoclassical French villas, built by foreign capital for the needs of colonial elites. In contrast to wealthy imperialists and capitalists in opulent buildings, millions of Shanghai's working poor lived in squalid slums.[3] Hence, the Chinese Communist Party took reversing these inequalities left over from imperialism as one of its primary objectives.

Building workers' villages was a way of spatially transforming Shanghai under socialism, contributing to both the alleviation of housing shortages of the workers and the new industrial goals of the country.[4] Fundamentally, it signifies the transformation of Shanghai from a city built on wealth generation for its capitalist elites, to one in which all land was controlled and distributed by a socialist state in the interests of the proletariat. It emphasizes the function of the state is to "serve the people" (Wei Renmin Fuwu 为人民服务). The principle of "serve the peo-

1. Henri Lefebvre, The Production of Space (Malden, MA: Blackwell Pub, 2005), 1280.

2. Duanfang Lu, Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949–2005 (London ; New York: Routledge, Taylor & Francis Group, 2006), 49.

3. Gang岗 Luo 罗," "Kongjian De Shengchan Yu Kongjian De Zhuanyi" 空间的生产与空间的转移: 上海工人新村与社会主义城市经验," Huadong Shifan Daxue Xuebao (Zhixue Shehui Kexue Ban) 华东师范大学学报（哲学社会科学版), no. 6 (2007), 93.

4. Matthew Van Duyn, "Building Socialist Shanghai: Workers' New Villages and the Socialist Right to the City" University of Washington), 7.

ple" was embraced by Rebecca Karl as an alliance between workers and intellectuals.[5] Workers' village was intended to demonstrate the perfect harmony between workers' interests and the government's goal of industrial production through its rhetoric and practices. As more people engage in industrial production, more workers' villages can be constructed, resulting in an improved standard of living for more people. Workers' village was staged as one cohesive narrative reflecting the alliance of state's goal, individual, and "the people".

The construction and operation of workers' villages was also directly tied to the work unit as part of the welfare of its employees. As a combination of economic, political and social functions, the work unit not only offers its employees lifetime employment, but also attendant welfare such as public housing and medical care. The work unit also manages many of the everyday necessities of the community by providing social services, such as organizing events and resolving local disputes.[6] Work units are all enclosed within walls, separating them physically from their surroundings. In a sense, a work unit is almost a mini city that contains workplaces for industrial production, workers' villages for housing, and social facilities including shops, canteens, clinics, nurseries and libraries. Spatially, the "jigsaw puzzles" arrangement of these self-contained and spatially demarcated work units is a distinct feature of a Maoist city.[7] Moreover, the walled compound provides the workers with a spatial environment that ensures security and exclusivity, fosters social exchange and equality, and creates a sense of belonging and social identity.[8]

Additionally, in collaboration with the urban neighbourhood system, the work unit forms the dual administrative system that is in charge of transmitting party policy, implementing social campaigns and providing political education. The work unit supervised those who are formal-

5. Rebecca E. KARL, "Serve the People," in After-lives of Chinese CommunismANU Press, 2019), 250.

6. Xiaobo L ü and Elizabeth J. Perry, The Danwei: Changing Chinese Workplace in Historical and Comparative Perspective (Florence: Routledge, 1997), 3–20.

7. Lu, Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949–2005, 49.

8. Lu, Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949–2005, 51–66.

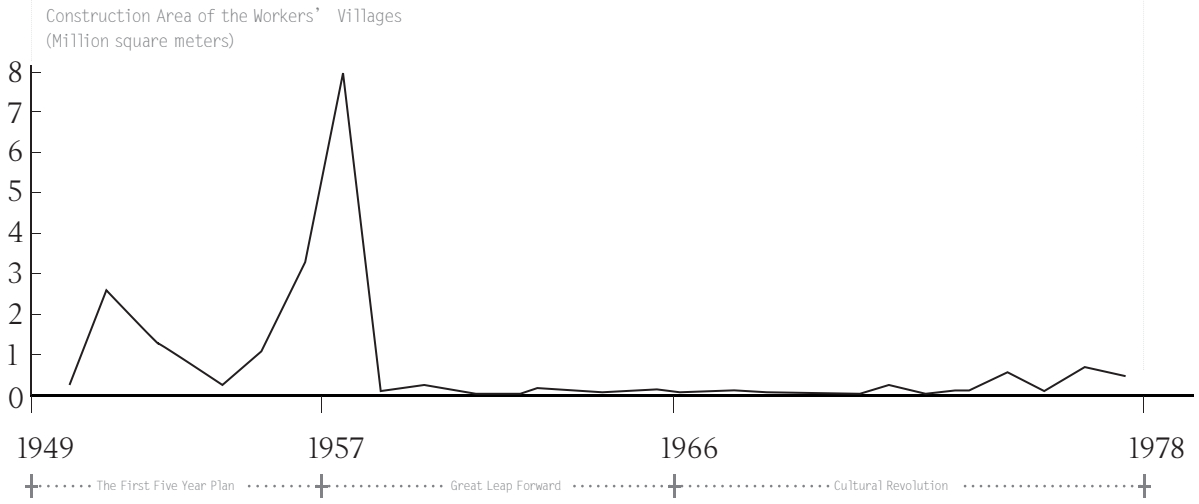



Fig1.1 Construction Area of the Workers' Villages

ly employed, while the neighbourhood system served to integrate those who were not employed such as students and retired workers.[9] Under this framework, the urban area of Shanghai was divided into a hierarchical stratification and each level corresponds to a respective organization in the urban administrative system. Under a territorial division of urban district (Qu 区), the Street Office (Jiedao Banshichu 街道办事处) takes charges of the Street (Jiedao 街道) which consists of 2,000–10,000 households.[10] Each Street was further divided into dozens of neighborhoods, each encompassing around 800 households, and was managed by neighborhood committee (Jumin weiyuanhui 居民委员会).[11] The neighborhood committee was sometimes further divided into smaller residents' groups consisting of residents living in the same building.

9. C. L. W. Chan, Myth of Neighbourhood Mutual Help, the Contemporary Chinese Community—Base Welfare System in Guangzhou (Hong Kong: Hong Kong University Press, 1993).

10. Lu, Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949—200, 550.

11. Lu, Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949—200, 550.

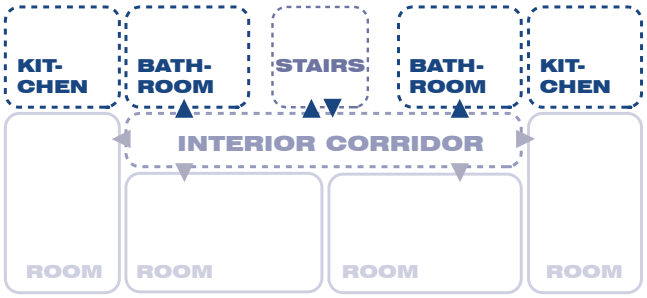
1949 1978

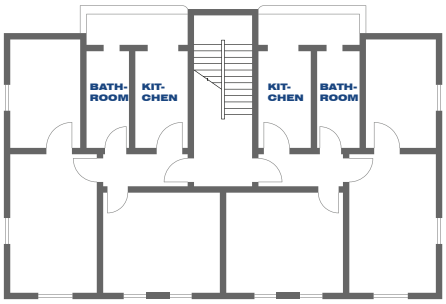
Construction of Workers' Village Challenges in Post-

1949 1957

The First Five Year Plan Great Leap Forward

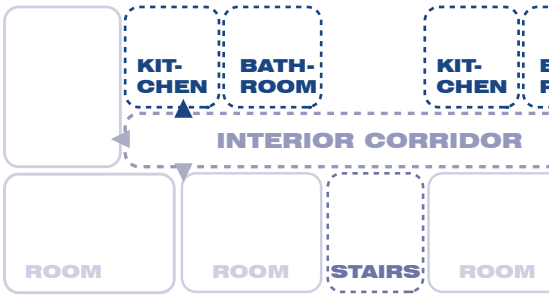
## INTERIOR CORRIDOR TYPE

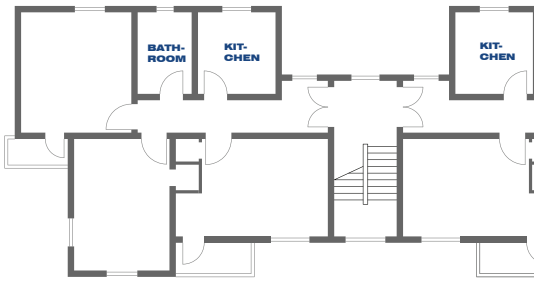



Taoyuan Workers' Village

## ALTERED INTERIOR CORRIDO




Caoyang Workers' Village

Fig1.2 Typical Layout of Workers' Village

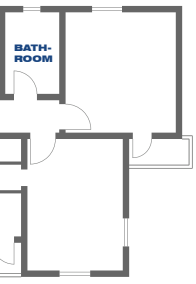
1990 2022

-reform Shanghai Inner-city Renewal

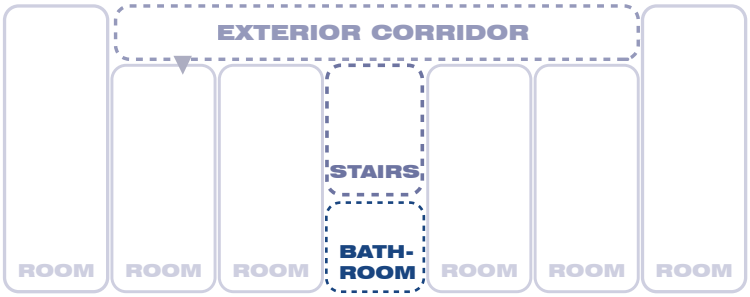
1966 1978

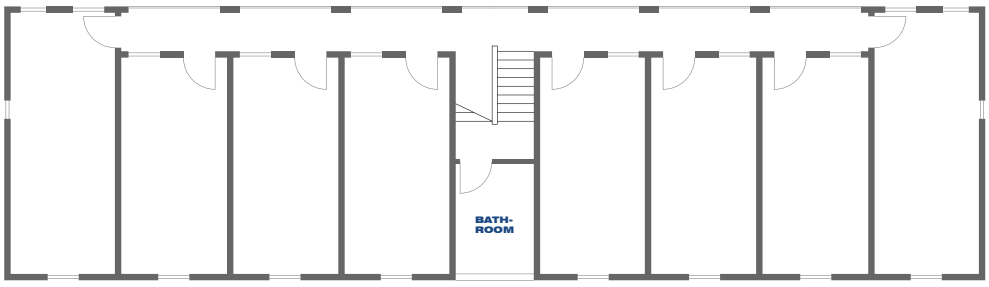
Cultural Revolution

## OR TYPE


## EXTERIOR CORRIDOR TYPE




Hangyun Workers' Village

## 1978-1990
## CHALLENGES IN POST-REFORM ERA

Despite their relative success in housing thousands of Shanghai's poorest, the workers' village never engendered a transformation to Maoist socialist society where the poor and working classes truly became "the master of the country".[1] In 1978, the Chinese Economic Reform took effect and shifted China to 'a market economy with Chinese characteristics'. Private enterprises have experienced rapid growth since then, while the public sector has shrunk.[2] Gradually, the work unit has ceased to be the fundamental socio-spatial unit of Chinese cities. The workers' villages, originally designed to support the collective and homogeneous lifestyle within work unit compounds, are now facing a new set of challenges in the increasingly market-oriented society.

1. Matthew Van Duyn, "Building Socialist Shanghai: Workers' New Villages and the Socialist Right to the City" University of Washington), 16.

2. Victor Nee, "The Emergence of a Market Society: Changing Mechanisms of Stratification in China," The American Journal of Sociology 101, no. 4 (Jan 1, 1996), 908–949.

### Deficiency of Space

*"Thirty thousand people are living in these small gray cubes, linked by paths bordered by young trees. We visited one apartment: three tiny rooms, inhabited by a family of six. On the landing, there was a communal kitchen used by three housewives in the building."*

*Marie-Claire Bergère, 2009, Shanghai: China's gateway to modernity, P380*

After visiting Caoyang workers' village in 1957, the French historian Marie-Claire Bergère was unimpressed by their "gray cubes" appearance and "tiny" size.[3] Workers' villages are easily distinguishable from commercial housing as they are brick and concrete structures that follow rationalist principles. They are usually orthogonal in shape, with flat roofs and simple mass without decorative expressions. The size of residences is significantly smaller as the bathrooms and kitchens are externalized to be shared by several households.

3. Marie-Claire Berg è re, Shanghai: China's Gateway to Modernity [Histoire de Shanghai.] (Stanford, Calif.: Stanford University Press, 2009), 379–380.

In the original development at Caoyang village, the first workers' vil-

lage built in 1951, three households would share one kitchen (one on each floor) and each household would have its own small toilet and washbasin located in the corridors.[4] The second period of the workers' village construction, the 20,000 Households Project, was built with lower standards. The standard layout consists of ten units spread over two floors and five households were to share one toilet and one kitchen.[5] Throughout the peak period of workers' village construction from the 1950s to the 1970s, the average living space for residents was under 4 square meters per person and facilities such as kitchen and bathroom remained being shared among residents.[6]

During the Maoist era, the reduced residence size was made acceptable by accommodating social activities and utilities that were usually in private domain in work unit facilities. For instance, there are no kitchens, dining rooms or shower rooms because people are expected to eat in unit canteens and take showers in public bathhouses.[7] After the start of the reform period, the central government attempted to disenfranchise the work unit from its social obligations and encouraged the work unit to make its facilities publicly accessible. This has resulted in the work unit's facilities becoming increasingly market-oriented. For example, many work unit canteens were turned into restaurants open to the public. Furthermore, a reduction in political controls has allowed previously suppressed cultural and consumer activities to resurface.[8] Without facilities such as canteens provided by the work unit, the "shortcoming" of the original design that doesn't accommodate private kitchens and bathrooms started to become obvious, as the residents' lifestyles began to evolve out of the confines of the work unit compound and became increasingly heterogeneous.

Another factor that contributed to the issue of space deficiency was the expansion of household sizes. The design of residence was based on the

4. Bianzuan Weiyuanhui 编撰委员会[Compiled by the Compilation Representative Committee], Shanghai Zhuzhai Jianshe Zhi 上海住宅建设志 [Shanghai Housing Construction Annuals] (Shanghai: Shanghai Academy of Social Sciences Press 上海社会科学院出版社, 1998).

5. Ibid., chap. 2 Section1 "20,000 Households".

6. Ibid., chap. 2 Section 3 "A batch of residential new villages"

7. Duanfang Lu, Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949–2005 (London ; New York: Routledge, Taylor & Francis Group, 2006)63–64.

8. Deborah S. Davis, The Consumer Revolution in Urban China, Vol. 22 (Berkeley [u.a.]: Univ. of California Press, 2000).

concept that the housing requirements for single employees are less complex and thus space expectations are lower. In William A.V. Clark's theories of migration, people move multiple times during their lifetime, with the primary reasons being marriage, birth of children, increased income, and retirement.[9] In general, most urban families would experience two to three relocations, while for low- and middle-income families in the workers' villages, these major changes in the family life cycle are confined to the same apartment due to economic constraints. The workers were in their twenties when they moved into the workers' village and they soon discovered that the space is deficient following their marriage and the birth of new children.

9. William A. V. Clark, Human Migration (Beverly Hills: SAGE publications, 1986).

**Financial Hardship and Loss of Social Identity**

The reform has brought significant changes to the economic performance and social role of the work unit, breaking the high degree of financial, social and spatial equality maintained within the work unit. Subsequently, the social ramification was intensified and resulted in economic hardship and the loss of social identities of those living in the workers' village.

Before the reform, work units were required to turn over most of their revenues to the state, which in turn redistributed money and scarce goods according to the central plan. With the introduction of a market economy, the role of the state has weakened and work units have become independent of their own economic performance. This shift generated sharp differentiation between work units as some units performed much better than others. As a result, some workers received a lucrative income from their highly successful units, while others lived on a modest salary.

Production driven by the needs of the market has replaced the previous focus on the development of heavy industry.[10] Some work units, especially those in heavy industry, lose their competitiveness and become insolvent. Mass poverty overtook the workers' villages after the insolvency of the work unit left most residents unemployed.[11] According to the statistics of the neighborhood committee of Caoyang village, as of 2010, the layoff unemployment rate (in the employment age group) of workers has exceeded 80%.[12] The monthly compensation of laid-off workers ranged from 300 to 600 yuan per month. Municipalities raised the minimum income to 800 yuan per month in 2000, and to 1000 yuan per month in 2010.[13] The amount, however, is still insignificant to the ever-increasing cost of living in Shanghai. The majority of laid-off workers need to re-enter the labor market to support their families, but unfortunately many of them are unable to be employed because they often do not possess the necessary professional skills as a result of their age and limited education.

In addition to financial hardship, the residents of the workers' villages also suffer from the loss of social identity. In the Mao-era, the working class was at the top of the social class, because it was the leader of the proletarian revolution and the socialist construction. The residents often recall the socialist period fondly and are proud of their worker identity. Nowadays, the enviable proletarian workers of the past are the laid-off workers at the bottom of the social ladder. This stark contrast made many of the residents feel they have been left out during the booming development of the Chinese economy.

## The Unwelcome New Residents, the Migrant Workers

Before the reform, Maoist authorities imposed strict controls on rural migration.[14] Permits for work and residence (hukou 户口) were coor-

10. Laurence J. C. Ma and Fulong Wu, Restructuring the Chinese City (Abingdon, Oxon: Routledge, 2005). https://www.taylorfrancis.com/books/9781134316090.

11. Dorothy J. Solinger, "Labour Market Reform and the Plight of the Laid-Off Proletariat," The China Quarterly (London) 170, no. 170 (Jun, 2002), 304–326.

12. Chen辰 Yang 杨, From Model Community to Monumental Site, a Workers' Village through History , A Workers' Village through History 从模范社区到纪念地，一个工人新村的变迁史 (Shanghai: Tongji University Press 同济大学出版社, 2019)124.

13. Ibid.

14. Kam Wing Chan, Cities with Invisible Walls, 1. publ. ed. (Hong Kong: Oxford Univ. Press, 1994).

dinated to ensure that peasants remained in their own villages.[15] Even after entering the cities, they were unable to survive without valid documentation, because basic commodities such as rice were rationed in cities.[16] As a result of the de-collectivization program implemented in 1978, the surplus rural labor was unleashed, resulting in a massive migration from rural areas to urban areas. Many rural migrants that came to Shanghai settled in and made a living in the workers' villages.

Since the late 1970s, migrants from rural have gradually taken over jobs in the cities, including restaurant and retail services and industrial and maintenance work.[17] The workers' villages have attracted many rural migrants due to their relatively low rents. The unit on the ground floor is particularly popular among rural migrants, because it allows them to convert the room facing the street into small shops or restaurants while having a small area in the back for living.

Despite the erosion of the institutional barriers that restricted rural-to-urban migration after reform, new social and cultural boundaries emerged. Crime and prostitution increased as the country transitioned to a market economy.[18] However, the issue of urban ills has often been attributed to peasant migrants despite the fact that they are closely linked to the process of marketization.[19] It is recognized by the majority of urban residents in the workers' villages that migrants and themselves are different. Migrants, in their view, are motivated by money and are jealous of urban residents because of their rural origins, mobility, and economic status.[20]

After the mass migration, old neighbors were replaced by newly arrived outsiders. Decades of interpersonal relations between neighbors disappeared. The tension between the urban residents and migrants in the workers' villages made it difficult for them to continue the old collective

15. Tiejun Cheng and Mark Selden, "The Origins and Social Consequences of China's Hukou System," The China Quarterly (London) 139, no. 139 (Sep, 1994), 644–668.

16. Cheng, "The Origins and Social Consequences of China's Hukou System," , 644–668

17. Lu, Remaking Chinese Urban Form: Modernity, Scarcity and Space, 1949–2005, 149

18. Dorothy J. Solinger, Contesting Citizenship in Urban China : Peasant Migrants, the State, and the Logic of the Market (Berkeley: University of California Press, 1999). http://hdl.handle.net/2027/heb.09177.

19. Li Zhang, Strangers in the City (Stanford, Calif: Stanford Univ. Press, 2001).

20. Solinger, Contesting Citizenship in Urban China : Peasant Migrants, the State, and the Logic of the Market

living, because the effectiveness of such living highly depends on the dense network of interpersonal relationships among residents. [21]

21. Lu 路 Feng 冯 and Xiagnzhu 湘竹 Zheng 郑, "Hangyun New Village in the Age of Post-Collectivism 后集体主义时代的航运新村," New Architecture 新建筑, no. 5 (2018), 43–47.

## 1990-2022
## SHANGHAI INNER-CITY RENEWAL

Shanghai has been racing to modernize its urban spatial environment through Inner-city Renewal (Jiucheng gaizao 旧城改造) since the development of the built environment became increasingly market-oriented in the post-reform era. The early phase of Inner-city renewal targeted structurally dangerous tents, shanties, and linong communities. A priority has been placed on the workers' villages in recent years due to its status as a non-self-sufficient residence (Feichengtao Zhuzhai 非成套住宅). As a result of lacking private toilets and/or kitchen, its inhabitants possess only the right of use, while the state retains ownership of the property. Consequently, the housing units in the workers' villages can only be sublet and cannot be sold.

The inner-city renewal has moved through three phases, each with a distinct renewal strategy that is feasible at the time. This section traced over the evolving policies of Shanghai inner-city renewal in three phases: demolition and relocation, demolition and move-back and rehabilitation.

## 拆迁, Chaiqian (Demolition and Relocation)

During the initial period of inner-city renewal, clearance of slum and spatial modernization was the main objective. Demolition and relocation were regarded as the most practical method of renewal at the time, in light of the shared interest of local government and property developers in pursuing exchange value. The government could make use of inner city land for a more valuable purpose, while the private sector was given a strong financial incentive to invest in redevelopment.[1] In the model of demolition and relocation, the private sector is responsible for capital investment and real estate redevelopment, the government facilitates through administrative powers, and the residents remain as passive recipients.

While demolition and relocation provided impressive efficiency in redevelopment of inner-city Shanghai, its operation is at the expense of local communities' benefits. Demolished dwellings were physically inadequate, however, they were socially inclusive due to their central location, the existence of established social bonds, and the affordability to the poor. Resettlement housing, on the other hand, was generally located in distant, poorly connected, or under-served suburban areas. As a result of relocations, many people have experienced difficulty obtaining jobs, schools, and medical care, as well as the loss of social networks, along with an increase in commute costs.[2] After the relocation, there was an outpouring of discontent among the relocated residents, and protests and petitions were initiated against the developers and even the local government.[3] In response to residents' opposition to redevelopment, renewal projects have been slowed down and development costs have risen, creating a number of complex obstacles to the demolition and relocation of buildings, as a model of renewal.

1. Shenjing He and Fulong Wu, "Property–Led Redevelopment in Post–Reform China: A Case Study of Xintiandi Redevelopment Project in Shanghai," Journal of Urban Affairs 27, no. 1 (February 1, 2005), 1–23.

2. Stephen Wei-Hsin Wang, "The Evolution of Housing Renewal in Shanghai, 1990–2010: A 'Socially Conscious' Entrepreneurial City?," International Journal of Housing Policy 11, 11, no. 1 (March 14, 2011), 57.

3. Yan Zhang and Ke Fang, "Is History Repeating Itself?," Journal of planning education and research 23, 23, no. 3 (March 2004), 286 – 298, doi:10.1177/0739456X03261287.no. 1 (March 14, 2011), 57.

### 拆落地, **Demolition and Move-back**

It was becoming increasingly evident that national leaders were concerned that uneven economic development and social instability associated with Inner-city Renewal would undermine the legitimacy of the Party by the turn of the millennium.[4] The Shanghai municipal government has therefore launched a 'New Round of Urban Renewal' that facilitates greater responsibility for social welfare, more effectively regulates renewal practices, and alleviates residents' complaints.

4. Ya Ping Wang, Urban Poverty, Housing and Social Change in China (Florence: Routledge, 2004).

The model of demolition and move-back has been proposed and implemented in response to the broader renewal agenda, including heritage conservation and social equity issues. According to this model, existing old buildings are demolished and rebuilt on the same site with low standard and high density. Different from the previous practices, the original residents would be relocated back to the original site, to the unit with the same square footage but accommodate a private kitchen and bathroom. Demolition and move-back is well accepted among the residents in the workers' villages, because in addition to solving the issue of shared facilities, it transformed the workers' villages from public houses to commodity houses, allowing them to be traded freely on the market.

Demolition and move-back is still a market-oriented model. The private developers can benefit from looser zoning and are able to build with higher density to sell the extra units for profit, while the government became a mediator of diverse interests and more proactive in promoting socially-oriented projects. This model, however, also faces a set of obstacles and has become increasingly hard to implement. Especially since 2003, the Shanghai government adopted a planning policy of "double increase and double decrease", that is to increase green space and public space, and reduce FAR (floor area ratio)  and GFA ( gross floor area).

With less surplus units to sell and costly on-site resettlement, there was only limited interest in this program from the private developers.

**改造, Rehabilitation**

The preservation of historic buildings as part of the urban renewal process was another key transformation. A decade of careless demolition led to the gradual realization in the government that heritage plays an important role in the local economy and in the culture of the community. Responding to this, the list of Outstanding Historic Buildings was expanded to encompass many workers' villages. A renewed commitment is being made to housing rehabilitation, particularly that of structurally sound and culturally rich worker's villages.

It is the purpose of the rehabilitation to improve the living conditions of the residents by optimizing the internal layout and adding amenities such as a private bath, a WC, a kitchen, and gas fittings. There have been cases in which the original building structure and facades have been retained, but the interior spaces have been converted into compact and self-sufficient apartments. In most cases, additional structures have been constructed in order to provide additional amenities to the original building. In recent years, small-scaled interventions has taken up the majority of renewal projects, resulted from the 'Walking Shanghai Micro-renewal Project (行走上海微更新计划)' initiated by Shanghai Municipal Administration of Planning and Land Resources in 2016. This project emphasizes residents' participation, responding to the innovative governance pattern of joint-construction outlined in the report of the 19th Party Congress. It seeks to explore a new model of shared governance between the community and the government; however, in

reality, power and resources remain concentrated in the state's hands. According to Chu Wei, Kangjian street office deputy director, residents naturally should be the ones to make the decisions because it is their home, but they must go through the relevant procedures to make it comply with the regulations.[5]

5. Rong 荣 Li 李, "Shanghai Urban "Micro-Renewal": Grassroots Communities have a Participatory Planning Guidebook 上海城市“微更新”：基层社区有了参与式规划指导手册," Xinhuanet. http://www.news.cn/politics/2021-12/25/c_1128200652.htm.

## Discussion

*“In accordance with insisting on organic renewal, people-oriented, adapting measures to local conditions, adhering to multiple strategies, adhering to cultural heritage, adhering to both restoration and management, speeding up the renovation of old housing, and further improving the quality of living.”*

*The 14th Five-Year Plan for Shanghai Housing Development*

The inner-city renewal framework in Shanghai has evolved over the last decade to become more socially conscious and smaller in scale.[6] There has been a rising national agenda calling for more socially balanced renewal, as increasing inequality as well as resident dissatisfaction require more nuanced policies. It also suggests a path to co-governance of the community and the government in community renewal, where the government plays an organizing, coordinating and service role, and the residents are active participants of renewal. Despite this, power and resources remain in the hands of the upper-level government, and there has not yet been a strong call for further decentralization of power, nor a concrete process to ensure residents’ participation in community renewal.

6. Stephen Wei-Hsin Wang, "The Evolution of Housing Renewal in Shanghai, 1990-2010: A 'Socially Conscious' Entrepreneurial City?" International Journal of Housing Policy 11, no. 1 (Mar 14, 2011), 51-69.

# 2. DOCUMENTATION

## INTRODUCTION

As the built environment deteriorated, the inhabitants of the workers' villages started to self-renew their living environment through constructing informal structures. An impressive array of vernacular structures will be immediately apparent upon entering a workers village. Some of these structures are built from the ground up, while others are suspended from the facade in midair. In some cases, they comprise assemblages of objects, thin planks and pipes, while in others, bricks and concrete form solid structures. Some are used as storages and some accommodate cooking, showering or laundry. These are inhabitants' local adaptations to the outdated spatial qualities in workers' villages, showcasing their constructive optimism, constantly seeking alternative ways of adapting their space to suit ever-changing circumstances.

In order to examine the most controversial form of local adaptation, suspended additions, Tianlin Second Village was selected as the study site since it is well known for the quantity and variety of these additions. The purpose of this chapter is to showcase the often under-recognized resource of inhabitants' ingenuity and their spatial agency. It includes assemblage of visual and textual materials that explore various aspects of the suspended additions, including materiality, construction details, mechanism and more importantly, how inhabitants tailor such small spaces to fit their unique everyday demands. This chapter provides substantial evidence to argue against the conventional profession practice in which users are typically rendered as passive 'consumers' and it forms a supporting material of design proposal in Chapter 3.

## A NOTE ON METHOD

The research of the thesis builds upon the research project entitled *Shanghai Project* (SHP) initiated by four architects: Feng Lu, Zhang Bin, Zhuang Shen and Fan Wenbing. They are drawn to the complexity of live-in space in contemporary Shanghai, especially in the workers' villages. They offer multiple extensive studies on how build form intervenes into the urban environment of workers' village as a spatial mechanism, and meanwhile under the impact from the specific political, economic and cultural conditions of the workers' village. Among them, one project conducted by Zhang Bin and his team, entitled *From Overflowing to Mutualism, Study of Common Space in Tianlin Workers' Village*, is particularly significant for the development of this thesis. Through this research, I first encountered the site and the interesting urban vernacular phenomena within it. This research, along with the published design studio of Tongji University led by Zhang Bin, offer substantial information and documentation of existing conditions in Tianlin second village, from its history, demography, personal narratives and the preliminary analysis of the vernacular constructions.

With travel restrictions due to global pandemic, the research of the site has to be conducted remotely. The remote investigation of the site was made possible thanks to the assistance of my two friends in Shanghai, Fu Ding and Sizhe Luo, who provide me with a great favor by taking photographs and videos of the site, as well as the open-source investigative techniques developed by Forensic Architecture, an London-based agency that conducts spatial and media analysis to reveal evidence of human rights violations in the site that the researchers do not have access to. As the suspended additions are located in the public corridor, my friends are able to access easily and take photos of this supposedly

private section of one's home. Supplements to this are the pictures and videos, especially the interior ones, posted on news, social media and real estate websites. Thanks to the contemporary universality of phones and social media, inhabitants of the site share fragments of their lives on various social media sites. Moreover, the two online forums where residents discussed the Tianlin second village renewal provide first-hand information of their thoughts of existing situations and expectations of their future homes.

Through photo-maching and digital reconstruction of the fragments gathered, this chapter aims to use a montage of architectural drawings to understand and communicate social, spatial, and temporal relationships of this unique phenomena of this suspended urban vernacular in Tianlin second village.

## STUDY AREA

The site of this thesis is Tianlin second village. It is part of Tianlin village, a cluster of workers' villages consisting of 14 workers' villages. Those workers' villages were built when this area was dedicated as Shanghai Instrument Industrial Zone. In its location, it is typical of workers' villages. Since the workers' villages were built as a kind of "supporting service facilities" that cooperates with the development of the industrial zone, they are usually located at the edge of Shanghai and next to the production sites.[1] By the end of 1958, the city had built 4.68 million square meters of residential houses and 201 workers' villages at the edge of the city.[2] In a report by the Xinhua News, Shanghai's "workers' village is encircling Greater Shanghai". (Figure 2.1)

Today, Tianlin village has evolved from subsidized collective housings located on the city periphery to market-based commodity housings that are now located relatively close to the city center. In the 1990s, the Shanghai Instrument Zone was replaced by High-Tech Industries, such as semiconductor, electronics manufacturing, IT and software development and it is renamed to Caohejing New Technology Development Zone. At the Northwest of Tianlin, Xujiahui area has developed into a high-profile commercial center known for its large malls. A large number of original residents have left and are replaced by migrant workers who work in the nearby factories, restaurants or retails. So far, in Tianlin second village, migrant workers have accounted for about sixty percent of the total inhabitants.[3] The remaining forty percent are mostly retired middle-aged and elderly original inhabitants.

1. Chen辰 Yang 杨, From Model Community to Monumental Site, a Workers' Village through History , A Workers' Village through History 从模范社区到纪念地，一个工人新村的变迁史 (Shanghai: Tongji University Press 同济大学出版社, 2019), 70.

2. Bianzuan Weiyuanhui 编撰委员会[Compiled by the Compilation Representative Committee], Shanghai Zhuzhai Jianshe Zhi 上海住宅建设志 [Shanghai Housing Construction Annuals] (Shanghai: Shanghai Academy of Social Sciences Press 上海社会科学院出版社, 1998), http://www.shtong.gov.cn/Newsite/node2/node2245/node75091/index.html. 151.

3. Bin 斌 Zhang 张, "From Overflowing to Mutualism, Study of Common Space in Tianlin Workers' Village 从“溢出”到“共生”，田林新村共有空间调研," Time + Architecture 时代建筑, no. 02 (2017), 47–55.

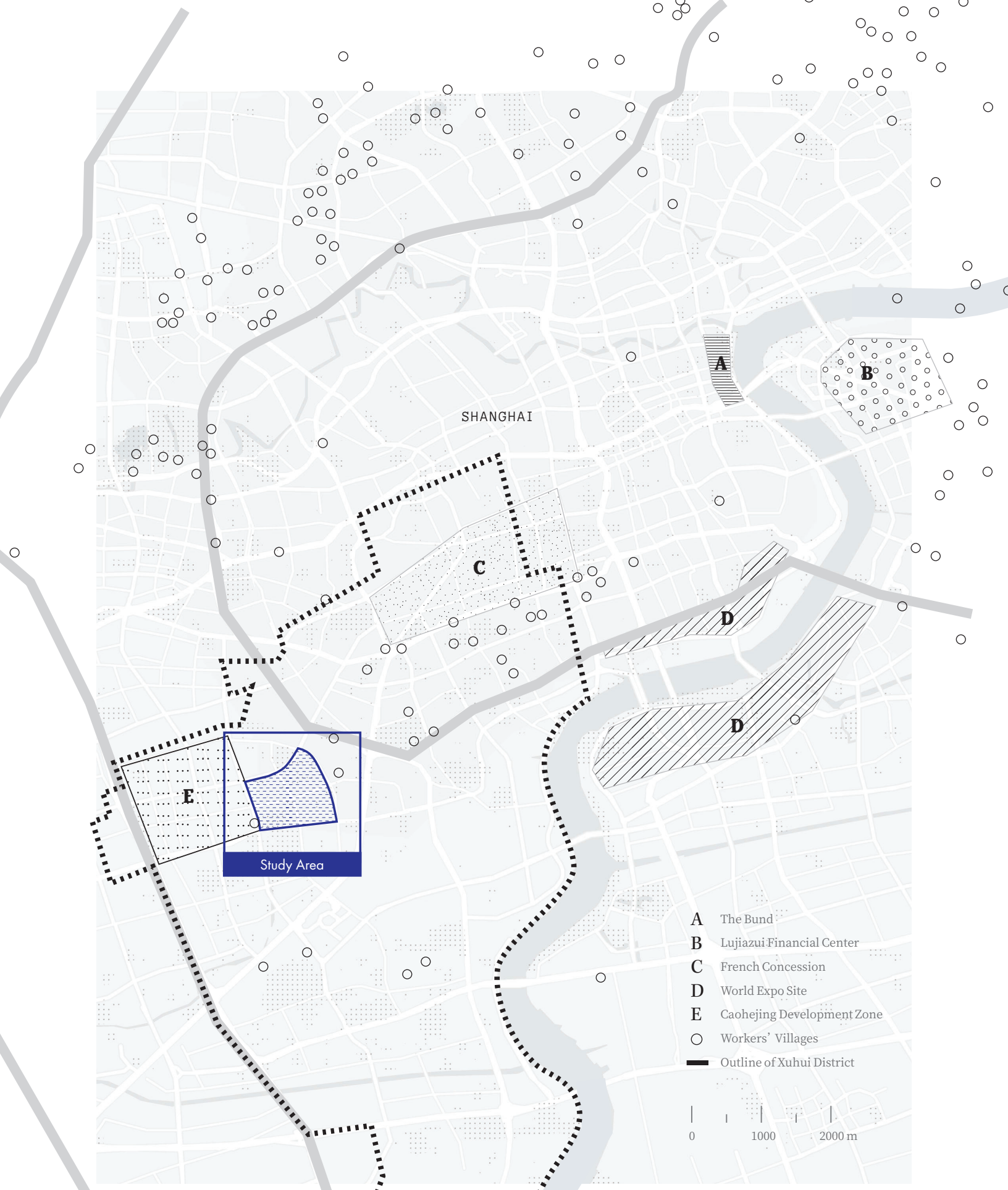



Fig2.1 Location of Site and Workers' Villages in Shanghai

## BACK IN THE DAY

Tianlin second village was built in 1957 to accommodate over 1000 households working in the Shanghai Automation Instrument First Factory. It was managed by the Municipal Housing Management Office (房管局 Fang guan ju). Property repair and maintenance mainly relied on state funds because the rent standard set by the state is very low.

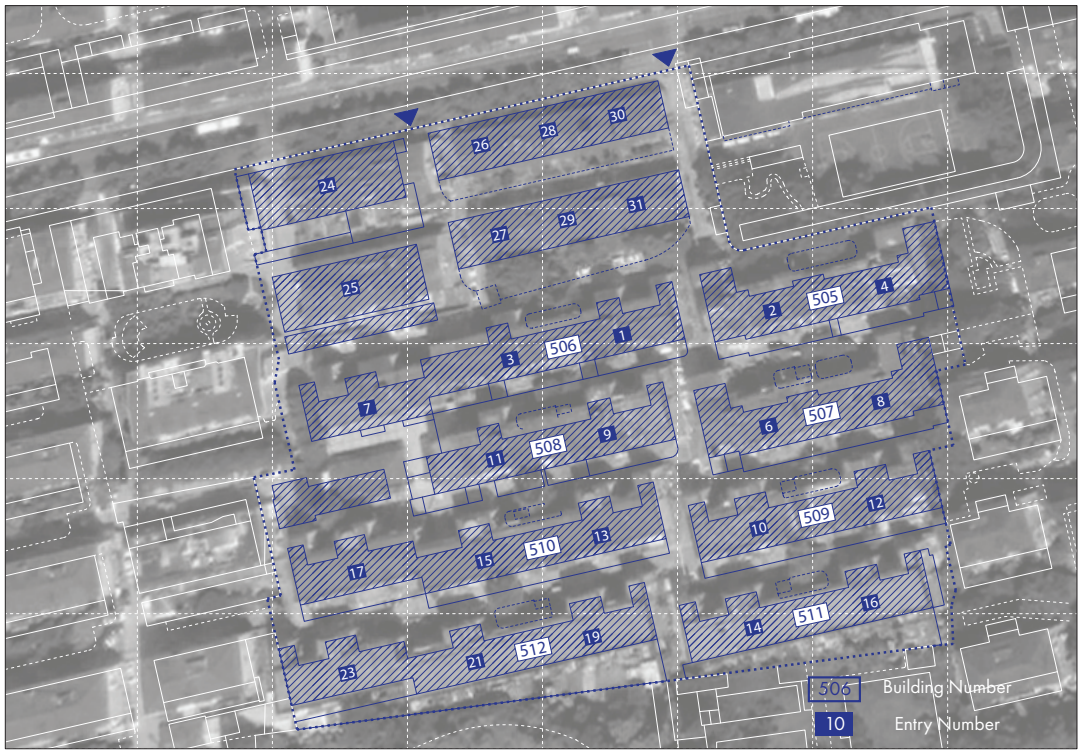



Fig2.2 Plan of Tianlin Second Village

The building follows the typical design of the exterior corridor style that are common among workers' villages in Shanghai built at that time. The buildings are dormitory-style, with each unit consisting of one room, as well as an entry room which counts as half a room.(Fig2.4) The unit is not equipped with a kitchen or bathroom. These residences are small in size, designed with the housing standard of 2-4 $m^2$ per person, totaling about 15-20 $m^2$ per household. Since the workers' families were provided with unit canteens and public bathrooms for eating and bathing, the small residence was adequate for the needs of the workers at that time. One entry has one staircase and nine units, and each building has 2-3 entries. Each floor shares a large toilet room where each toilet stall has a lock on its door, so each household can secure its own independent and private toilet space.(Fig2.3)

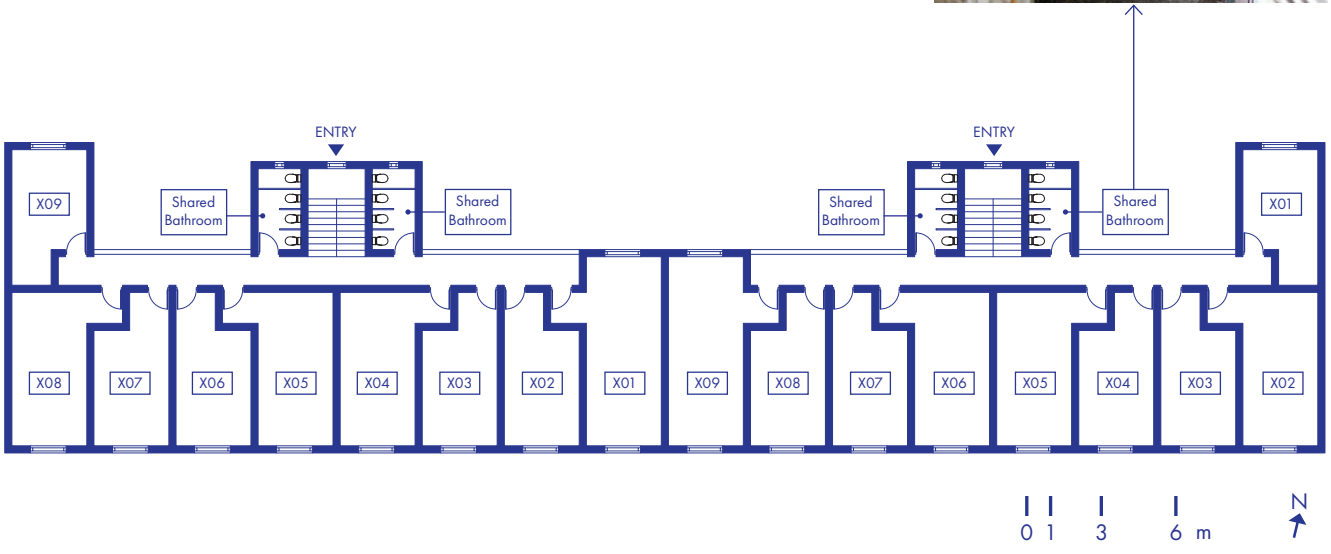



Fig2.3 Photo of Shared Bathroom (Top)

Fig2.4 Plan of Dormitory-style Building (506, 508, 509, 510, 511) (Bottom)

## RECENT YEARS

Around the 1990s, Shanghai Automation Instrument Factories was closed and a large number of workers were laid off. Following the mass closure of the work units, the state council initiated housing privatisation by allowing the sitting residents to purchase the work unit housing, in order to reduce cost of public housing management. While most of the workers' villages were converted into commodity housing where residents purchased the ownership of their units, Tianlin second village, however, remained state-owned, because non-self-sustained housing units cannot be sold according to the *Implementation Rules on the Sale of State-own Housing*.

In 1996, the ownership of the Second village was turned over to the State-owned enterprise *Shanghai Xufang Limited Company*, which was established in 1996, as a private service sector detaching from administration function in *Xuhui District Public Housing Management Office*. The original residents hold the right to use and pay extremely low rent to *Xufang Company*, and the company is responsible for the management and maintenance of Tianlin second village.

As *Xufang Company* operates as a private sector without state funds, there is inadequacy of maintenance funds due to low rent, resulting in rapid and serious housing deterioration. Under such circumstances, the inhabitants' reports on housing issues and inquiries for maintenance were usually ignored. Gradually, the inhabitants were left by themselves to repair and manage their properties. [1]

Moreover, along with the closure of the work unit were the closure of work unit facilities such as public canteens and bathhouses. A lack of space and necessary amenities within each unit began to affect residents. Some households experimented with occupying the public space

1. "The Breakout and Resistance of Daily Life: A Study of Residential Architecture Space in Dinghai Bridge Area (4) 日常生活的突围与抵抗——定海桥地区居住建筑空间调研 (4)," last modified Apr 14, accessed May 27, 2022, https://mp.weixin.qq.com/s/ZJUbQIv89paZXslIPPcRzw.

such as courtyards and corridors for personal use.(Fig 2.5) It started with putting some personal items outside and quickly transformed into constructing permanent structures in public areas. After these structures were not ordered to be removed and the individuals responsible for them were not punished, the rest of the households began to follow suit in order to compensate for inadequate interior space.[2]

2. Bin 斌 Zhang 张, "From Overflowing to Mutualism, Study of Common Space in Tianlin Workers' Village 从“溢出”到“共生”，田林新村共有空间调研," Time + Architecture 时代建筑, no. 02 (2017), 47–55.

Fig2.5 Photo of Tianlin second village

## FAILED RENEWAL

In the course of Shanghai's decade of feverish inner-city renewal, the Tianlin second village was left out. Due to the high value of land and the concentration of population, the cost of demolishing the second village is too high for developers to consider it "developable" if they follow the "headcount" based demolition compensation method.[1] In the face of similar situations, the government usually helps residents to renovate their homes to “self-sustain” units. The renovation plan for Tianlin second village was proposed in 2010, but shelved because the signed approval rate of residents is lower than the rate needed for such a renovation project (95%). This relatively high rate reflects the “people-oriented” objective outlined in *The 14th Five-Year Plan for Shanghai Housing Development*. As previously discussed in Chapter 1 Groundwork, escalating conflicts over city renewal had led Shanghai’s government to adopt a socially conscious policy to inner-city renewal.

1. Zhang 张, "From Overflowing to Mutualism, Study of Common Space in Tianlin Workers' Village 从“溢出”到“共生”，田林新村共有空间调研," , 47–55

*“In accordance with insisting on organic renewal, people-oriented, adapting measures to local conditions, adhering to multiple strategies, adhering to cultural heritage, adhering to both restoration and management, speeding up the renovation of old housing, and further improving the quality of living.”*

*The 14th Five-Year Plan for Shanghai Housing Development*

According to the *Shanghai Urban Renewal Regulations*（上海市城市更新条例）, a renewal project must to through two rounds of consultation and each rounds of consultation follows a linear path from Central government, to local government and end with residents(Fig 2.6).

The first round of consultation is for establishing a renewal project. The renewal targets and supporting policies are formulated by the municipal government: Shanghai Municipal Committee of Housing and Urban-Rural Development. The district government would then select sites for renewal, taking into account both the municipal requirements

and local conditions. After site selection gains approval from municipal level, the renewal task would be handed over to the sub-district government sub-district office and then the neighborhood committee. They would inform and mobilize the maximum number of property owners in the selected site. The property owners will be given an inquiry form with two choices: agree to renewal or disagree to renewal. If more than 95% of the property owners agree to renewal, this renewal project will move into the second round of consultation.

The main actor of the second consultation is the district government, who would collaborate with experts like architects, planners and developers to draft the detailed renewal plan. The renewal plan will be submitted to the municipal level for review. The sub-district government and the neighborhood committee would then take this plan to the community to obtain both approval and feedback. In practice, they often plays the role of trying to persuade residents to sign the agreement form.

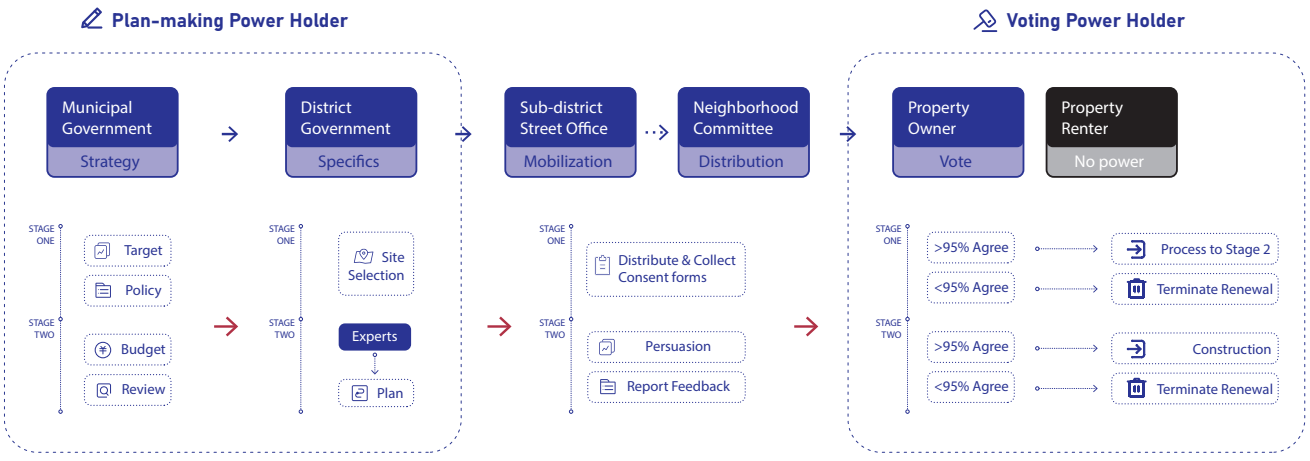



Fig2.6 Diagram of Current Renewal Process

Even though the path to community renewal is clear, and residents have become willing partners in inner-city renewal because of the deteriorating building environment, there are various obstacles and challenges in workers' village renewal, due to the complexity of old communities and the distribution of power among stakeholders.[2]

Tianlin second village renewal project began with the first round of consultation in the beginning of 2010 and passed in April 2010. In 2014, a detailed plan was released during the second round of consultation. Unfortunately, the second round of signings fell short of passing rate and the project was terminated. The successful first-round consultation indicated the mutual agreement between property owners and the government that a renewal is needed due to the dilapidated built environment. What led to the termination was the residents' dissatisfaction with the detailed plan released during the second round. The two online forums where residents discussed the Tianlin second village renewal provide valuable insight into their thoughts of the existing renewal process and expectations of their future homes. The first forum started in 2009 and ended around 2014.[3] The second one started in 2019 and still has ongoing discussion.[4]

Many forum participants have expressed frustration with the renewal process due to a lack of information transparency and communication channels with government officials. In the absence of a clear method of contact with the government officials, obtaining information can be difficult. In spite of the residents' efforts to call and write to the neighborhood committee, to post on the web message board, and even to visit multiple offices in person, they are not satisfied with the typically bureaucratic standard responses they received.

"*The official website indicates that it is still in progress, but a month has passed and there has been no update. So angry.* (今天上官网问竟说在处理，但是一个月快过去了还没处理好哦，气四人了)"

*– Posted by Wlj821221 on September 30th, 2009*

2. Meicheng Wang and Tian Ruan, Conflicts in the Urban Renewal of the Historic Preservation Area—Based on the Investigation of Nanbuting Community in Nanjing, Recent Developments in Chinese Urban Planning (Cham: Springer International Publishing, n.d.), 114, https://doi.org/10.1007/978-3-319-18470-8_7.

3. "About the Renovation of Lane 65 Tianlin Road 关于田林路65弄动迁," , accessed Sep 28, 2022, https://www.libaclub.com/t_7308_3455434_1.htm.

4. "News about the Old Reform of Lane 65 Tianlin Road in Xuhui District 徐汇区田林路65弄旧改消息," , accessed Sep 28, 2022, https://www.libaclub.com/t_7308_10745078_1.htm.

*"It is always the government's excuse that the matter is still under research.* (政府总是拿研究中来挡事 )"

– *Posted by* 懒猫_懒猫 *on May 12th, 2010*

*"I am afraid that ZF*[5] *is fooling us, being perfunctory, and putting the responsibility on the residents when the pass rate is not reached.* (就怕zf捣糨糊, 敷衍了事, 没达到通过率就把责任推给居民。)"

5. Pinyin abbreviation of the government to avoid censorship.

– *Posted by Ray1885 on July 15th, 2021*

Many residents of Tianlin second village are frustrated with the endless waiting time and lack of communication and are seeking ways to assert a greater voice in the village's renewal.

*"Brothers and sisters, we need to unite to carry out ***** [6]*, otherwise the district officials will not pay attention to us. This has been dragging on for so long I do not know when it will be the end!* (兄弟姐妹们啊, 我们有必要联合起来进行****, 否则区里领导不会重视的。这样一直拖下去不知道又要等到侯年马月了)"

6. This word is censored and could not appear in the website, the most possible word would be "protest" given its context.

– *Posted by Willlian0922 on November 30th, 2009*

*"I think the situation is that no one takes the lead in going to the sub-district or district office to put some pressure on them, otherwise they will not pay attention to it. The official is just stalling for time.* (我觉得 这里叫做没有人带头去街道 区政府给他们点压力 否则他们是不会重视的 官方只会应付应付下你们)"

– *Posted by Wlj821221 on February 20th, 2010*

However, as opposed to the original residents, the subrenters have strong objections to the renewal. As migrant workers who come to Shanghai to make a living, they are worried that the renewal will drive up the rents and force them to relocate towards the city peripheries.

*"There is another phenomenon for your reference: the whole 65 lane*[7] *is filled*

7. Lane 65 is the street number of Tianlin second village

*with the sound of yp[8] (their voice of objection): they say no renovation is allowed. They even called 12345[9] and complained to the district office, saying that they have no place to rent if Tianlin second village is renovated.* (还有一个现象供大家参考: 整个65弄弥漫的就是yp的声音(骂街): 不许改造、甚至打电话给12345以及到区里投诉, 说是改造了他们就无房可租了)"

*– Posted by 398041949 on September 26th, 2021*

*"The YP renting in the 65 lane probably realize that they could lose the housing with cheap rent and good location. I heard that the tenant YP in 65 lane has been protesting, obstructing the old housing renewal.* (估计是租住在65弄的YP, 眼看着要失去廉价租金的好地段的房子了, 听说65弄租客YP一直在闹事体, 阻碍旧改)"

*– Posted by Ray1885 on October 5th, 2021*

Upon passing first-round consultation In 2014, a detailed plan of renovation was posted both online and on the notice board in Tianlin second village.(Fig 2.7) An exterior corridor of 1.5m is added to the north facade in order to address the space shortage. A small kitchenette and toilet room are added to each unit using the original corridor space.(Fig 2.8) Among residents, this plan sparked a variety of reactions.

A number of participants in the forum expressed opposition to the proposal. The strongest opposition to this plan comes from residents of the first floor who have privatized considerable common space and residents of the upper floor who have built extensive additions to the exterior corridor. They feel the addition proposed in the plan is significantly smaller than their current vernacular additions. Other objections are related to dissatisfaction with the design, from the way space is distributed to the size of the addition and the program that is added.

*"Many old men and women sign to disagree.. In fact, this renovation plan is just to relocate the original shared kitchen and bathroom into the private unit. It does not substantially improve the life of the original residents.* (很多老头老太签不同意.. 这次改造其实就是把原来共用的厨房间 ,卫生间, 帮你改到室内

8. YP is pinyin abbreviation of Yang Pan (洋盘), referring to people who are uncivilized in Shanghai dialect. It is often used in a derogatory sense to describe migrant.

9. 12345 is Shanghai Government Service Convenience Hotline.

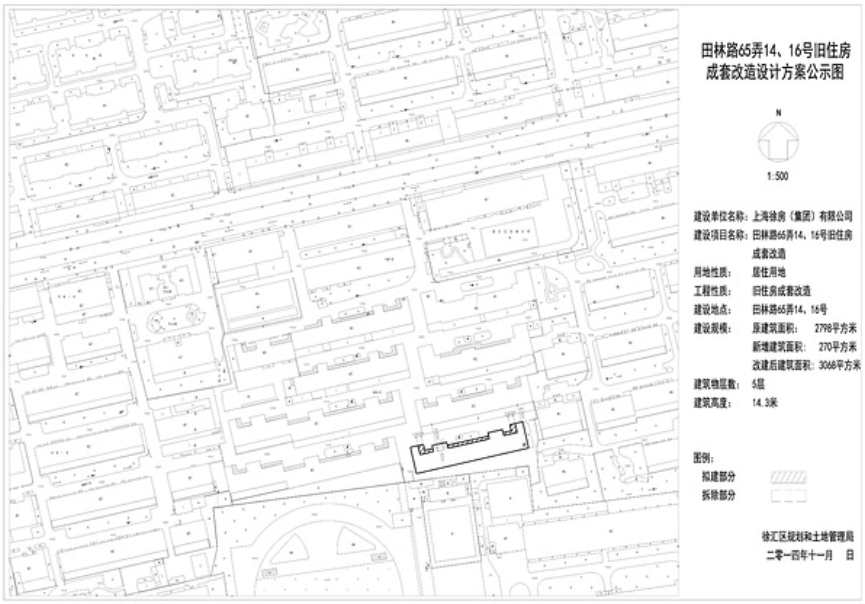



Fig2.7 Proposed Renewal Plan for Tianlin Second Village

Source: Shanghai Municipal Government. Tianlin Road Lane 65 (No. 13–15–17) renewal plan program announcement 田林路65弄成套改造（13–15–17号）方案公告, accessed October 19, 2022, Https://www.xuhui.gov.cn/H/xhxxgkN/xhxxgk_gtj_yw_jqgz/Info/Detail_34778.htm

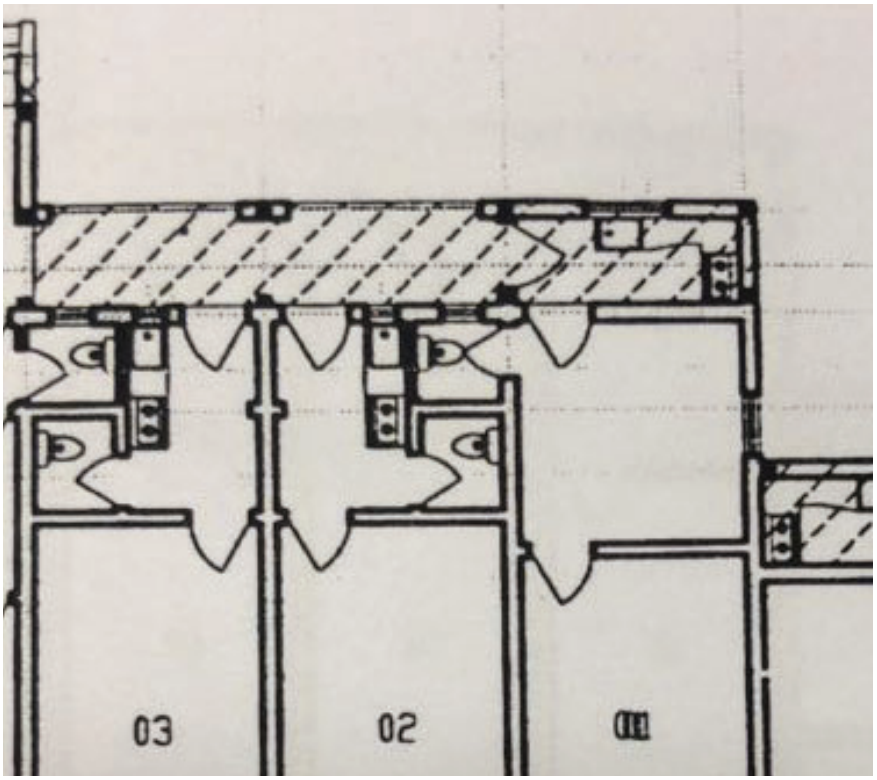



Fig2.8 Detailed Renewal Plan for Tianlin Second Village

Source: Forum "News about the Old Reform of Lane 65 Tianlin Road in Xuhui District 徐汇区田林路65弄旧改消息,", accessed Sep 28, 2022, https://www.libaclub.com/t_7308_10745078_1.htm.

*对原住民没任何生活上的实质改善的)"*

*– Posted by 大米粥DMZ posted on September 28th, 2021*

*"When the drawings came out, there were a lot of people who felt that other people's homes gained more size than their own. (图纸出来觉得别人家多了自家亏了的肯定一大堆)"*

*– Posted by Painkyller on June 29th, 2021*

*"Some residents' requests: kitchen can put refrigerator and bathroom can put washing machine, a balcony is also needed. (有些居民提出的要求：厨房能放冰箱，卫生间能放洗衣机，加一个阳台。)"*

*– Posted by 诸蓉on June 8th, 2021*

There is no doubt that a substantial number of residents support the renewal plan, but their support can be attributed to a number of factors. As compared to the current situation where many residents have a private kitchen in the vernacular addtions but share a bathroom with their neighbors, having a private bathroom inside the unit is viewed as a significant improvement.

*"I personally hope to renovate, at least the toilet can be private. (我个人还是希望改造的 至少能厕所独门独户了)"*

*– Posted by Zhangyue3344 on March 18th, 2010*

*"It is at least convenient not to have to leave the house to use the toilet. It's better than now. (至少上厕所不用出家门了，怎么样都比现在要好)"*

*– Posted by 纠结症的巨蟹 on October 11th, 2021*

Some, however, place a greater emphasis on improving the condition of the kitchen.

*"Currently, our kitchen is in a very poor condition, so it would be a good idea to*

*just make a small improvement. (我们的厨房实在太破了，所以只要动一下，也好。)"*

*– Posted by 点心妈妈 on March 21st, 2010*

*"It would be nice to at least improve the kitchen. (就是把厨房间改一下也好。)"*

*– Posted by 回忆的世界 on August 24th, 2013*

A bigger benefit of adding a private bathroom and kitchen is that the unit can be transformed into self-sustained units, which can be traded freely in the housing market.

*"Change is better than not changing, as self-sustaining units will have a greater value. (改总比不改好吧，房子只有成套价值上才会提升)"*

*– Posted by Jackchen81 on March 23rd, 2010*

*"Even if the added area is small, it will be much better than the current situation. You can buy property rights with an added private bathroom and kitchen. The nature of property will change and it can enter the housing market. (不管怎么样，就算加的面积再小也比现在的破房子好多了伐，独立煤卫，就可以买产权了，性质就不一样了，又是这个地段的新房子)"*

*– Posted by Fish蒋 on September 28th, 2021*

Some voted in favor of the renovation because it would reduce the risk of fires and structural failures caused by illegal additions.

*"The fire risk in Lane 65, Tianlin Road, should arouse our residents' great attention. Because the house is dilapidated and the wires are very old, we must not use small household appliances such as rice cookers, electric kettles, and hair dryers in the future. One day disaster will come. We must pay attention to the safety issue, otherwise we will not only suffer from disasters, but also harm innocent neighbors. 田林路65弄火灾要引起我们这里居民高度重视，由于房屋破旧不堪，电线十分老化，今后千万不能使用电饭煲，电水壶，电吹风等家*

用小家电，一不小心，极容易发生火灾，不知哪一天灾难又会临头，为了亡羊补牢，大家一定要重视啊，否则不仅自己受灾难，还要殃及无辜，殃及邻居”

*– Posted by 670212 on April 18, 2013*

It is evident from reading the posts that the residents' dissatisfaction mainly stemmed from two factors: the renewal process and the design of the proposed renewal.

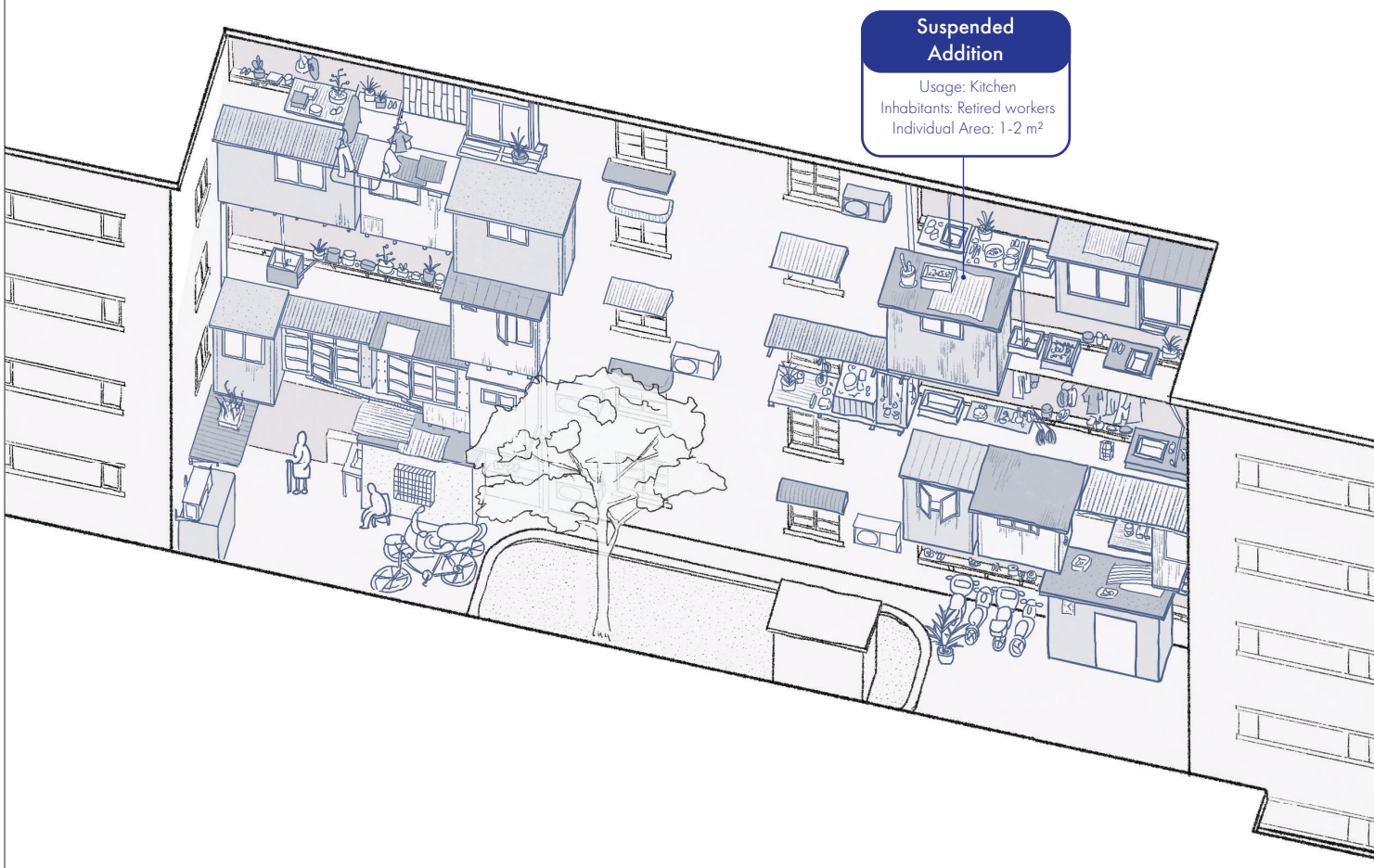
Despite the intention of giving property owners (original residents) rights and powers to participate in the renewal process and express their discontent, the current process does not provide a meaningful way for residents' feedback to be heard, nor do the proposed plan have room for negotiation. In the absence of an avenue to modify a plan that is incompatible with the needs of the residents, they are left with no alternative but to reject the renewal in its entirety.

However, residents’ political agency, their strong desire to become an important force in the renewal process, can be traced in the forum discussion. Even with limited resources and capacity, the original residents tried multiple approaches to express their discontent and insert their interests. Yet their influence remains minimal despite the intent of the two rounds consultation process is to give residents rights and powers to be active participants. In contrast, the subtenants are in a much more vulnerable position, excluding from the two rounds of consultation. The forum does indicate that they have sought the government's attention by calling and protesting in order to protect their own interests. In spite of this, neither the original residents nor the subrenters were able to become a meaningful political force in community renewal due to the linear renewal process, which does not allow for feedback or negotiation, and a lack of leadership and limited resources.

The proposed one-size-fits-all design does not appear to meet the differing needs and desires of the residents. The ground-floor residents appear to be the major objection force as the size of their self-build addition is larger than the proposed plan. The upper-floor residents,

although they generally support the proposed plan, have voiced their varying spatial requirements. A number of residents expressed a preference for private bathrooms, especially in-unit bathrooms. Many people, on the other hand, place a great deal of emphasis on the need to improve the quality of their kitchens. There have also been a number of comments highlighting the benefits of having both a private bathroom and a kitchen in order to raise the property value and sell the unit on the housing market. In some cases, specific requirements have been stated, such as the need to install a refrigerator in the kitchen or a washing machine in the bathroom. Beside the kitchen and bathroom, some have mentioned the need to have a balcony. The hesitations often come from the feeling that the space is not distributed equally.

Furthermore, this "top-down" approach to renewal fails to take into account the existing system of urban vernacular developed over time as a result of the use of buildings. A disconnection between the design and the use of a building is, in my opinion, a missed opportunity. Following this line of thought, this chapter uses a variety of drawing techniques (plan, sectional-perspective, axonometric, photography, etc.) to unpack architecturally this fascinating phenomenon of suspended urban vernacular and to determine how it can be transformed into a design solution.




## THE HIDDEN LAYER OF URBAN VERNACULAR

Invisible on official maps and satellite images is the layer of urban vernacular that is shaped by inhabitants' appropriation of space. This axonometric drawing illustrates the otherwise hidden layer of urban vernacular of Tianlin second village in blue, emphasizing the influence of its inhabitants on the physical fabric of the community.

The public realm is characterized by a number of informal structures. Some built up from the ground and some are suspended in midair attached to the facade. Some are assemblages of objects, thin planks and pipes, some are solid structures made of bricks and concrete. Many of the ground-floor additions serve as small shops primarily operated by migrants, such as barbers, convenience stores, and repair shops. The additions on the upper floors accommodate a variety of residential programs, including cooking, cleaning, and drying laundry.

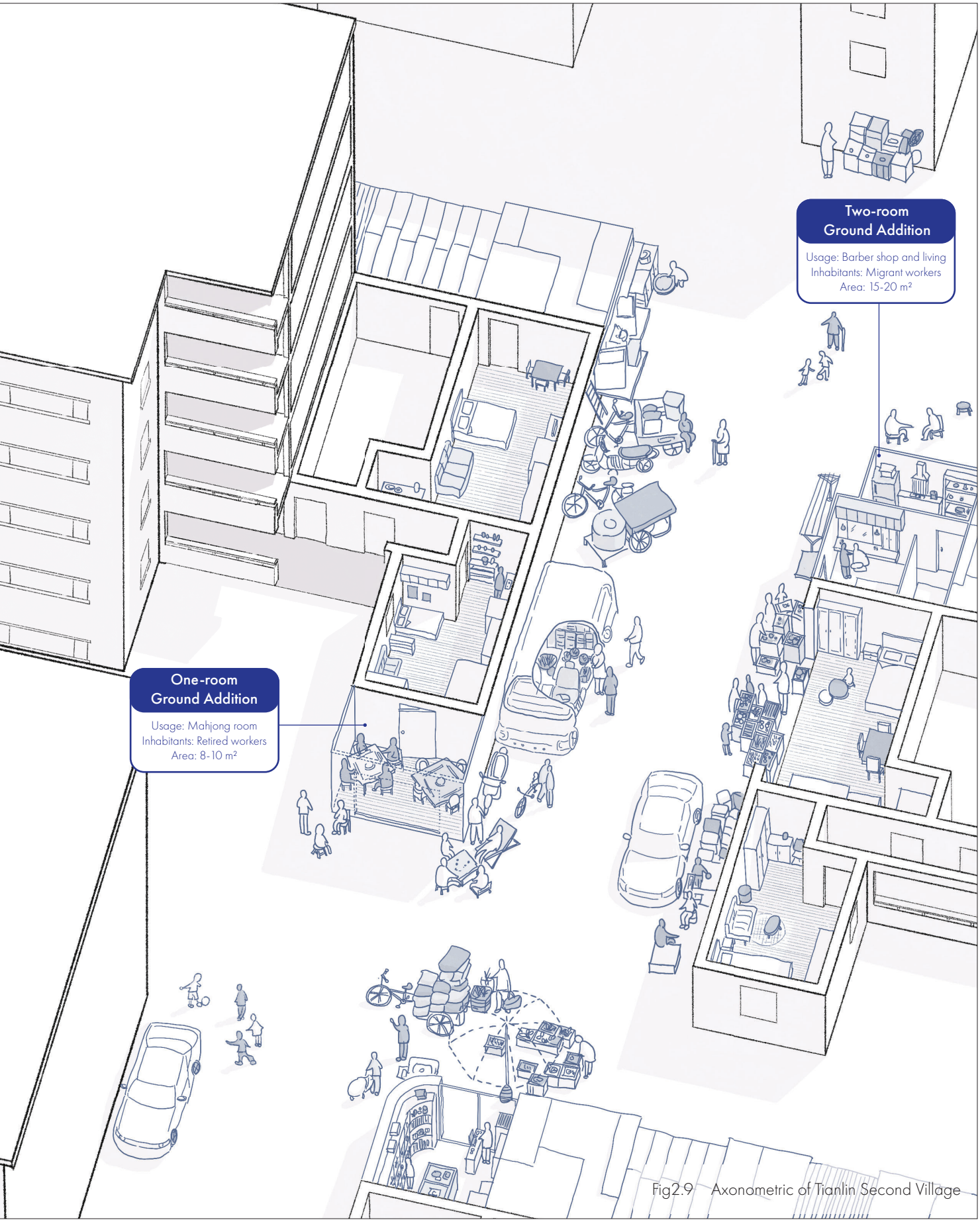


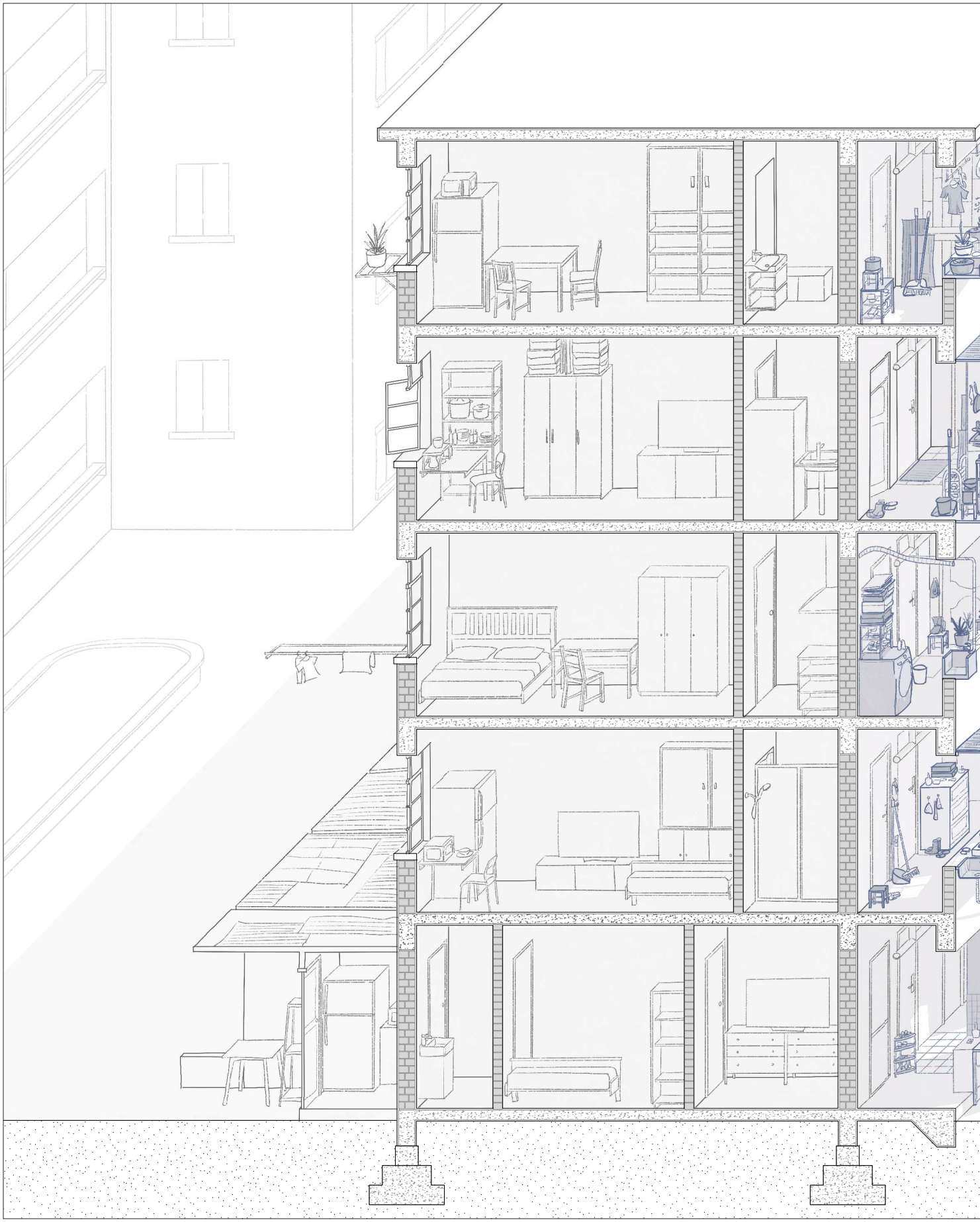

Fig2.9 Axonometric of Tianlin Second Village

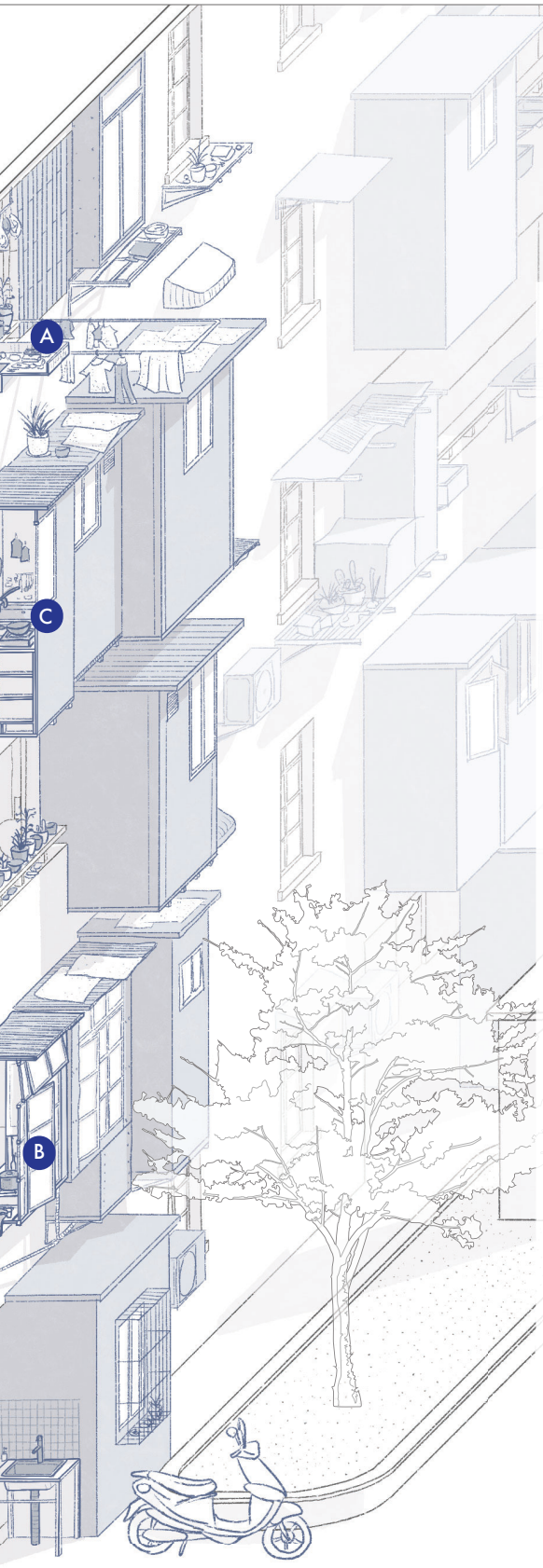

Fig2.10 Facades of Building 510 (Left) , 508 (Middle) and 506 (Right)

## SUSPENDED ADDITIONS

Among all the local adaptations within Tianlin second village, the suspended additions hanging on the facades is the eccentric one, attracting a lot of media attention.

The majority of the suspended structures are built and used by the original inhabitants. Although both the original inhabitants and the migrant workers are renters who don't legally own the property, the original inhabitants have stronger rights compared to the migrant workers who are subtenants. Almost impossible for them to be evicted, the original inhabitants enjoy unlimited occupancy and can even pass the property on to their children, or sublet it informally. Due to their precarious job and living status, the migrant workers only treat the second village as a temporary residence and are reluctant to invest in even simple renovations and improvements. The original inhabitants often view themselves as owning the place and are relatively more concerned about the quality of life, thus willing to invest on the additions.






The local adaptations first appeared in the beginning of the 1990s when the inhabitants tentatively put furniture/objects such as small coal stoves in the corridor. Later, some inhabitants began to build up sinks and shelves on the railing to avoid the overcrowded corridor. (Refer to label A in Fig 2.11) Around 2000, some households experimented with more permanent structures such as brick, steel and concrete to shelter the previously exposed sinks and shelves.(Refer to label B) Many even had the railing removed in order to create a small room that allowed them to enter.(Refer to label C) Since it was not demolished by the housing authority, various households followed suit. Nowadays, the majority of households have a form of suspended addition.

The building of suspended additions can be carried out in two ways: by self-constructing or by hiring a contractor. Self-construction offers greater flexibility and material diversity while being the most cost-effective. The materials are mostly waste and old pieces collected by the inhabitants. Scrap steel pipes, timber and bamboo are usually used as supports, and scrap doors and windows, boards and plastic sheeting are used as enclosures to form simple structures. Due to the cost of hiring construction workers, the second method is more costly. Usually, the contractors are introduced by a neighbor or sourced from small renovation companies in the area. The materials used are more permanent, usually including brick, cement and concrete.

Fig2.11 Section of Entry 10, Building 509

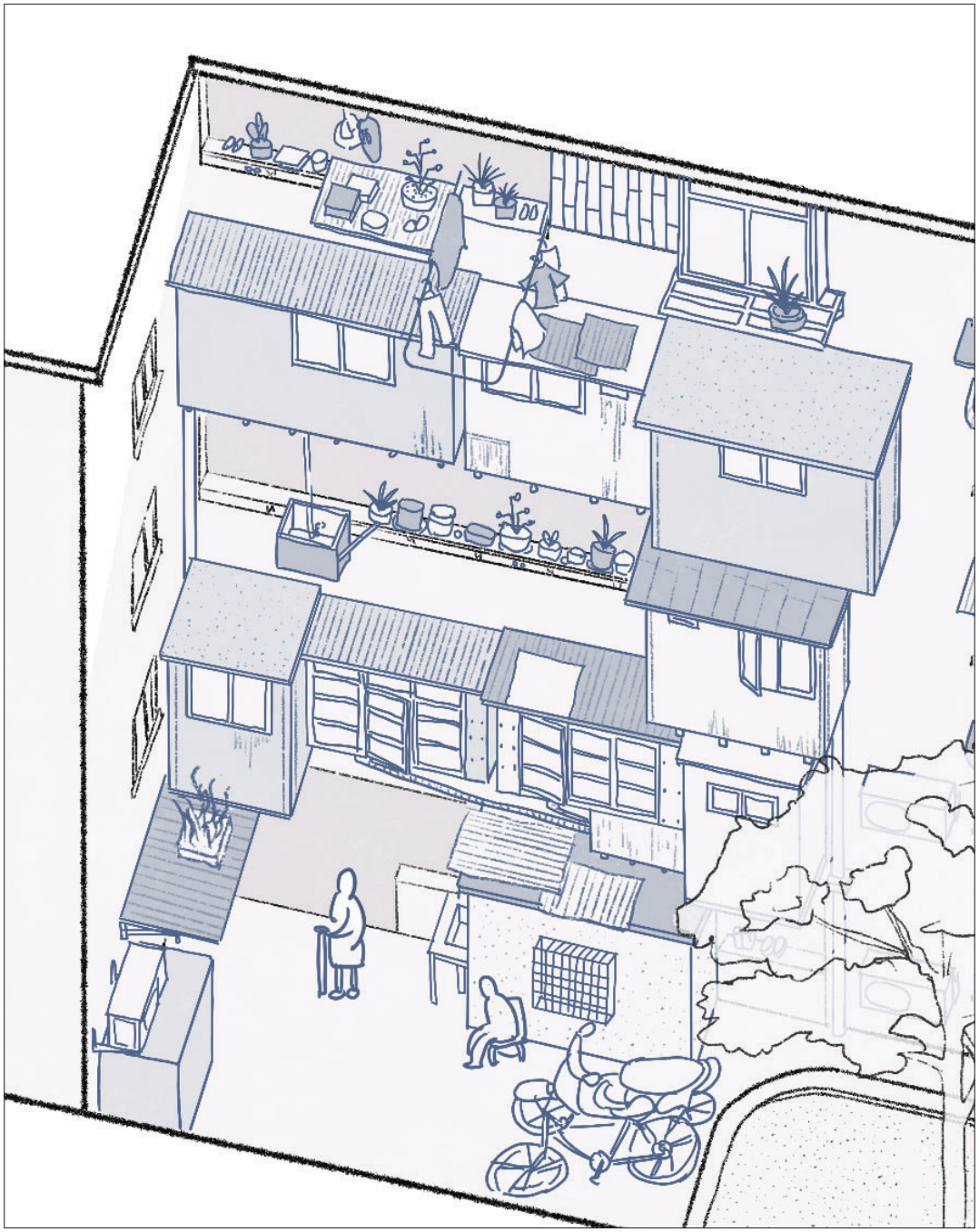
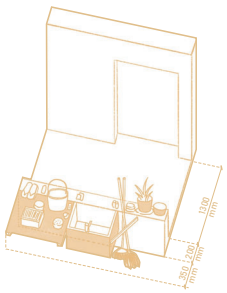


Fig2.12 Suspended Additions

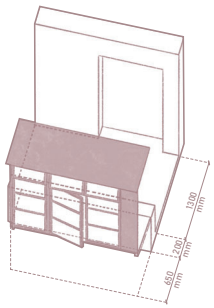
## CATEGORIZATION OF SUSPENDED ADDITIONS

While each suspended addition is unique as it is one's specific adaptation in this adverse situation, they can be categorized into three types, as indicated in the previous page by the labels A, B, and C (Fig 2.11).



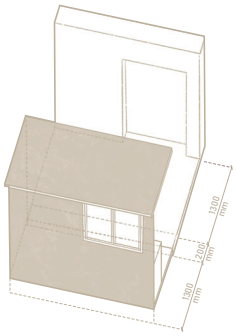
Label A, Object

Eighty percent of the suspended additions contained one amenity: a sink, as the only sink in the original home was far from adequate for laundry, dish-washing, and other water needs. The object type addition are centered on the addition of a sink and various platforms for placement of objects.



Label B, Counter-top Enclosure

A sink and a gas stove are all that is needed to meet the basic needs of a simple kitchen. The common practice of counter-top enclosure type is to construct a box on top of railing and overhang to the outside by the support of steel structure underneath.



Label C, Walk-in

The walk-in type is less common, because the railing has to be removed to allow people to enter the box. As the overhang is usually more than 1.2 meter, there are higher requirements for material and structure to ensure safety, leading to increased costs.

## TYPE A
## OBJECT

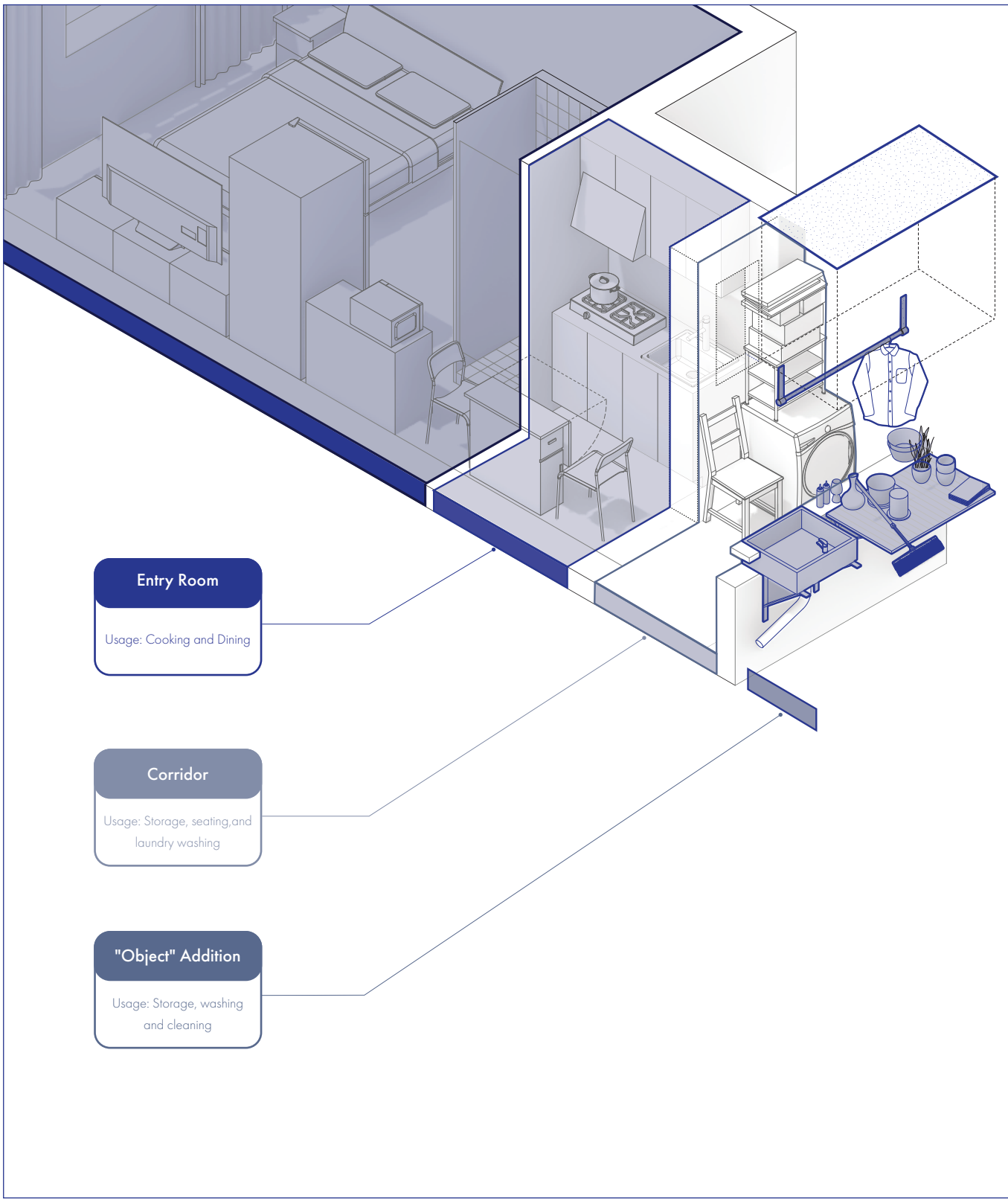
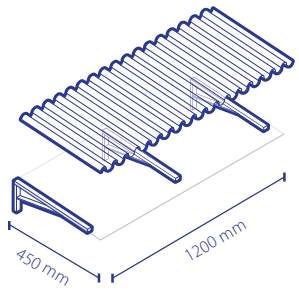
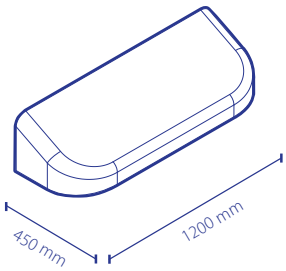



Fig2.13 Diagram of Type A Object

## CANOPY UNIT

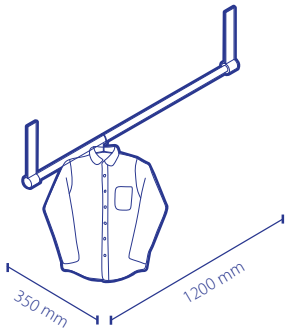



Canopy

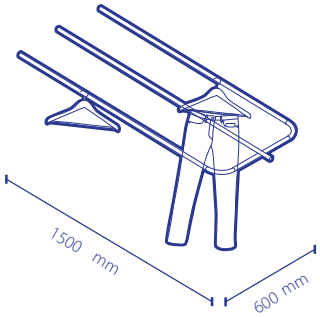



Canopy

## HANGING LAUNDRY

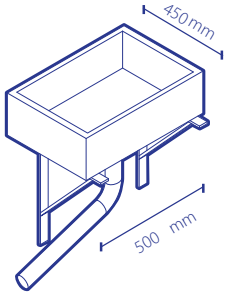



Laundry Rack

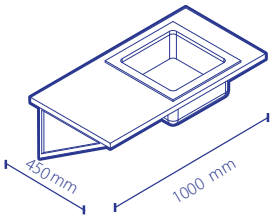



Laundry Rack

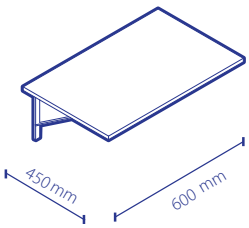
## BASE UNIT




Sink




Shelf with Sink




Shelf

Fig2.14 Dimension Diagram of Type A Object Components

## TYPE B
## COUNTER-TOP ENCLOSURE

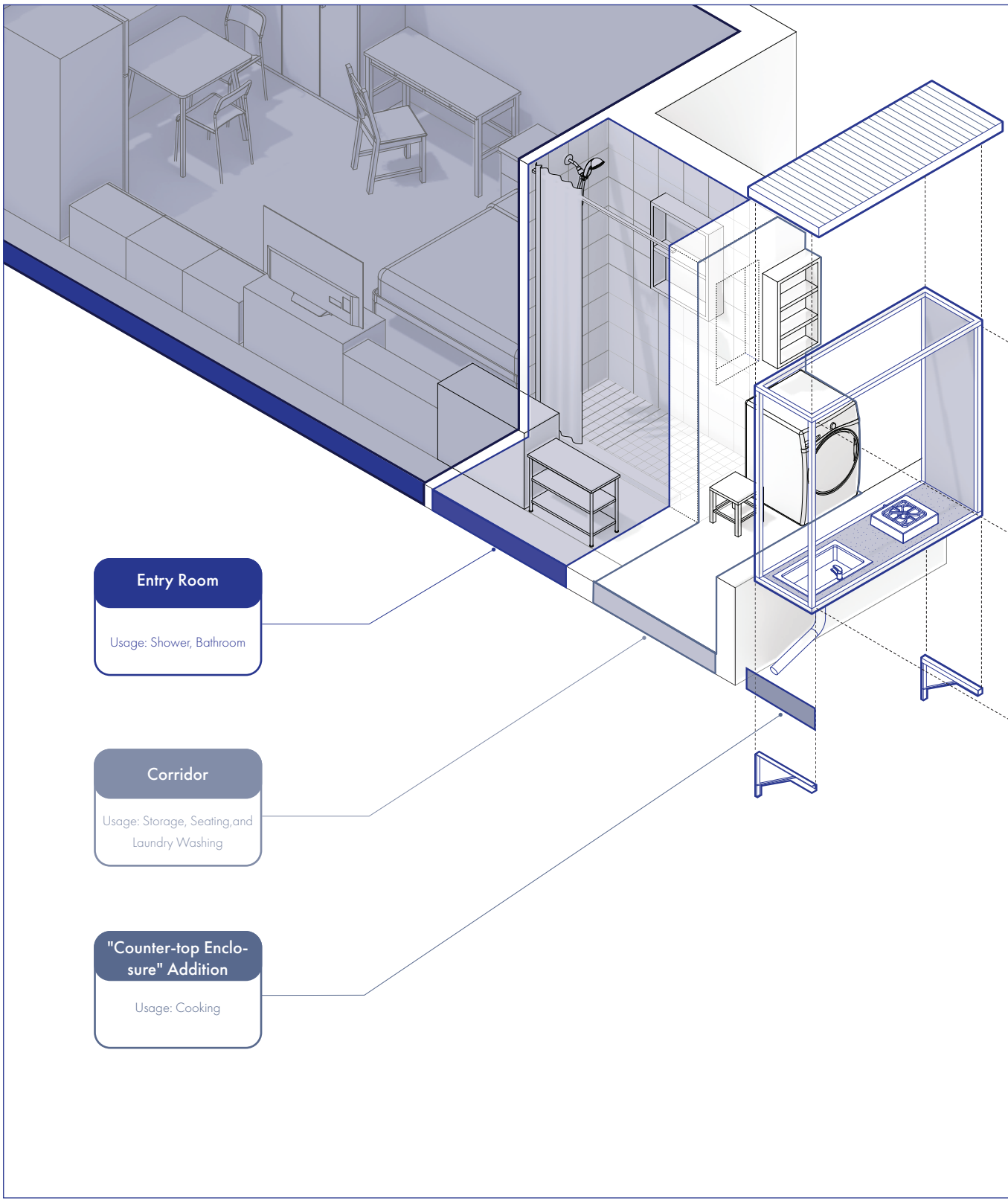
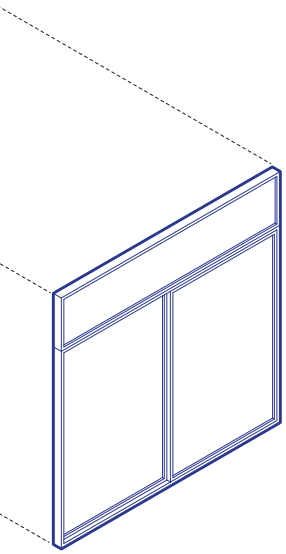
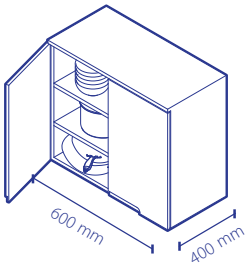


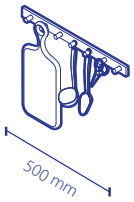

Fig2.15 Diagram of Type B Counter-top Enclosure



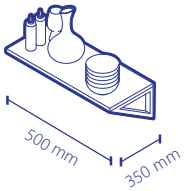
## WALL STORAGE




Wall Cabinet

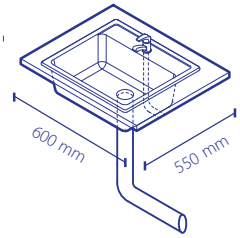



Wall Hook

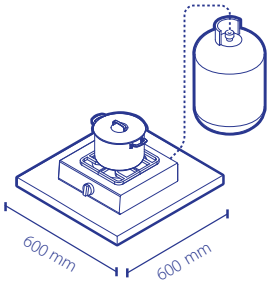



Wall Shelf

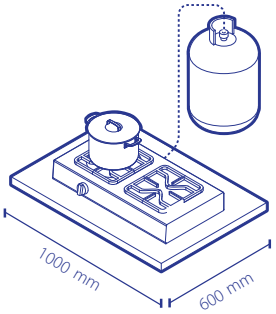
## BASE UNIT




Single Bowl Sink

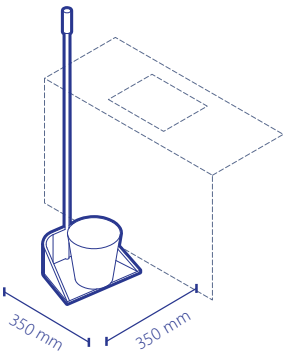



Single Burner Stove

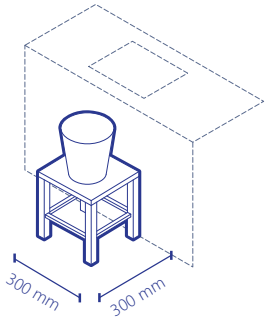



Double Burner Stove

## ADJACENT ITEM




Dustpan and Gabage Bin




Stool and Gabage Bin

Fig2.16 Dimension Diagram of Type B Counter-top Enclosure Components

## TYPE C
## WALK-IN

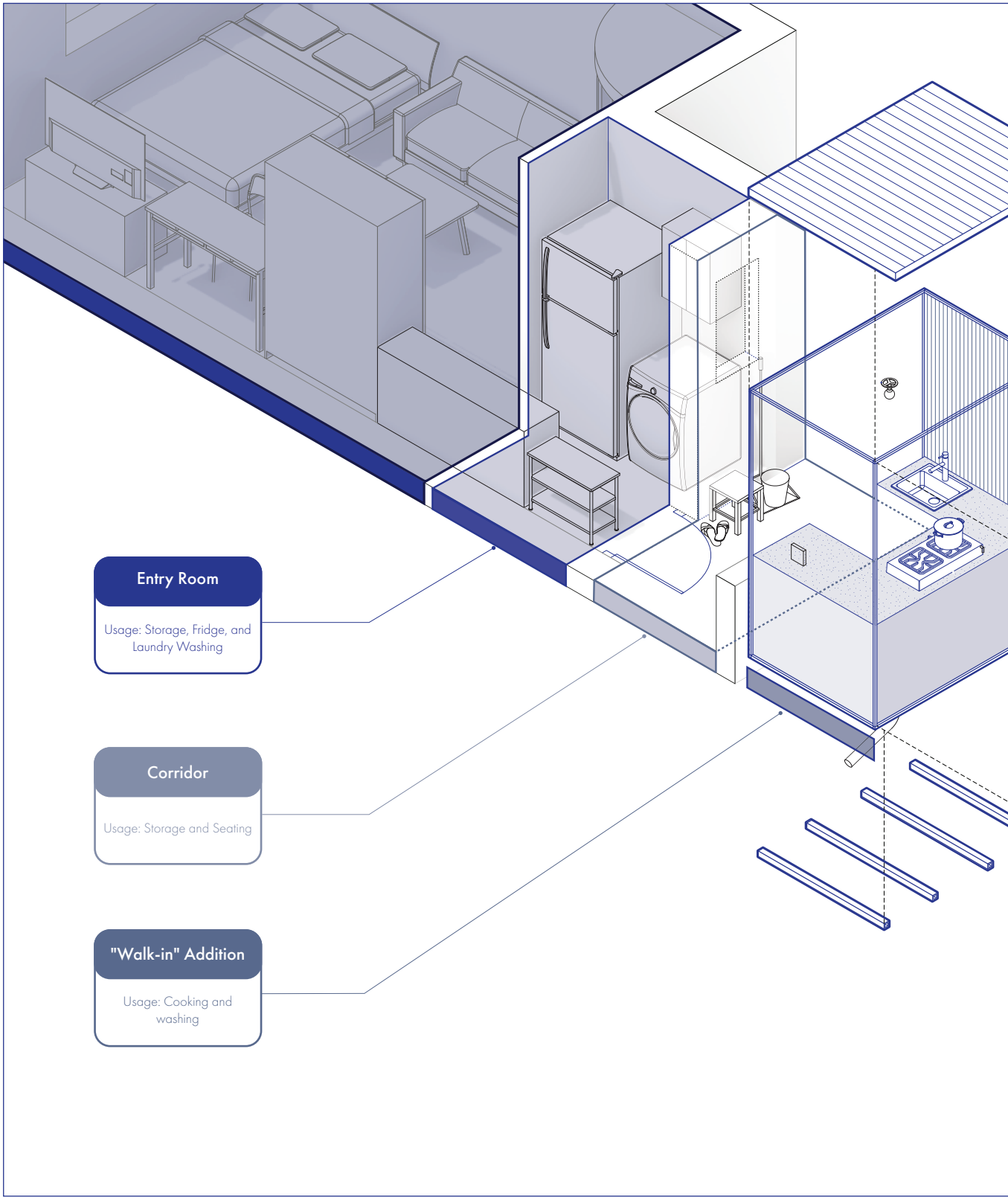
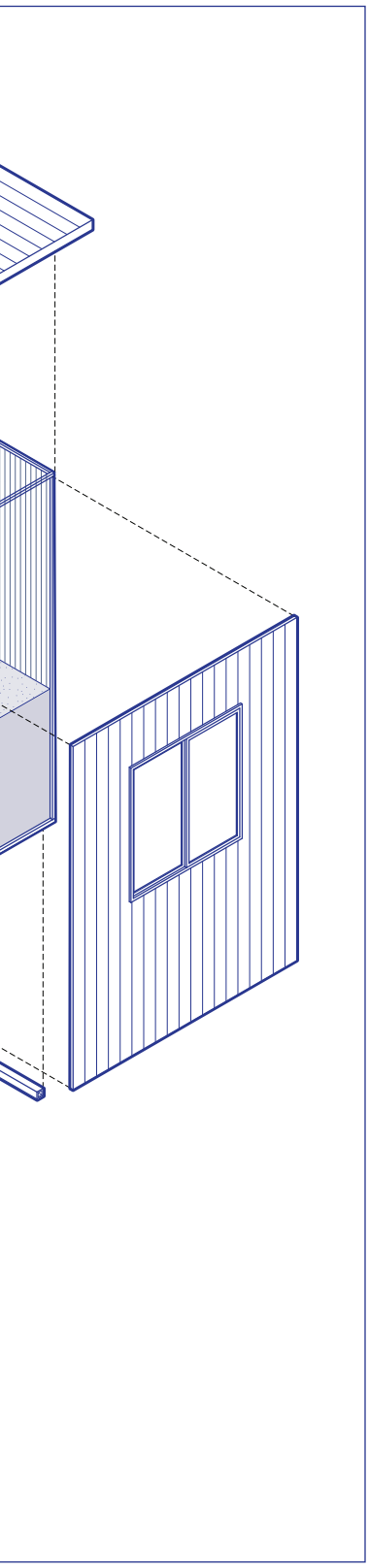
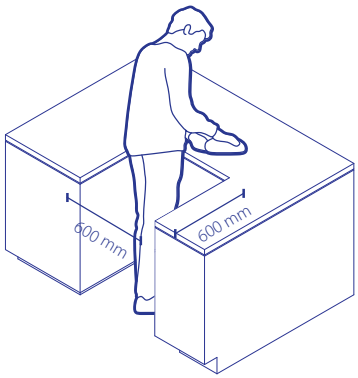


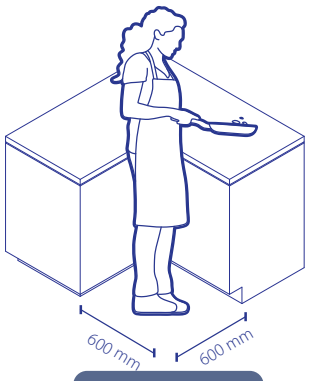

Fig2.17 Diagram of Type C Walk-in



## OPERATION SPACE

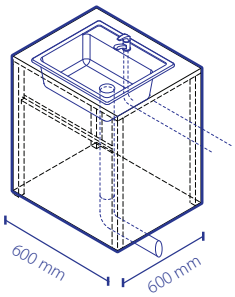



Operation Space

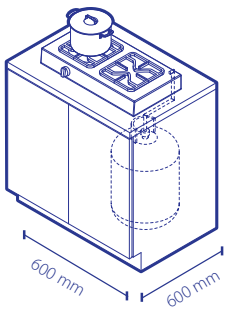



Operation Space

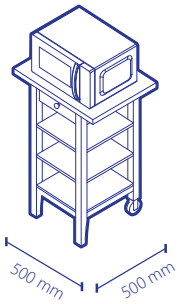
## BASE UNIT




Single Bowl Sink

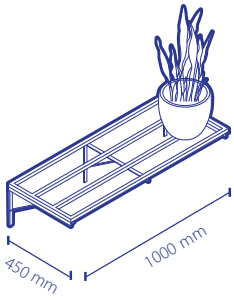



Double Burner Stove

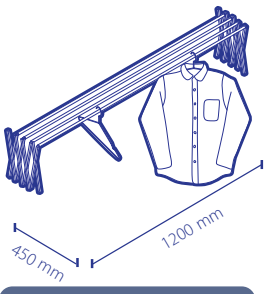



Microwave

## EXTENDED UNIT




Shelf




Retractable Laundry Rack

Fig2.18 Dimension Diagram of Type C Walk-in Components

## A CLOSER LOOK
## THE CORRIDORS AND THE SUSPENDED ADDITIONS

Photographs and videos collected through open-source research provide many important insights; however, more documentations are needed to address the more "intimate" parts of the building, such as the corridors and the suspended additions.

As a result, I sought assistance from two of my friends in Shanghai, Fu Ding and Sizhe Luo. In a two-page document (see appendix), I provided them with detailed instructions on where, what, and how to document the site, corridor, and suspended additions. The photos that came back demonstrate an intriguing domestic atmosphere of the public corridor, as evidenced by the arrangement of household essentials, the accumulation of personal objects, and even the paved floor. By using these photographs, an in-depth analysis of two corridors is conducted in order to gain a better understanding of how the inhabitants define boundaries and how they utilize those vernacular urban spaces.

Fig2.19　Photos of Corridor in Tianlin Second Village

## CORRIDOR 1
## SECOND FLOOR, NO.12 , BUILDING 509

Corridor 1 is fully covered by the suspended additions, where the two side units (206 and 209) have the walk-in additions and the middle two units(207 and 208) have the counter-top enclosure additions.

Because of the neighbors on either side, there are limitations regarding the width of the addition. As can be seen in the plan(Fig 2.20), the width of the addition is restricted to the extended line of the unit division walls. While the middle two units are able to have wider additions, the side units compensate for the narrow width by building deeper additions. All the personal objects are aligned to the side of the unit entry, and most of the objects are hung on the wall, freeing up most of the corridor space for traffic. The common personal items are: chairs, shoes, bags, brooms.

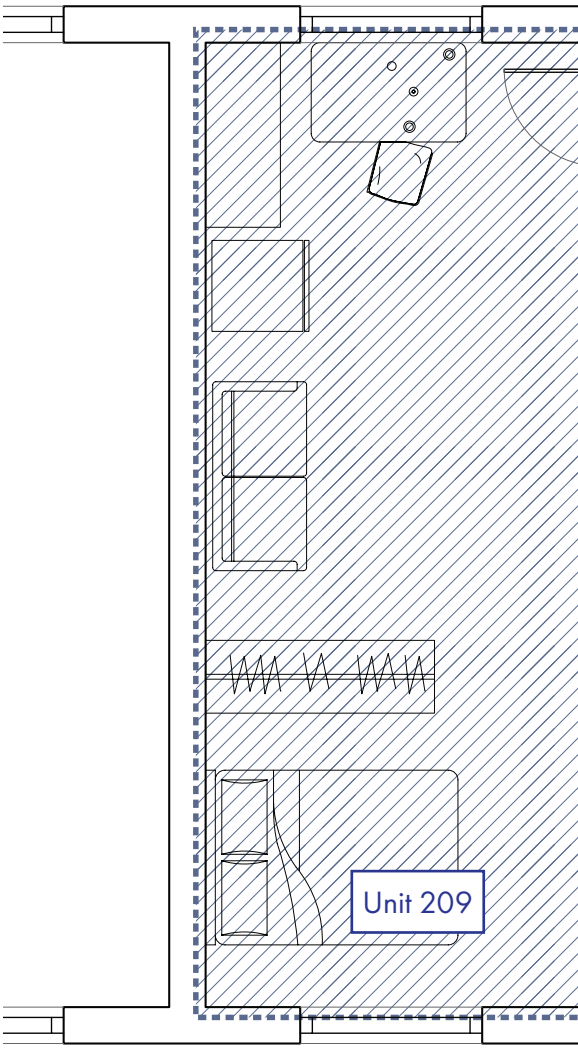
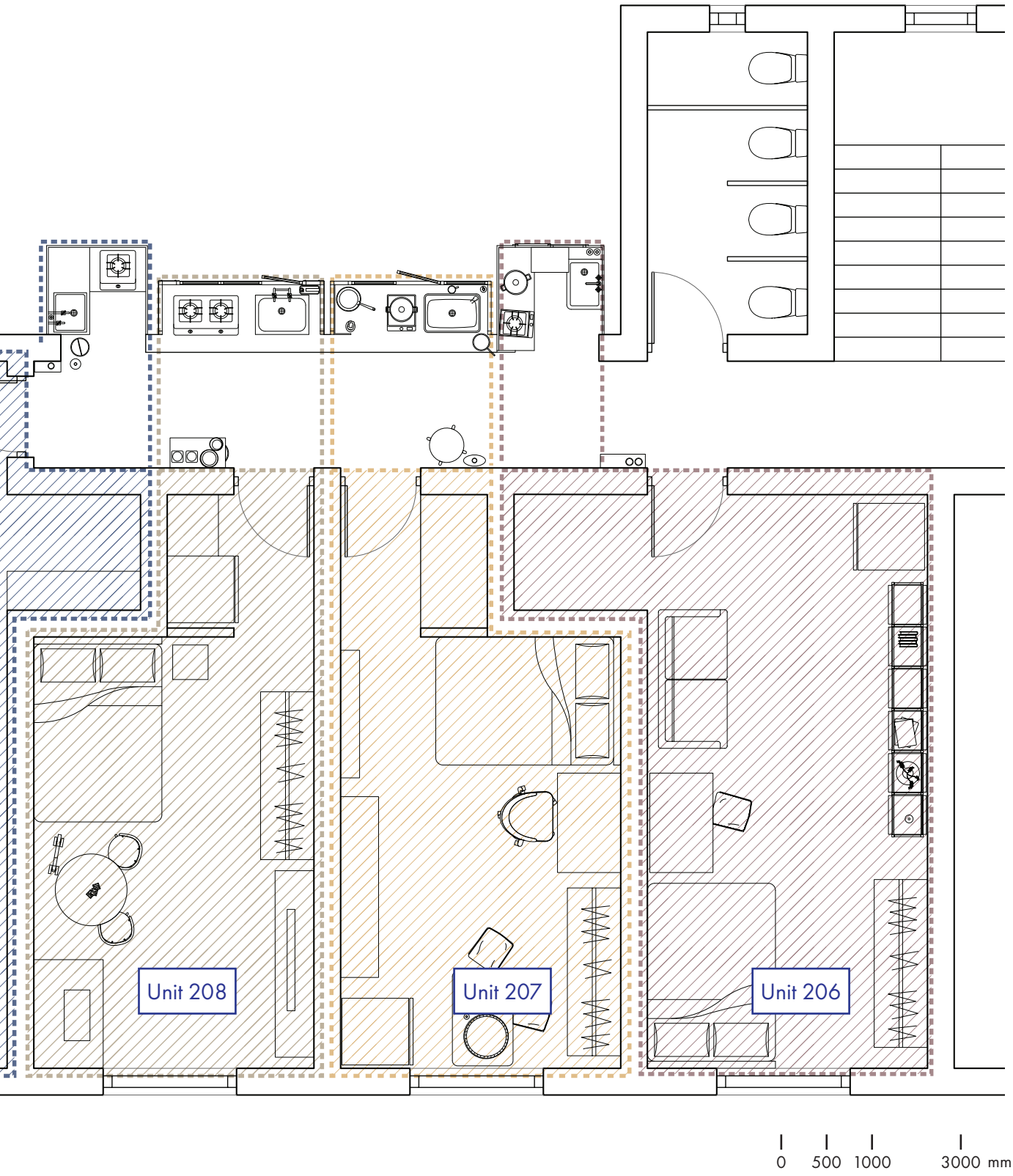



Fig2.20 Plan of Corridor 1

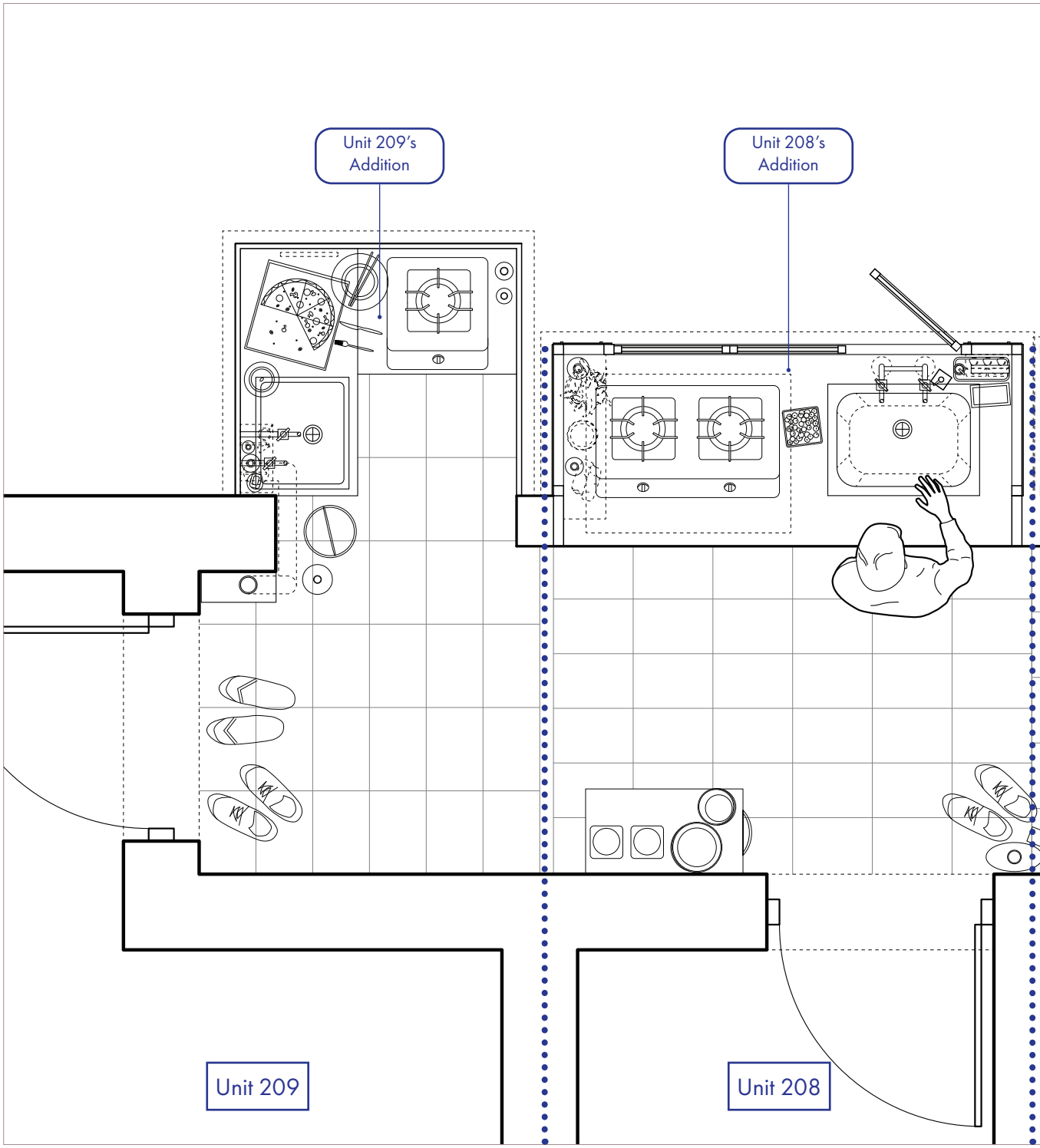

Unit 208
Unit 207
Unit 206
0
500
1000
3000 mm

From within the unit, cables and pipes supply electrical and water to the addition.

In comparison to the counter-top enclosure additions in units 208 and 207, unit 209's walk-in addition significantly reduces corridor lighting. The walk-in additions are deeper than counter-top additions, making it harder for light to penetrate. The window on walk-in addition is also smaller, letting less light into the corridor.

Different pavings clearly define the boundary of "private" space in the public corridor.


Fig2.21 Photo of Corridor 1


Unit 209's Addition
Unit 208's Addition
Unit 209
Unit 208

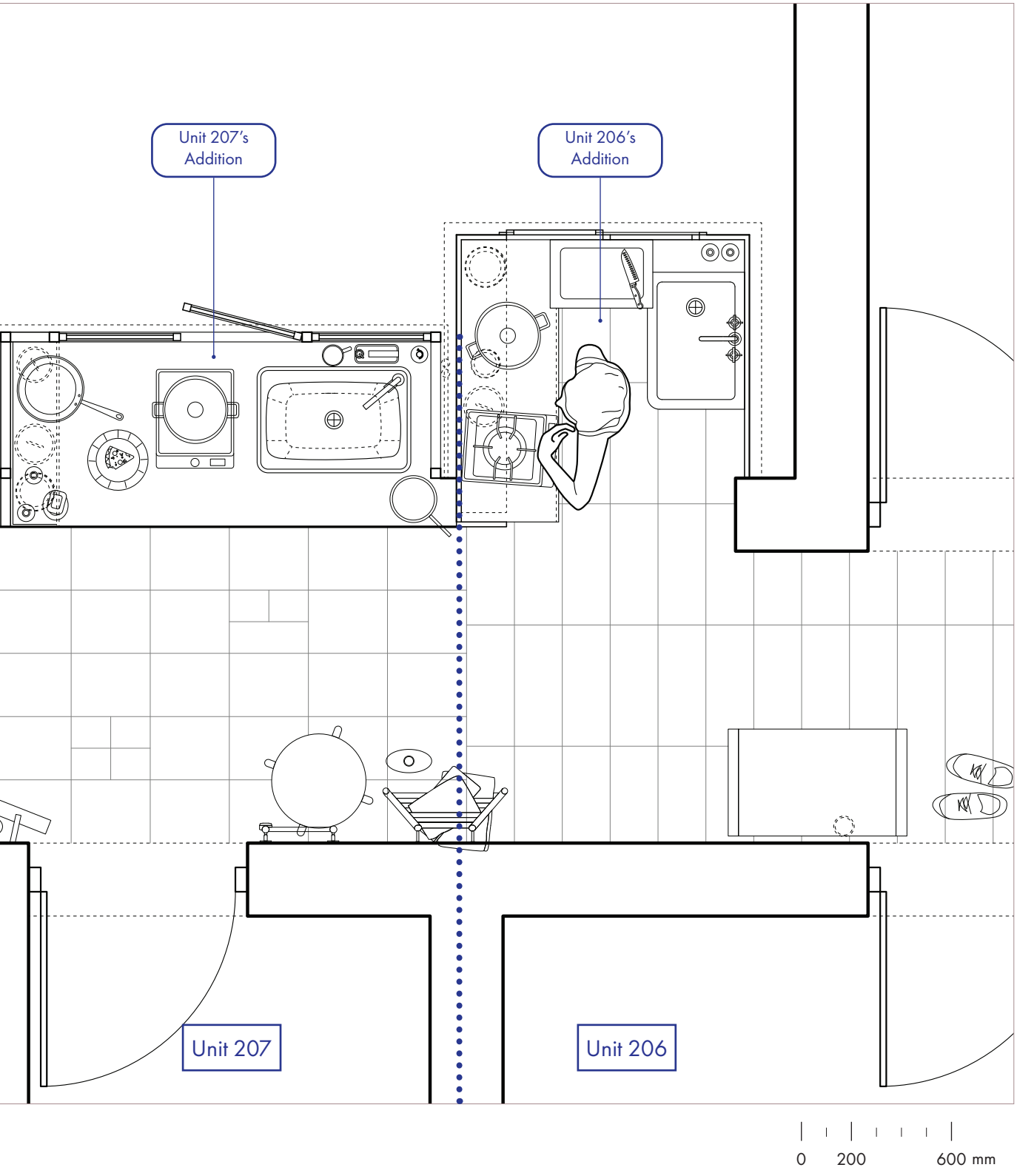



Fig2.22 Plan of Corridor 1

Unit 206's Addition

Unit 206 has constructed a walk-in type addition and use it as a kitchen. The left side is a cooking area made of one portable gas stove and one steam appliance on top of a side-board. The middle is the preparation area separated into three levels: the top is surface for preparation, the middle is storage for stacked plates and bowls, the bottom is a garbage bin. The left side is occupied by a sink and one surface area created by a wood plank to put cleaning products. There is a continuous floor paving from the unit door to the kitchen.

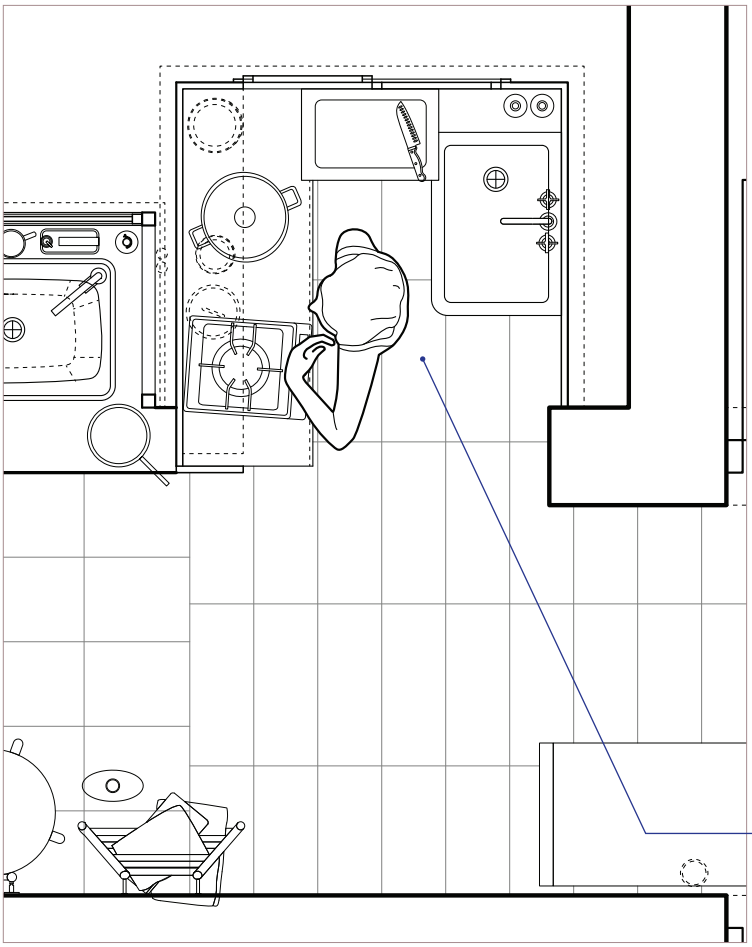


Fig2.23 Plan of Unit 206's Addition

**Shelf**

The items on the shelf are wrapped in plastic bags to protect them from oily fumes and cooking odor, because there is no exhaust fan.

**Power Strip**

Electrical cable is connected to the inside of the unit to supply power to the stove and small appliance.

**Self-adhesive Film**

A layer of self-adhesive PVC film is applied on the wall to prevent kitchen grease. This film makes it easier to wipe off grease with wet cloth and it can be peeled off and replaced cheaply when it is dirty. This material, however, is in question in regard to its fire resistance.

**U-Shape Configuration**

There is only room for one person to stand in the kitchen and cook, but the layout is compact and efficient, following the cooking steps from washing, preparing to cooking.

Fig2.24　Photo of Unit 206's Addition

Unit 207's Addition

Inhabitants of unit 207 selected counter-top enclosure type for their kitchen addition and enclose the addition with mainly glazing. The linear counter space is divided into two parts: the right part is a sink and the left part is a stove with additional storage.

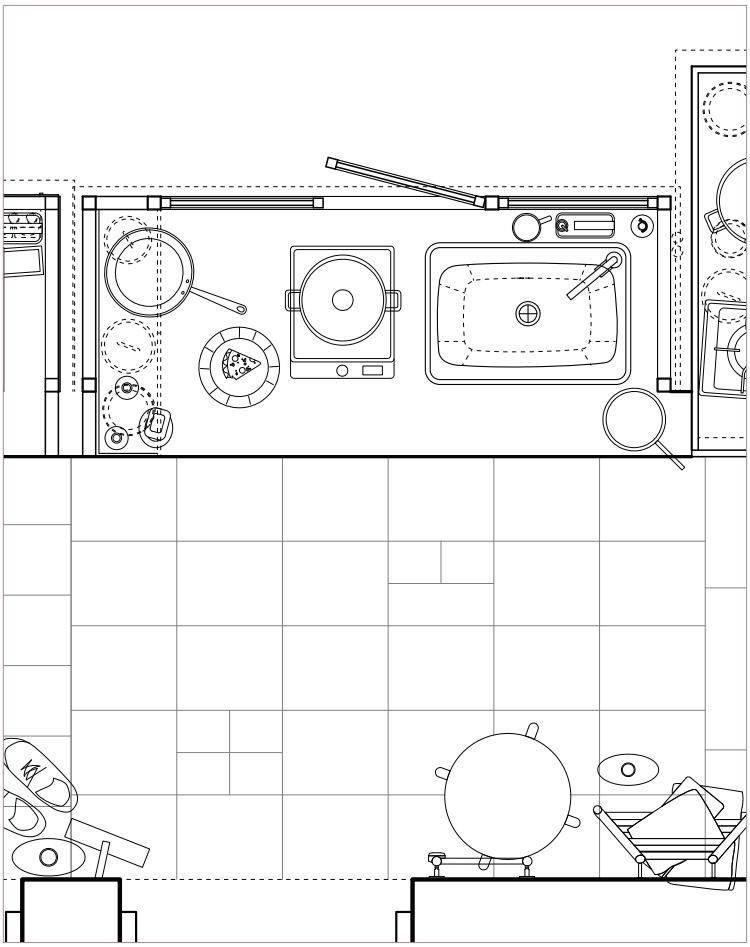


Fig2.25 Plan of Unit 207's Addition

## Storage

The storage only occupies the upper area and leaves the bottom area open for valuable counter top space. The two doors effectively protect the items inside from kitchen grease. There is also a lock on the door, although it is currently unlocked, it provides the option to lock it off, as it is located in the public corridor where everyone has access to their personal items.

## Window

Although there is no exhaust fan, the window can be opened up and act as a fan to allow oil fumes to escape. The big window also allows light to penetrate into the corridor.

## Stove

While there is deficiency of surface area for meal preparation, the inhabitants find ways to make it work. The stove can be turned into a temporary counter surface.

Fig2.26 Photo of Stove

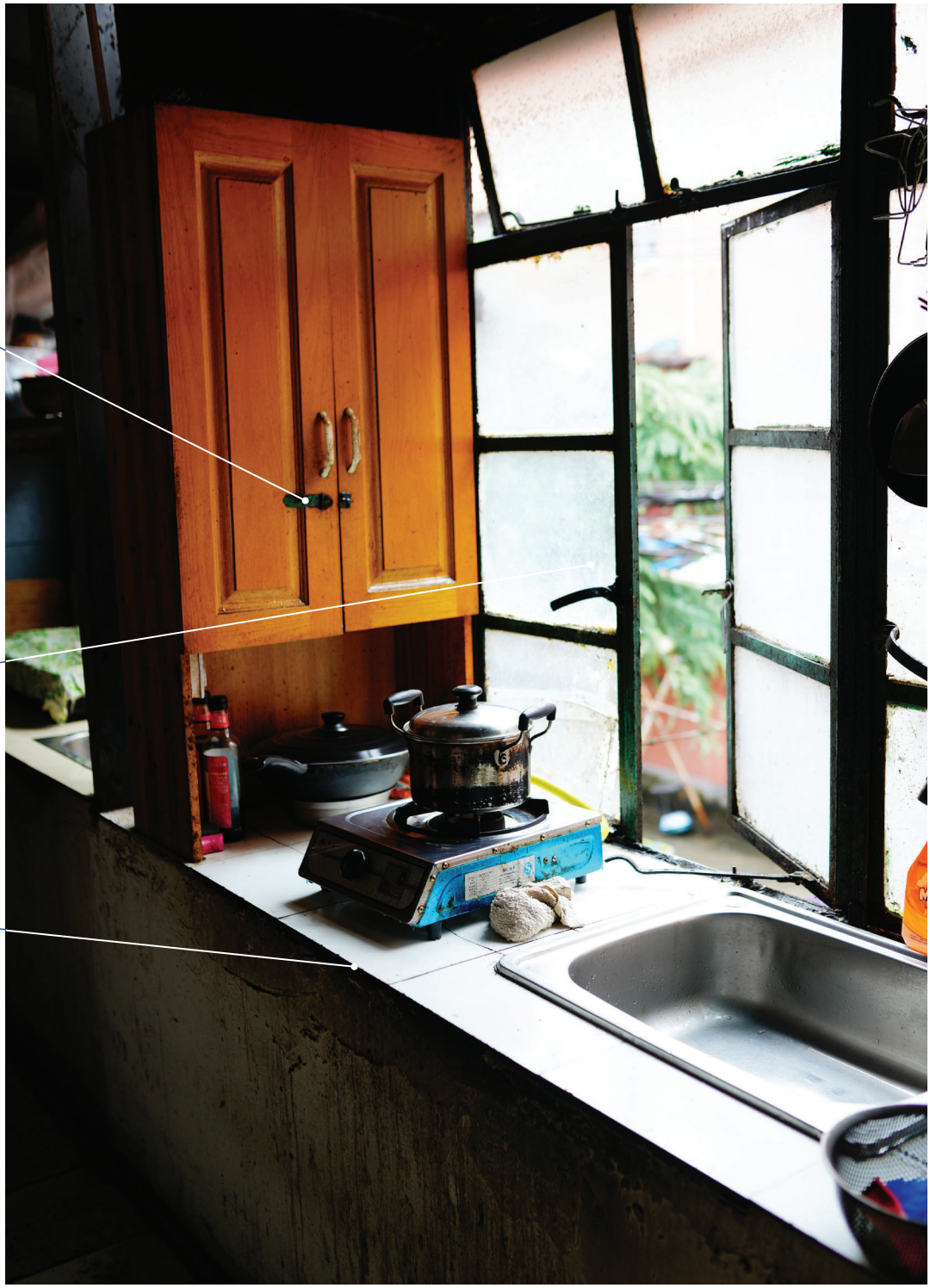


Fig2.27　Photo of Unit 207's Addition

## CORRIDOR 2
## FOURTH FLOOR, NO.14 , BUILDING 511

Corridor 2 has 2 counter-top enclosure type additions(unit 406 and 408), 1 object type additions (unit 407) and 1 unit without any additions(unit 405). The end unit (409) does not have a corresponding railing area to build on but the inhabitants fully privatized the end corridor space.

There is a strong similarity in terms of types and arrangements of objects in the personal objects that every household keeps in public corridors. Washing machines, storage cabinets, dustpan and brush are often found in the corridors. They are usually placed along the wall rather than the railing, leaving a narrow space around 50 cm wide for passing and accessing the facilities inhabitants built on the railings.

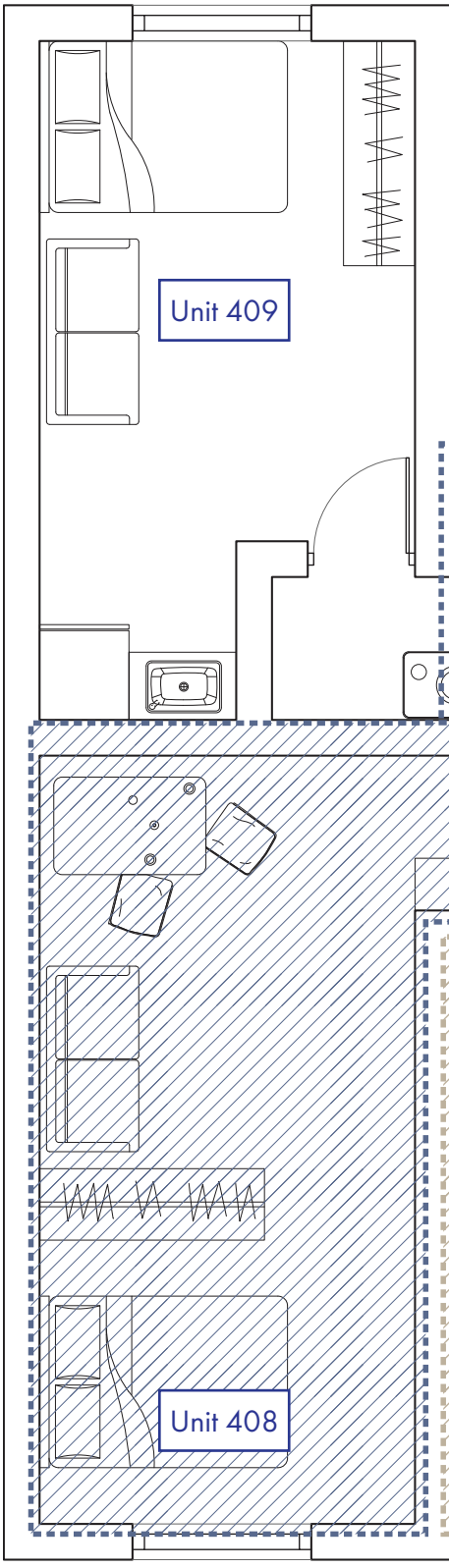
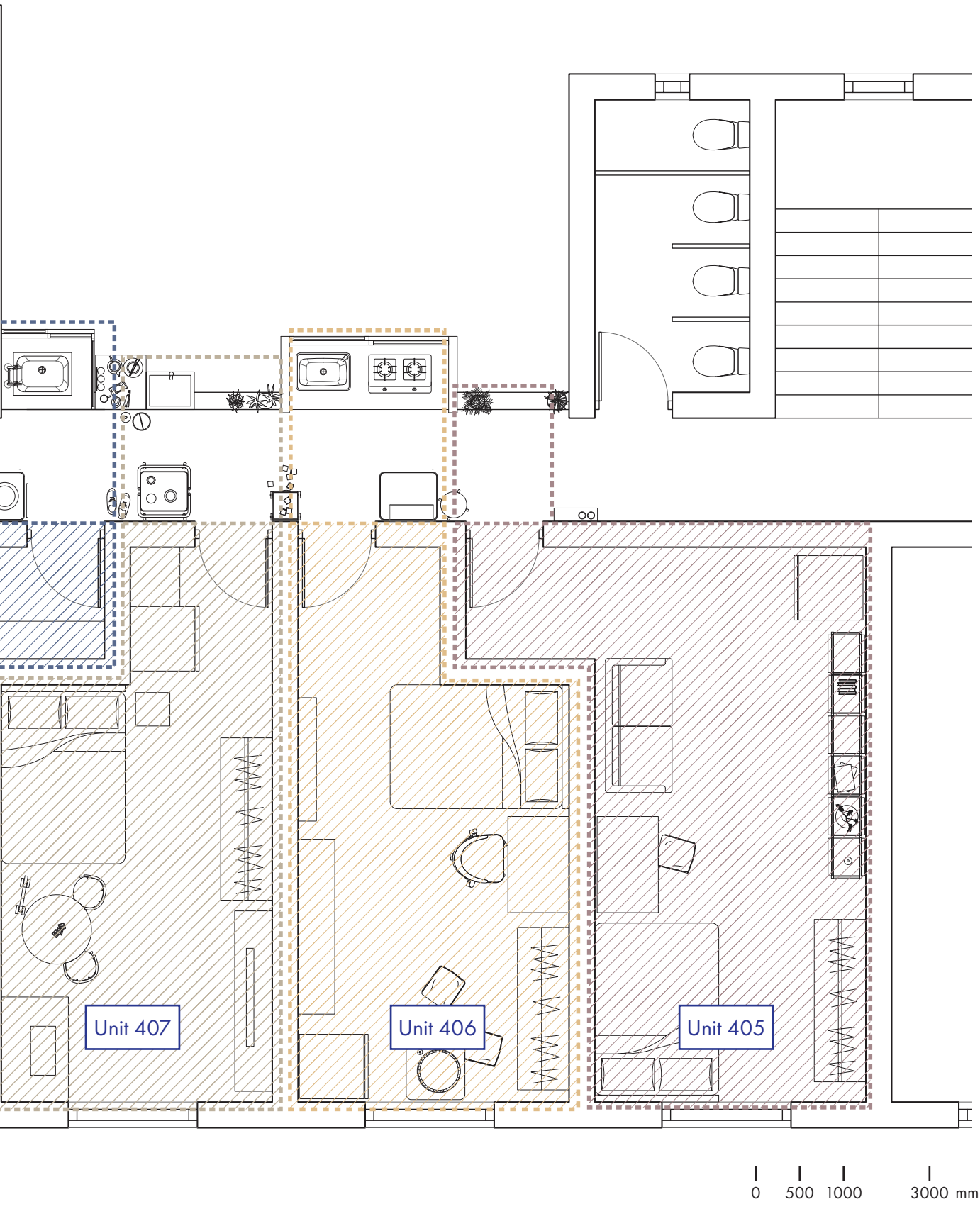



Fig2.28 Plan of Corridor 2

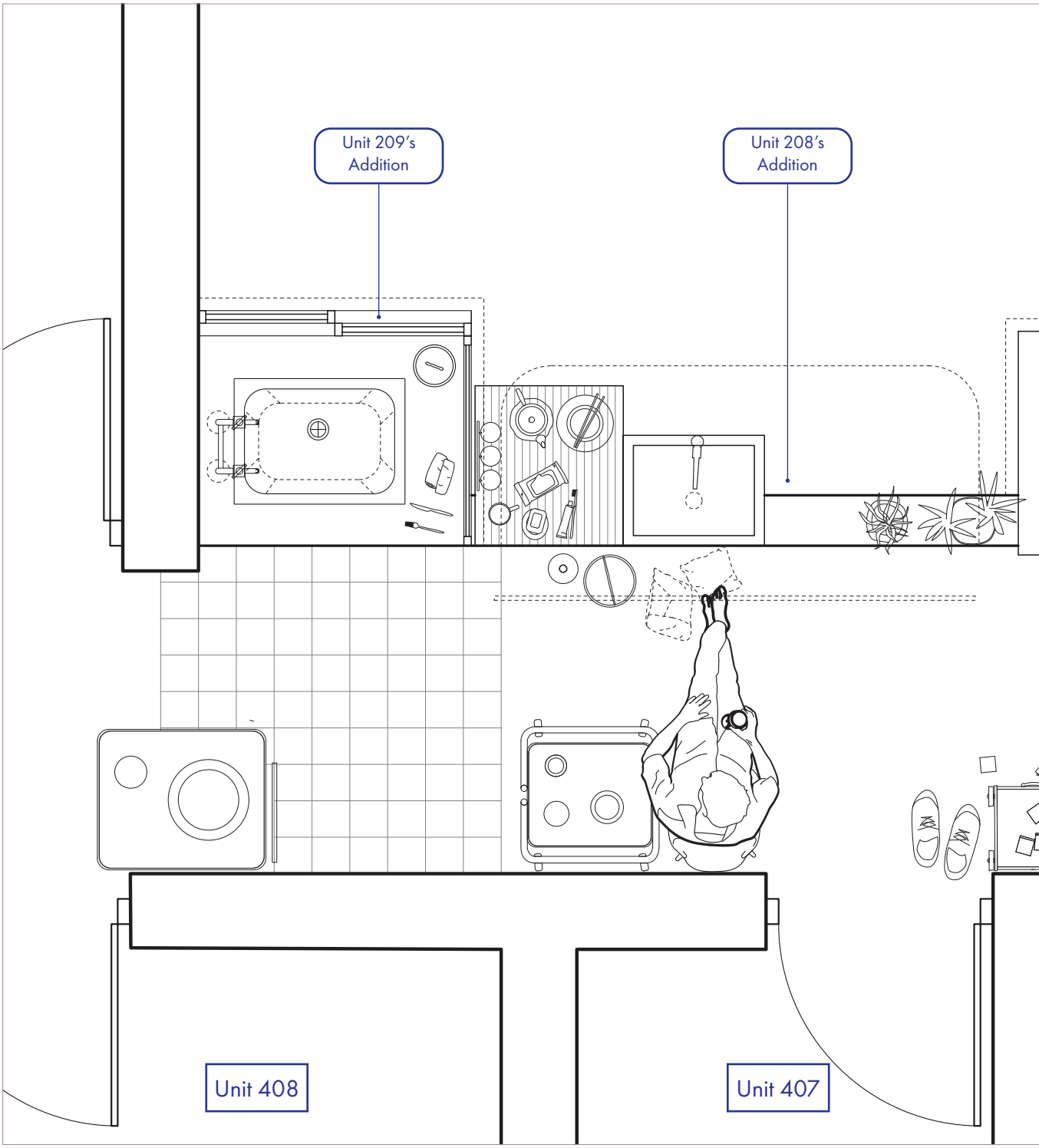

Unit 407
Unit 406
Unit 405
0
500
1000
3000 mm

Storage systems mounted on walls allow maximum storage capacity without clogging up corridors.

The end of corridor is fully privatized by the inhabitants of unit 409. Such "private ownership" is sometimes marked by a gate or door.

Washing machines does not only clean your laundry, it also provide a surface area for storage.

Fig2.29　Photo of Corridor 2


Unit 209's Addition
Unit 208's Addition
Unit 408
Unit 407

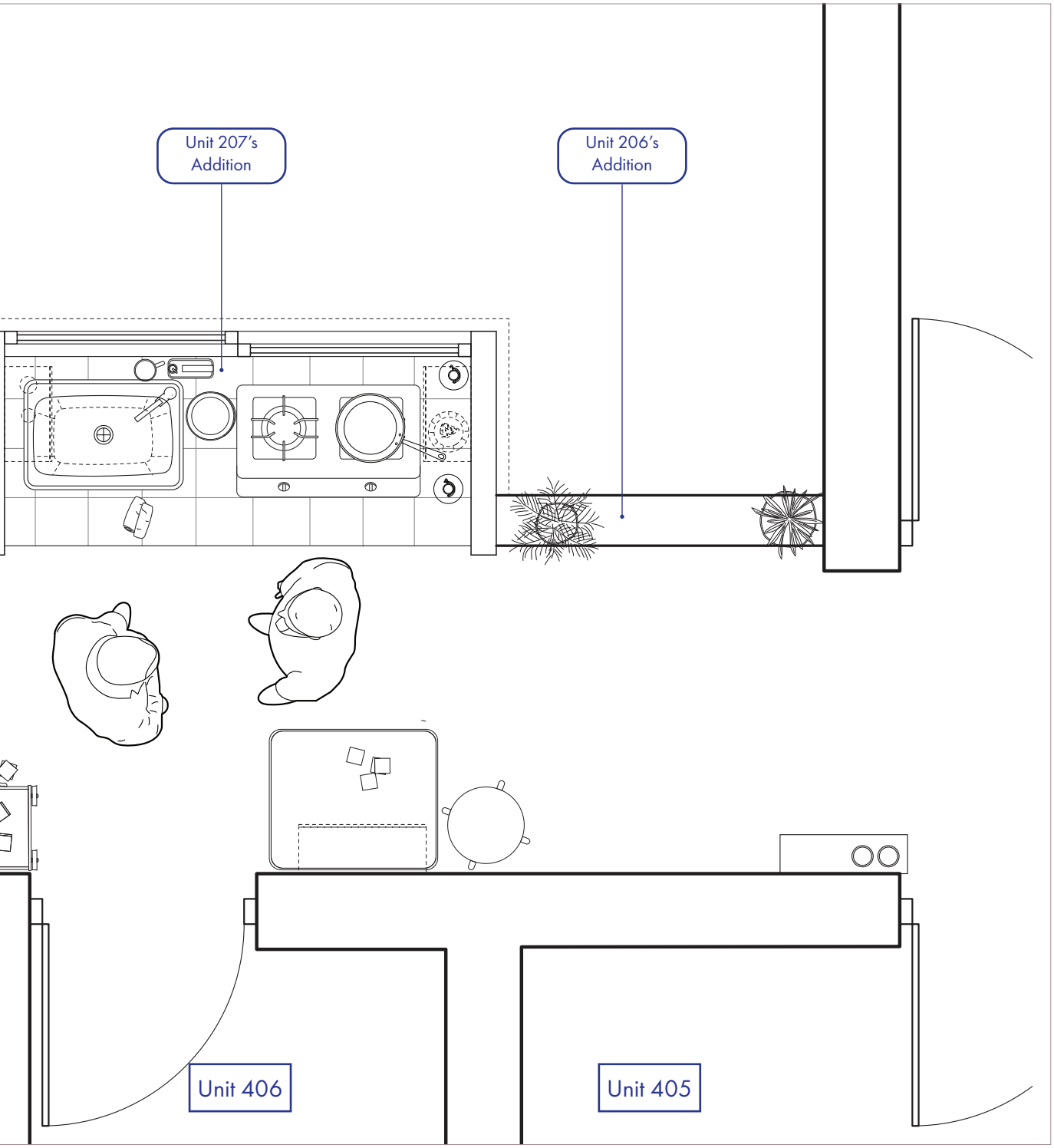



Fig2.30 Plan of Corridor 2

Unit 407's Addition

In this case, the railing is fully utilized with a number of things attached to it or added to it. There is a shelf, a sink and three plants pots. There are a variety of items on the shelf, including cleaning supplies such as soap and brushes, personal hygiene products such as toothbrushes and comb, cooking items such as a knife and half a melon. The sink has a tap where the black supply water pipe can be traced back to the inside of the unit.

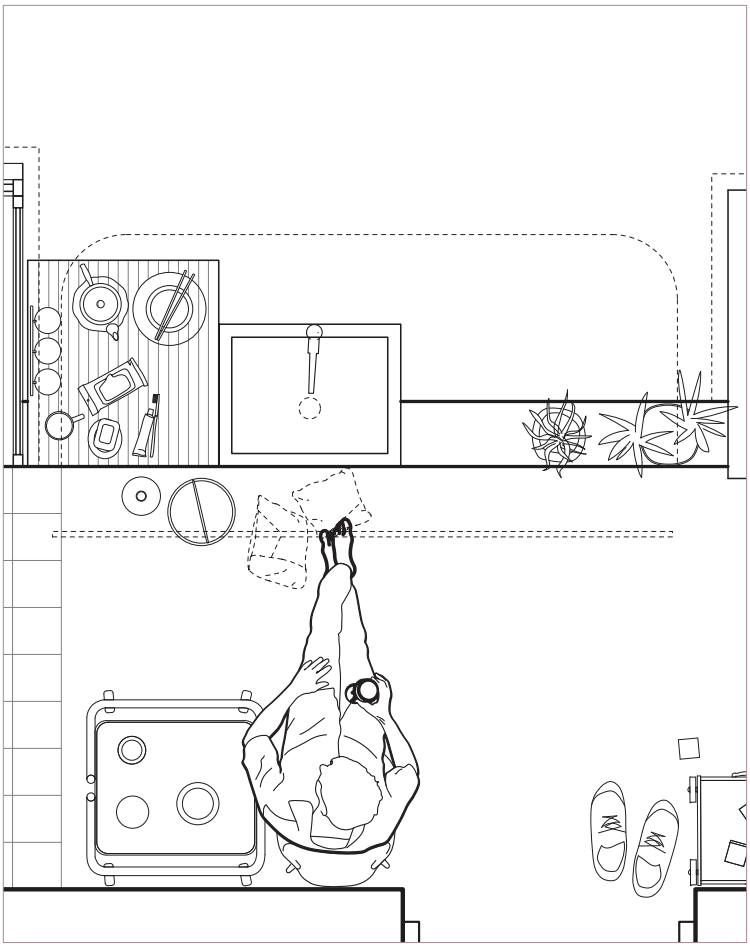


Fig2.31 Plan of Unit 407's Addition

### Canopy

Canopy is one of the popular components to add on the facade. The most common accompanying fixture is a clothes rack.

### Shelf

An assembly of wood planks makes up the shelf. There is a small piece at the end to prevent items falling down. The big side piece offers some privacy and possibilities to hang things onto it.

### Sink

The material used to build the sink is cast-in-place concrete and stone mixture. There is moss growing because its uneven surface makes it challenging to clean.

### Watermark

It appears that there is a small area on the railing left empty for laying the wet dishes after washing given the marks left by the wet dishes.

Fig2.32　Photo of Unit 407's Addition

Unit 406's Addition

This is a counter-top type addition, in which the side walls are solid and the front is a sliding window. A sink is located on the left side and a stove is located on the right side. There was limited space on the counter top for meal preparation since the sink and stove consumed most of it. Items such as cutting boards and colanders are stuffed between the sink and the adjacent wall. There are also two wall mounted storage cabinets on each side of the wall.

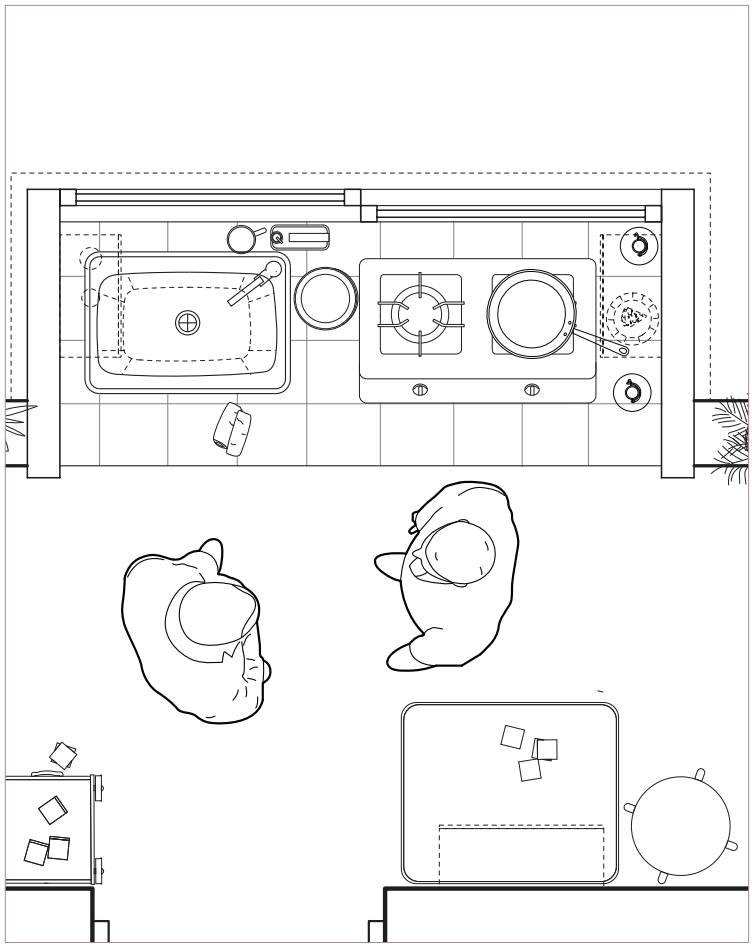


Fig2.33 Plan of Unit 406's Addition

**Storage**

Appearing to be modified by inhabitants, a few hooks were added at the bottom of the wall mounted cabinet. Those hooks effectively compensate for the limited storage space.

**Wood Plank**

It appears that the wood plank in front of the stove acts as a barrier to prevent items from falling when the window is open to allow oil fumes to escape during cooking.

**Tile**

The wall and counter top is paved with tiles, which is an economical and practical choice due to its durability and grease/water resistance.

Fig2.34　Photo of Unit406's Addition

## A CLOSER LOOK
## ITS INHABITANTS AND THEIR "LIFE NARRATIVE"

Over the years, the corridor has evolved in its function as an organizational element, from a means of separating the noble family from the servants in the 17th century English aristocratic homes, to a blank passage space that served the functional circulation system since the beginning of 20th century. Many architects have made attempts to re-image the space of the corridor. Le Corbusier famously sought to incorporate social aspects into the corridors of Unite d'Habitation, naming them rue intérieures (Internal streets). While level 7 and 8 provided public services, the remainder of the corridor was dim and empty, making them unwelcoming and uninviting to interact in.

The corridor of Tianlin second village, without the intentional design and manipulation of any architects, is full of life – from the lines of hanging laundry stretched above the railing to the carefully stacked objects of garbage bins, washing baskets and pots and pans. The vernacular addition in the exterior side of the corridor was an act out of necessity by the inhabitants. Unintentionally, this act generated a new typology: parts of residential programmes are separated from the main unit by a public corridor. The corridor, thus, is no longer a simple passage that accommodates traffic.

What does it mean by separating a piece of unit across the corridor? What kind of social dynamic is formed by this new typology? How are social interactions encouraged through this new typology? The following pages turned to the “life narrative” through the montage of fragments of corridor objects, the type of objects, the state of objects, and the manner of organizing and arranging of objects.

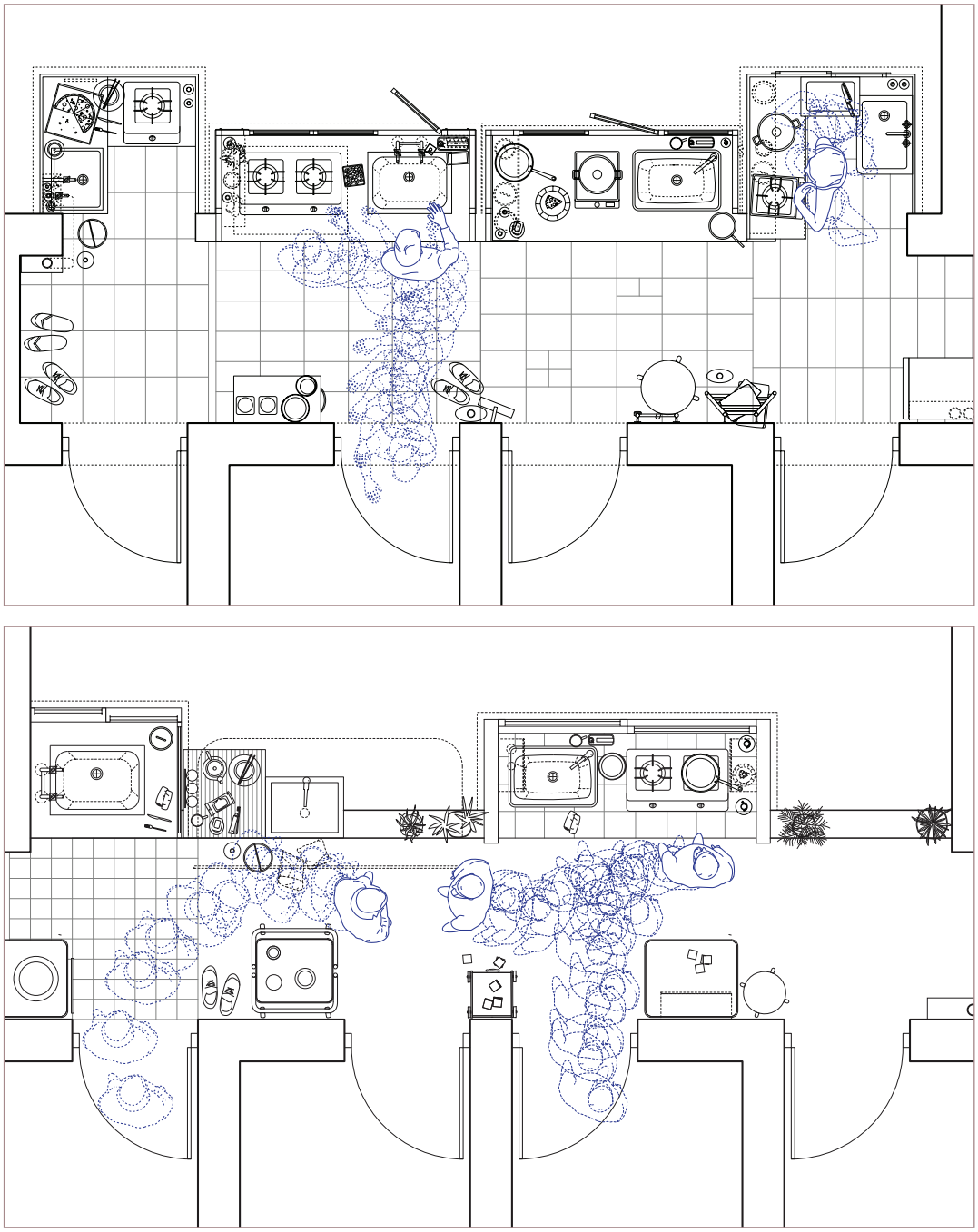


Fig2.35 Diagram of Corridor Dynamic

## OPEN UNIT DOORS

In the modern multi-storey residence, the unit door is the threshold that draws a clear boundary between the public and private space. The doors are always shut, protecting the private territory from the “indiscreet glances”. Things, however, are different here in Tianlin second village. The doors are often open, creating this porous boundary between the public exterior and private interior. The private everyday activities “leak” out into the public corridor. The sounds of the clatter of dishes and plates from the kitchen, the smell of fresh laundry from the drying rack, and the silhouette of a neighbor watching TV on the couch. The public domain is allowed to break through the public-private demarcation of unit doors. One can easily peek into others’ private space, smell others' cooking and strike up a conversation with a neighbor.

One of the reasons behind this is convenience. As parts of the residential programme such as the kitchen and laundry room are separated from the main unit by a public corridor, residents often need to travel between the separated programme and their main unit to complete household tasks. Leaving the door open creates an unobstructed path between the two sides of the corridor.

Another reason is that decades of working and living together have created a social "acquaintance trust" among residents, especially among the original residents who used to be colleagues from the same work unit. Although the sense of community has declined dramatically since the influx of migrant workers, the “publicness” of collective living has not yet completely disappeared. It has survived through the living habits, interpersonal networks of the original residents and spatial environment of the workers’ village.

Fig2.36　Photo of Open Unit Doors

## THE SEATING

The corridor has become the stage of everyday life and the seating furniture commonly placed in front of each unit demonstrates this shift of the corridor space. As the bustle of everyday life unfolds in the extended exterior side of the corridor, the interior side naturally becomes a perfect auditorium to watch the display of everyday life.

The seniors, with limited mobility, are the most appreciative audience of this play. It is a great way to pass the time as many retirees feel at loose ends after their retirement. They enjoy sitting in front of their unit, observing the busy corridor life, and chatting with the neighbors passing by. The unit wall behind provided a sense of security where the watchers can always retreat back to their private home.

Many enjoy sitting outside in the corridor as they often feel confined within their small unit. Compared to visiting the public courtyard on the ground floor, sitting in the corridor does not have the pressure of socializing with a group of strangers. One can relax with some alone time while having an open arms for social encounters with familiar neighbors.

Fig2.37　Photo of Chair

## THE CORRIDORS

This cage-looking addition belonged to an old couple, who dedicated the front part of the house as a hair salon and the back as living space. The handwritten sign is the name of the business, Rose Hair Salon (玫瑰理发). While the interior of this addition is strictly privately used, it has a basketball hoop hanging at its side for community use. Individual's appropriation of public space, in this case building an addition in public domain, is justified by contributing to the improvement of the community, such as adding a communal facility like basketball hoop.

Zhang Bin identifies this process as appropriation, cooperation and mutualism. The appropriation is the individual's pursuit of occupying the public space for personal use. In order for this "selfish" action of appropriation to be accepted by the community, the benefit of appropriation should also be shared among the community, forming a tacit cooperative relationship. Through this process, a symbiotic relationship between different groups is gradually formed and thus the publicness of ones' appropriation.

This publicness is also unstable; it is shaped by the trajectory of countless individuals' daily life practices. It does not have a precise form or location, or a set of clear and specific rules that are agreed among residents. It is constantly being established and disappearing.


Fig2.38　Photo of Basketball Hoop

Fig2.39　Photo of Corridor in Tianlin Second Village

## DISCUSSION

Adverse financial and spatial situations pushed the inhabitants to transform the existing built environment to create a viable form of life in contemporary Shanghai. With mutual respect and a set of unspoken rules about occupying the public corridors, everyday life in Tianlin second village can unfold in a limited area and achieve a temporary balance between spatial demands and reality.

Here, cooking and dining, normally in the private domain, are located in the suspended additions across the corridor from the private unit. The corridor, thus, is no longer a simple passage that accommodates traffic, but part of inhabitant's shared living space with a rich, chaotic and vibrant spatial atmosphere. These spatial praxes the inhabitants created are innovative to the conventional typology of multi-storey residential buildings. It challenges the conventional concept of a home as an entity with a clear demarcation that separates the private and the public domains.

# 3.
# DESIGN

## INTRODUCTION

A strong sense of political and spatial agency is evident from both the analysis of the online forums and the vernacular additions in Chapter 2. Aside from seeking innovative and creative ways to enhance their living environment, the inhabitants are eager to participate and contribute to the future of their community. Despite this, the renewal practices of Shanghai continue to follow the top-down renewal model and view residents as passive recipients of the decisions made by the government, developers, and architects.

It is in this context that this thesis seeks opportunities to re-imagine a way of inhabitants-led renewal in Tianlin second villages and asks: how can architects turn the political and spatial agency of inhabitants into constructive catalysts and to empower the inhabitants, both property owners and renters, to design, construct and modify their unique extension to suit their current and future spatial needs. In addition, how can the design build upon the existing innovative spatial praxes and further encourage corridor social interaction to dissolve social barriers between the locals and the migrants.

## TOWARDS DESIGN PROPOSAL

In spite of the fact that the inhabitant's adaptations effectively and economically resolve the problem of space deficiency, they raise a number of aesthetic and safety concerns, violation of city regulations, and create tension between neighbors due to unclear rules governing how space is distributed.

Multiple incidents have raised concerns about the safety of these suspended structures. In 2013, a fire in Tianlin second village claimed four lives, a twenty six year-old male and a family of three with a six-year-old child.[1] A sign board of a shop in Shanghai collapsed in heavy rain in 2018, killing three and injuring six.[2] A report by Knews (看看新闻) specifically highlights the safety concerns regarding the suspended additions in Tianlin second village and interviews a number of residents who have voiced concerns about the situation.[3] Some are worried about the construction quality, as most of the suspended structures are self-built or constructed by handymen. Some are concerned about the rusting steel members that provide critical structural support. Some are afraid of the potential fire hazard due to the illegal electrical wiring. Although the Illegal Structure Rectification Notice has been posted in the community, there is no action of force demolition due to the acknowledgment from the neighborhood committee of the difficult situations many inhabitants are facing.

Currently, the laws and regulations that govern the renovations and additions of residential housing are inconsistent and ambiguous. The Property Law of the People's Republic of China stipulates that as long as more than two-thirds of the relevant owners give consent, reconstruction, or addition can be carried out.[4] The Shanghai Residential Property Management Regulation, however, strictly prohibits renovation and addition, and imposes severe penalties for violation.[5] Ho argues that the Chinese government deliberately created a vague property rights sys-

1. Cao曹, Wenqing文清, "A Residential Building on Tianlin Road Caught Fire in the Early Morning and Four People Died 田林路一居民楼凌晨起火 四人死亡," Xinmin Evening News 新民晚报Apr, 2013, https://wap.xinmin.cn/content/19712521.html (accessed Oct 20, 2022).

2. Li李, Xiaojin骁晋, "Three Dead and Six Injured when a Store Sign Fell Off in Shanghai 上海一商店招牌脱落致3死6伤," The Beijing News 新京报Aug, 2018, http://www.bjnews.com.cn/news/2018/08/13/499309.html (accessed Oct 20, 2022).

3. "It's Too Dangerous to Build a Kitchen Outside the Corridor 楼道外搭厨房 空中楼阁太危险" (Knews看看新闻, January 3, 2019), http://www.kankanews.com/a/2019-01-03/0018711114.shtml.

4. Property Law of the People's Republic of China 中华人民共和国物权法, (2007):

5. Shanghai Residential Property Management Regulation 上海市住宅物业管理规定, (2010): .

tem to leave the state free to alter the rules.[6] The opposing fates of inhabitants' alternation in Tianzifang and Fangjia Hutong illustrates Ho's argument. In Tianzifang Commercial Street, the collective illegal alteration from the residents was preserved and fuelled the revitalization of this community.[7] Yet in Fangjia Hutong, the campaign of "clean up, straighten, and reorder" (清理整顿, qingli zhengdun) has characterized the previous acquiesced alterations as "malady and persistent disease".[8] Due to the wavering attitude of the central government, the fate of the suspended additions constructed by the inhabitants remains uncertain.

In spite of the fact that the local residents and the migrant workers have been sharing Tianlin second village for over a decade, clearly defined social and cultural boundaries still exist between them.[9] They have their respective social circles and networks.

The majority of the local residents are the original workers who are already retired. They remained in Tianlin village partly due to economic constraint and partly due to the familiar social circle. The presence of relatives and old faces in the community serves as both a source of social support and a source of community identity for local residents. Additionally, a number of local seniors have moved in, who value the convenient location of Tianlin second village, which is located near supermarkets and hospitals. There is generally a feeling among local residents that the community environment is deteriorating. They attribute the declining community environment to both the housing marketization and influx of migrant workers.

Migrant workers constitute 60% of the population of Tianlin second village, most of whom are from Anhui, northern Jiangsu, and Sichuan. A majority of them are between the ages of 20 and 40, and work primarily in the service industry and the nearby factory. Their children at-

6. Peter Ho, "Who Owns China's Land? Policies, Property Rights and Deliberate Institutional Ambiguity," The China Quarterly (London) 166, no. 166 (Jun, 2001): 394–421, https://dx.doi.org/10.1017/S0009443901000195.

7. Y. U. Hai, CHEN Xiangming and ZHONG Xiaohua, "Communal Entrepreneurship in Old Neighborhood Renewal : Case Studies of Shanghai Tianzifang Shopping District," グローバル都市研究, no. 7 (2014), 15–38.

8. " The Doors of More than 6,000 Shops have Disappeared, Who Closed the Eyes of the Street? 6000多家店鋪的門消失了，誰讓街道閉上了眼睛？," accessed Feb 28, 2022, https://theinitium.com/article/20170628-mainland-teardownthewall/.

9. Chen辰 Yang杨, "The Residential Mobility in Urban Immigration-Community: Field Survey in New Worker's Village in Shanghai 城市移民化社区中的居住流动——上海工人新村N的实地调查," 国际城市规划 27, no. 6 (2012), 69–77. http://lib.cqvip.com/qk/96357A/201206/44286912.html.

tend the Tianlin Primary School right next door. A low sense of community identity exists among migrant workers, as they simply view Tianlin second village as a place to reduce their living cost or make a living through small business in the community. A lack of community identity is compounded by inequalities in policy. Without having Shanghai residence permit (Hukou 户口), the migrant workers are not allowed to purchase the right of use of the units in Tianlin second village, because it is categorized as non-self-sufficient residence. Furthermore, their children are forced to return to their place of origin after completing middle school in order to continue their education.

At the micro level, however, a symbiotic relationship is gradually forming between the local and the migrant workers.[10] The migrant workers have brought a younger population to Tianlin second village. Some of them provide basic services to the community, including recycling, street cleaning, housekeeping, tailoring, and haircutting. The locals benefit from the convenient service provided by the migrant workers. The locals, in turn, provide the migrant workers with community news and information through their local networks. The shared public space in the community has become the arena where the boundary between two groups slowly dissolve. By supporting small businesses, exchanges of used items, and displays of everyday life, the shared public space facilitates social encounters, dissolves social barriers and develops social networks.

10. Bin 斌 Zhang 张, "From Overflowing to Mutualism, Study of Common Space in Tianlin Workers' Village 从“溢出”到“共生”，田林新村共有空间调研," Time + Architecture 时代建筑, no. 02 (2017), 47–55.

From the analysis of both online forums and vernacular additions in Chapter 2, it is evident that the inhabitants have a strong political and spatial agency. They not only seek creative and revolutionary ways to improve their living environment, but are eager to participate and gain a voice in the future of their home. By separating a piece of unit across a corridor, they created a new housing typology and turned the corridor into a social space, questioning the standardized single-loaded/doubled-loaded multi-storey residence typology.

**The design proposal of this thesis aims to turn the political and spatial agency of inhabitants into constructive catalysts and to empower the inhabitants, both property owners and renters, to design, construct and modify their unique extension to suit their current and future spatial needs. Additionally, the design builds upon the existing innovative spatial praxes and further encourages corridor social interaction to dissolve social barriers between the locals and the migrants.**

## DESIGN PROPOSAL PART 1
## POLICY LEVEL

强化居民共建的参与机制。完善党建引领的群众工作机制，形成基层党组织领导，社区居委会配合，业委会和物业服务企业等参与的协商议事机制。(*Strengthen the participation mechanism for residents. Improve the mass work mechanism led by party building. Form a consultative and deliberative mechanism led by grass-roots party organizations, with the cooperation of neighborhood committees and the participation of residents committees and property management enterprises.*)

*-Several Opinions on Accelerating the Renovation and Renovation of Old Housing in Shanghai*

Shanghai has been experimenting with alternative paths to the previously monolithic top-down housing renewal of old communities like workers' villages. The pilot project is the "*Walking Shanghai 2016—Community Space Micro-Renewal Plan*" launched in 2016, aiming to explore a smaller-scaled, more economical, decentralized and flexible model to community renewal with the broad participation of multiple stakeholders.[1] Residents are emphasized on paper as important stakeholders, but in reality, they are unable to directly participate in design or decision-making. There is still a lack of clarity regarding how different stakeholders can collaborate and how residents can be empowered to participate.

To gain a better understanding of how to establish a co-governance renewal model in Tianlin second village where inhabitants can participate in the actual design process, two successful "bottom-up" renewal projects in Shanghai were examined: elevator installation project in Yuanlong Apartment and Tianzifang revitalization project.

### Elevator installation project in Yuanlong Apartment

1. Kongjin Ying and Hong Ma, "Micro-Regeneration of Community Public Space : Exploring Approaches to Community Building in the Context of Organic Urban Regeneration in Shanghai," Shidai Jianzhu, no. 4150 (Jul 1, 2016): 10-17, https://search.proquest.com/docview/1815347830.

Yuanlong apartments are experiencing an aging population, making it urgent to construct facilities, such as elevators, in the existing multi-story residences. Having been initiated and curated by residents, the project exemplifies a co-governance model of community renewal as opposed to the current government-led model. Based on field research and in-depth interviews conducted by Simeng Li, Zhimin Liu and Chao Ye, it is indicated that some actors and their roles are crucial to the success of this alternative path to renewal.[2]

First and foremost, there is a residents representative group composed of the building leaders (Lou Zhang 楼长) from each building. It is a voluntary role normally taken on by the members of the communist party and distinguished elders. In collaboration with the neighborhood committee, this group acts as a liaison for residents, negotiates with the government and elevator company, consults with experts and professionals, resolves differences among residents, collects payments, and manages elevator maintenance. This type of self-organized project would not have been possible without their efforts.[3] [4]

The neighborhood committee is also an important actor. It is “a mass organisation for self-government at grassroots level” (基层群众组织 jiceng qunzhong zizhi).[5] One of the crucial roles played by the neighborhood committee was in inviting the relevant government departments from district level to the "1 + 5 + X" meetings of co-governance. During the meetings, the neighborhood committee served as an important intermediary between the residents and higher level government to facilitate negotiations and communication. As a result of discussion and communication, contradictions were gradually resolved, consensus was reached, and the content of the agreement was gradually refined and improved. These measures effectively resolved the differences between residents and the officials, effectively protecting residents’ interests.

2. Simeng Li, Zhimin Liu, and Chao Ye, "Community Renewal under Multi-Stakeholder Co-Governance: A Case Study of Shanghai’s Inner City," Sustainability (Basel, Switzerland) 14, no. 9 (2022): 5491.

3. Yongshun Cai and Zhiming Sheng, "Homeowners' Activism in Beijing: Leaders with Mixed Motivations," The China Quarterly (London) 215, no. 215 (Sep 1, 2013): 513-532, https://search.proquest.com/docview/1497673969.

4. JIEREN HU, TONG WU and JINGYAN FEI, "Flexible Governance in China," Asian Survey 58, no. 4 (Aug 1, 2018): 679-703, https://www.jstor.org/stable/26494071.

4. Organic Law of the Urban Residents Committee of the People's Republic of China [Revised], Public Law Article 2, (1989): .

## Tianzifang revitalization

Tianzifang revitalization is another example where the grassroots residents directly participated in the renewal and redevelopment process. The project began with an informal process enacted by individuals who converted the lower floor of the old Lilong housing into a commercial space. There was eventually a coalition formed among residents, local authorities, and local institutions to protect the Tianzifang neighborhood from a higher-level redevelopment plan that intends to transform it into one of the most popular commercial districts in the city.[5]

While the rehabilitation of Lilong housing occurred in a decentralized manner, the district government, especially street office, played a vital role throughout. In Shanghai, it is illegal to convert the use of the building from residential to commercial without the government's permission. Thus, the existence of such collective violation of regulations was due to the street office authorities turning a blind-eye to its illegality and have tacitly consented to such illegal conduct.[6] When the higher level government advocated a competing vision for the area, the street office mobilized its own institutional resources to invite experts, scholars, media and other organizations to the negotiation table with the district government in order to persuade it to change its plans.[7] The quantitative analysis of the level of participation of different actors in the Tianzifang revitalization project conducted by Hao Wang confirmed the key position of the street office.[8] Wang concluded the study saying: “In the “bottom-up” renewal model of Tianzifang in Shanghai, the street office plays the most crucial role.”[9]

Different from the previously discussed elevator installation project in Yuanlong, the expert group consisting of individuals from various fields, including economics, urban planning, and architecture played

5. Y. U. Hai, CHEN Xiangming and ZHONG Xiaohua, "Communal Entrepreneurship in Old Neighborhood Renewal : Case Studies of Shanghai Tianzifang Shopping District," グローバル都市研究, no. 7 (2014): 15–38.

6. Stephen Wei-Hsin Wang, "The Urban Politics of Housing Renewal in Transitional Shanghai: Reassessing the Chinese Pro-Growth Coalition Perspective" ProQuest Dissertations Publishing), 255, https://search.proquest.com/docview/1562559171.

7. Wang, "The Urban Politics of Housing Renewal in Transitional Shanghai: Reassessing the Chinese Pro-Growth Coalition Perspective" 258

8. Hao Wang, "A Study on Stakeholder Relationship in Urban Renewal Projects: Case of Tianzifang in Shanghai," in ICCREM 2019 – Innovative Construction Project Management and Construction IndustrializationAmerican Society of Civil Engineers (ASCE), 2019), 334–342.

9. Wang, "A Study on Stakeholder Relationship in Urban Renewal Projects: Case of Tianzifang in Shanghai," in 340

a supporting role in Tianzifang revitalization. They are strong allies of the street office in producing the report of the cultural and economic value of Tianzifang and to make a case for its conservation. They also helped with developing a conservation planning proposal that was later approved by the central government, marking the success of the conservation of Tianzifang from redevelopment. Yet Hao Wang points out that the expert group is located in the periphery of the stakeholder network, meaning that they only have interactions with a small number of other stakeholders.


Fig3.1 Photo of Tianzifang

**The proposed co-governance community renewal model** (Fig 3.3) aims to resolve the issues of communications between the Decision-making power holder(the upper-level government), and the voting power holder(the residents) by introducing the crucial rules of collaboration facilitator (the sub-district street office, neighborhood committee and the expert group). With dialogue and negotiation, the residents can be elevated from the role of simple recipients to collaborators throughout the renewal process. As a result, their participation is assured, their voice is heard, and their demands are met.

### Decision-making Power Holder

The renewal in Shanghai's older communities has been dominated by a top-down approach where the district government has centralized power over every aspect of the renewal project, from overarching budget to fine-grain design.[10] In the co-governance model, the upper-level government needs to transform its role from a paternalistic leadership deciding every step of the renewal, to a paternalistic supporter providing high-level policy and budget.

Theoretically, as the formal bureaucracy, the street office directs "community-building" (shequ jianshe 社区建设) and manages neighborhood affairs by coordinating with the neighborhood committees, an autonomous organization elected by inhabitants but not officially connected to the administrative hierarchy. In reality, however, the strict hierarchical relations of district government, sub-district street office and neighborhood committee are far from supportive of neighborhood autonomy.[11] Moreover, the street office and the neighborhood committee have limited capacity since the upper level government takes over the majority

10. Wen-I Lin and Chaolee Kuo, "Community Governance and Pastorship in Shanghai," Urban Studies (Edinburgh, Scotland) 50, no. 6 (May 1, 2013): 1260–1276, https://www.jstor.org/stable/26144283.

11. Judith Audin and Katharine Throssell, "Governing through the Neighbourhood Community (Shequ) in China: An Ethnography of the Participative Bureaucratisation of Residents' Committees in Beijing," Revue Fran aise De Science Politique (English Edition) 65, no. 1 (Jan 1, 2015): 1–26, https://www.jstor.org/stable/revfranscipoleng.65.1.1.

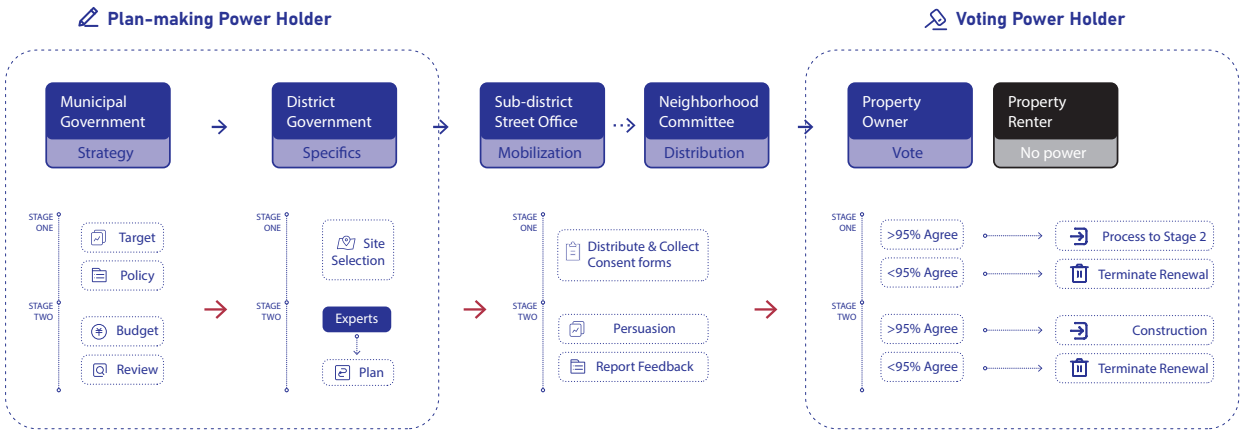



Fig3.2 Diagram of Current Renewal Model

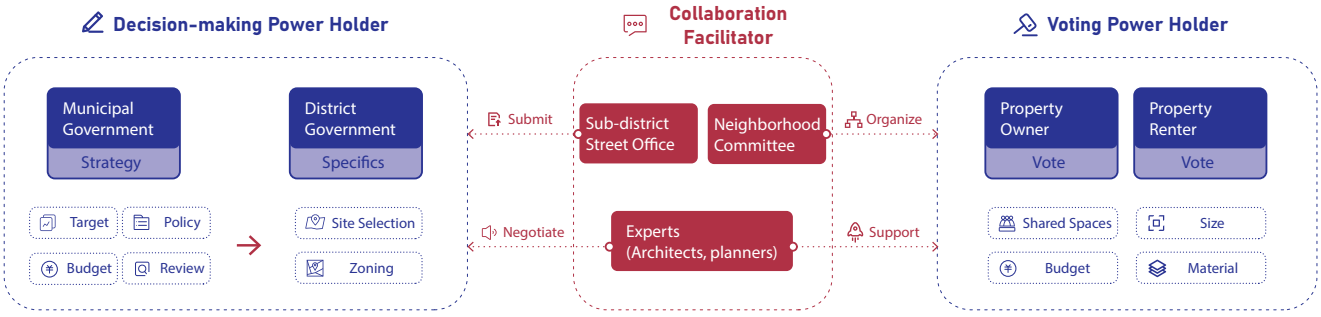



Fig3.3 Diagram of Proposed Renewal Model

of community governance matters.[12]

The further decentralization of the power would allow the sub-district government to play its crucial role in the renewal process. On the other hand, the government's all-round management approach has led to a long-term passive position of residents. Relinquishing parts of the power to the hands of the community is a prerequisite for citizen participation in community renewal.[13]

## Collaboration Facilitator

Both the street office and neighborhood committee are shown to be key catalysts.

The street office is the formal bureaucracy that extends to the street level, as the decentralized components of district-level government. Each street level contains several neighborhoods that can be reached by state power through neighborhood committees. In official terms, the street office is responsible for "providing guidance to" (zhidao 指导), but not "directing"(lindao 领导), the neighborhood committees.[14] Under organic law, the neighborhood committee is theoretically granted autonomy, representing the community to convey its opinions and demands to the upper-level government.

Thus, both the street office and neighborhood committee, as indicated in two case studies, are critical links between the state power and the grassroots residents and can be active mediator to facilitate communication and negotiation between the two parties. As an authoritative body, the street office can mobilize its own institutional resources to assist the residents group in the negotiation table with the district government. It can also submit a proposal to the central government for approval. The neighborhood committee, as an organization dealing with day-to-day affairs in the community, has a strong involvement with the residents. Through both asserting its authority and forming a close interpersonal relationship with the residents, the neighbor committee often has a strong influence on the residents' decisions.[15]

12. 金 Jin and others, "Research on Pathways of Micro-Regeneration of Public Space in Old Communities in Shanghai," 住宅科技, no. 06 (2019): 58-63.

13. Jiang蒋, Shanshan珊珊,"互助型社区治理模式研究，以上海市浦东新区贵龙园社区为例 (A Study on Mutual Assistance Community Governance Model, Taking Guilongyuan Community in Pudong New Area, Shanghai as an Example )," 农村经济与科技 30, no. 18 (2019): 230-232.

14. Organic Law of the Urban Residents Committee of the People's Republic of China [Revised], Public Law Article 2, (1989): .

15. Guixia桂霞 Ma马, "Study on the Reconstruction of Residents' Community Identity in the Reconstruction of Old Lilong, Case Study Based on Lilong X" East China University of Science and Technology 华东理工大学), 36-39.

In the examples, the expert group rely on their professional knowledge and academic prestige to support the co-governance model and to drive policy development and improvement. It has a more peripheral role as a consultant and supporter. The professionals and scholars, however, have the ability to play a stronger role given their professional knowledge. The architect can facilitate certain design decisions that are user-centered, as those often at the lower priorities when the government sectors prioritize implementation, including funding construction and management.[16] The architectural perspectives also allow architects to understand the needs of the inhabitants through observing and analyzing their vernacular constructions. This allows architects to form the database of inhabitants' fine-grain spatial requirements, and use the database to guide their design.

16. Yuchen禹辰 Guo郭 and Shuyuan淑媛 Dai戴, "政策网络视角下城市基层社区治理的结构性困境——基于上海市A街道微更新的实证研究 The structural dilemma of urban grass-roots community governance from the perspective of policy network," Dongbei da xue xue bao. She hui ke xue ban 22, no. 4 (2020): 57–65.

## Voting power holder

From the state-led model to the co-governance model, every inhabitant should be empowered to engage in every step of community renewal. There are, however, differences in capabilities and enthusiasm of residents' participation as they differ in age, education, occupation and knowledge of community-renewal projects. A residents' representative group then becomes indispensable. Externally, this group represents the residents as a strong political force to protect their own interest and take charge of coordination and negotiation with other stakeholders. Internally, it acts as a mediator to resolve contradictions among the residents and facilitate mutual consensus. The importance of residents' representative group is also evident in the forum discussion, where multiple posts have mentioned that they are in need of people/group to organize and lead the residents into a strong force.

The subrenters, however, remain neglected in co-governance renewal experiments in Shanghai. The subrenters take up almost 60% of the population of Tianlin second village, however, their voices are muffled due to their vulnerable social and economic conditions.[17] The female, the elders, and the less educated are often marginalized.[18] Thus, it is important to ensure an equal representation of different groups in the residents' representative group.

17. Bin 斌 Zhang 张, "From Overflowing to Mutualism, Study of Common Space in Tianlin Workers' Village 从“溢出”到“共生”，田林新村共有空间调研," Time + Architecture 时代建筑 , no. 02 (2017): 47–55.

18. X. Lu and E. Lange, "Stakeholder Characteristics and Interactions in a Participatory Community Renewal Project : A Case Study of Pun Tong Wuyue Village, Guangzhou," (Sep 1, 2021)30, http://eprints.whiterose.ac.uk/181407.

## DESIGN PROPOSAL PART 2
## PRACTICE LEVEL

The design proposal follows the significant shift in the idea of housing from the post war 1960s, when the Dutch architect and theorist John Habraken introduced the open building concept for mass customized housing.[1] The two key principles of open building are user participation and future adaptability. In Habraken's view, architecture is a continuously evolving work in which the inhabitants have a significant influence in shaping it. The support and infill system is the solution proposed by Habraken to allow both user co-creation and future evolution of building. He differentiated the building system into the support and the infill according to its technical nature and more importantly, its ability to accommodate personal influence.

*"The support represents the most permanent parts of the building like the structure and can be seen as a bookcase. The infill represents the adaptable part of the building or in other words the books. "*

*John Habraken, 1961*

The support, described by Habraken, is a bookcase that acts as a frame accommodating change of its contents. As an independent and autonomous entity, it is not affected by its content. Architecturally, it is a structure that allows for a great variety of layouts and functions. Commonly, this frame consists of the structure elements, vertical circulation and servant elements. The support ensures the safety and durability of the building.

The infill is the property of the individual user that can be modified and changed according to the shifting spatial requirements of the users. Within the armatures of the support, each user can design their infill according to their requirement and budget. Users can also modify or rearrange the infill as their spatial requirements change over time.

1. N. J. Habraken, Supports: An Alternative to Mass HousingRoutledge, 2021), https://www.vlebooks.com/vleweb/product/openreader?id=none&isbn=9781000025798.

Furthermore, different from the support that is permanent, the components of the infill are renewable. Depending on its condition, it may be reused, repurposed, repaired or recycled.

With the support and infill system, many of the features sought by the design of Tianlin second village renewal can be addressed. Safety is one of the main concerns associated with the current vernacular construction. Cantilever structures that are neither certified by structural engineers nor constructed by licensed contractors are concerning for both the inhabitants and government officials. Fire hazards are posed by the illegal electrical wiring and the overloaded small appliances. The support structure is able to ensure public safety while allowing residents a high degree of design freedom. The infill answers to the fine-grain spatial agency of the inhabitants observed in Chapter 2 by allowing the inhabitants to decide the program, size and arrangement of their own infill. Additionally, the circular infill components allow the participation of the temporary inhabitants like the subrenter, who can re-sell or recycle their infill system when they move out. This adaptable framework of the support and the infill also allows easy reorganization of space to accommodate the changing spatial needs of the inhabitants.

## PROPOSED MODEL
## THE SUPPORT AND THE INFILL

The proposed renewal process involved two stages: the support and the infill. This distinguish follows the Harbrabken's uses of levels, where he divides the built environment into hierarchical levels that are related to different levels of control and responsibility.[1] The model proposed has two levels: the support is the higher level and the infill is the lower level. (Fig 3.4) The higher level, the support, establishes the structural order for the lower level, and the lower level, the infills, follows the rules of the higher level.

1. N. J. Habraken, "Recognizing Levels," in The Structure of the Ordinary, Form and Control in the Built Environment (United Kingdom: MIT Press, 2000), 41–50.

**The support** aims to establish a collective framework for the infills. It is under the public domain, hence, it is decided collectively by the upper-level government and the elevated representative resident group. Physically, it includes the decision of overall dimension of the extension, the design of infrastructural elements such as the load bearing structure, services such as electric wiring and plumbing. More importantly, the support frameworks include a set of rules that guides the infills process and ensures the private infills respect the public realm and the collective interest.

**The infill** engages with the lower hierarchical agents: the inhabitants, and propose a kit-of-parts system that nurtures the fine-grain agency of each inhabitant. The "we-design" toolkit is an assemblage of physical modular blocks. It helps inhabitants to understand the space and ways to realize their spatial requirements. It also facilitates the in-person collaboration among inhabitants of one floor to collectively envision the shared corridor. The "we-build" kit-of-parts are the "we-design" modular blocks in real-life size that feature an easy assembly process that allows the inhabitants to construct their design just like an Ikea furniture.

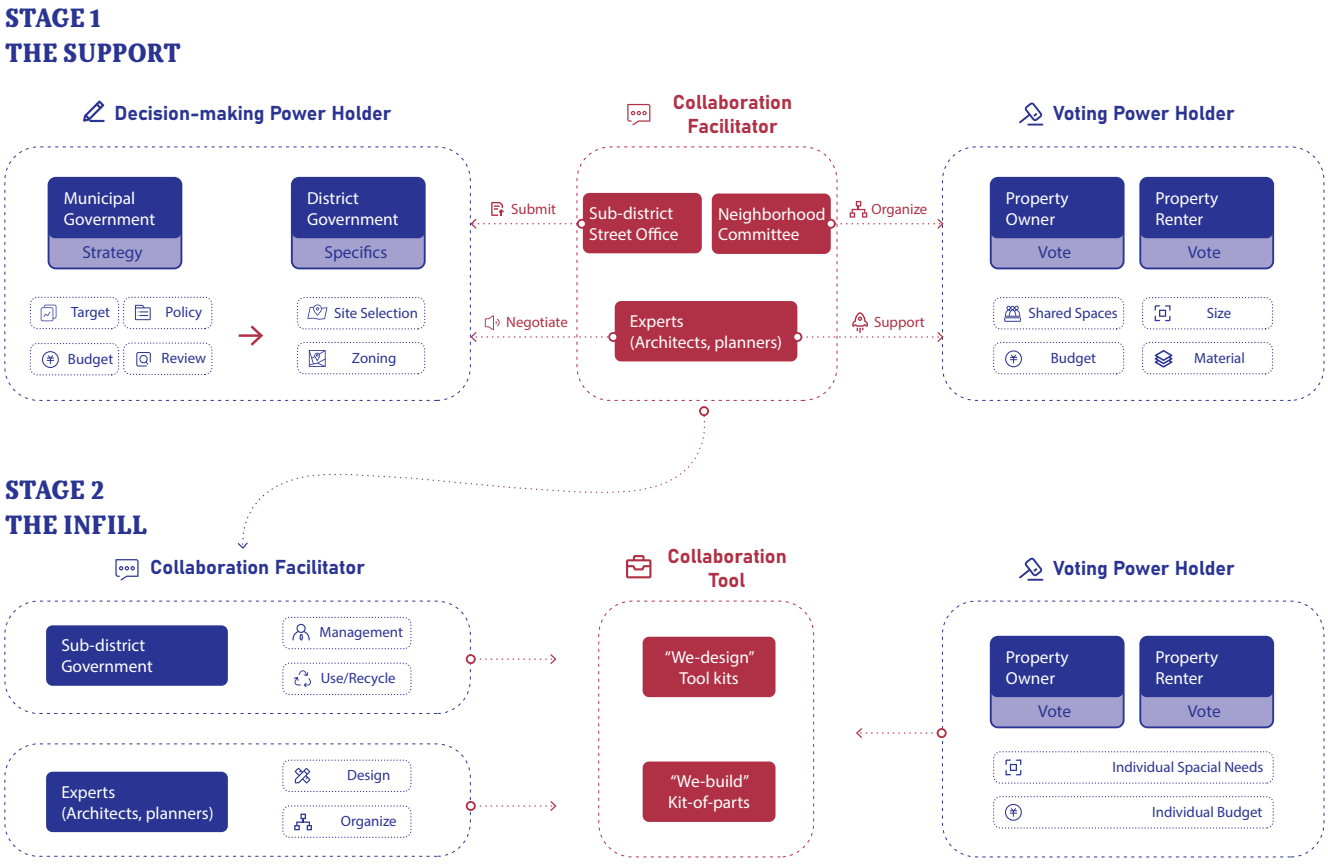
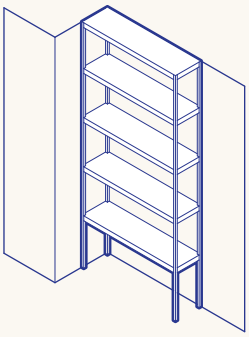



Fig3.4 Diagram of Two-stage Process

## STAGE 1
## THE SUPPORT

### PHYSICAL ELEMENTS



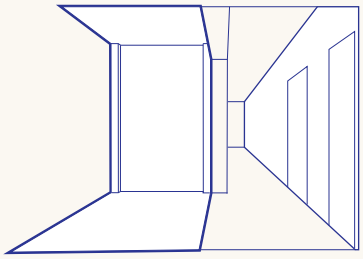
SIZE

ELECTRIC

STRUCTURE

PLUMBING

### SET OF RULES



1. CORRIDOR SOCIAL SPACES
2. LARGE WINDOW WITH VARIED LIGHT
3. SEATINGS IN THE CORRIDOR
4. OPEN PRIVATE ADDITIONS

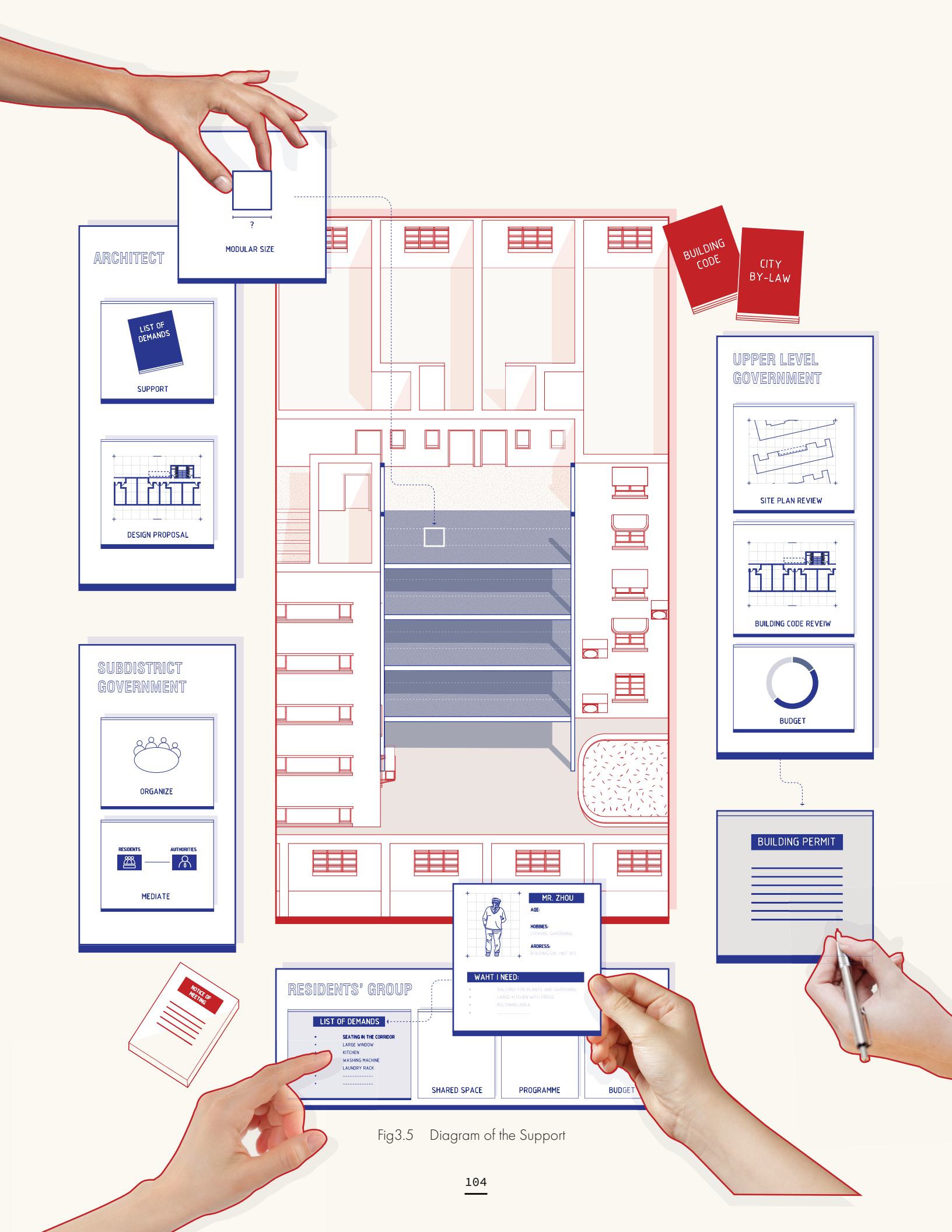
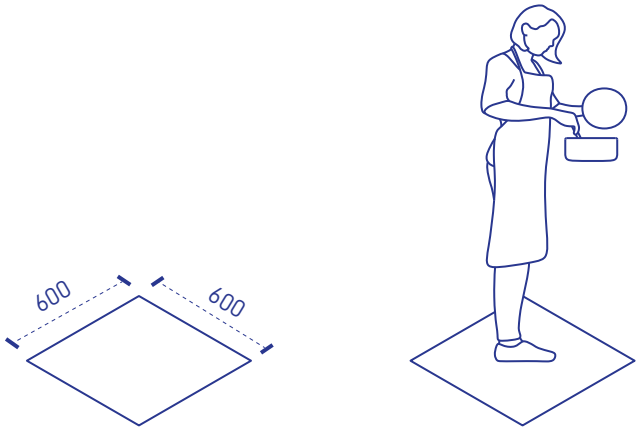



Fig3.5 Diagram of the Support

## 600MM X 600MM
## MODULAR SIZE

The support aims to establish an open-ended and flexible frame that allows the users to engage in the design and construction of the infill at the later stage. Hence, a modular language is essential to facilitate a high efficiency of design and construction, without losing too much design freedom and user influence.

The 600 x 600 mm modular size is extrapolated from the measurement of existing additions. In the absence of building guidelines and professional designers, the inhabitants in Tianlin second village pushed the existing building standard and exercised alternative spatial prexes. The standardized dimension in the building code lost its effectiveness here and the inhabitants adopted a much smaller set of dimensions compared to the building standard. In observation of the existing situation, the 600 x 600 mm square can house a single bowl sink base unit, or a single cooktop base unit, or a room for a person to stand and operate, or a washing machine. Extended from the existing, there are more items that can fit in this limited space and the various arrangements of this module can offer much more programmatic possibilities.(Fig 3.6)



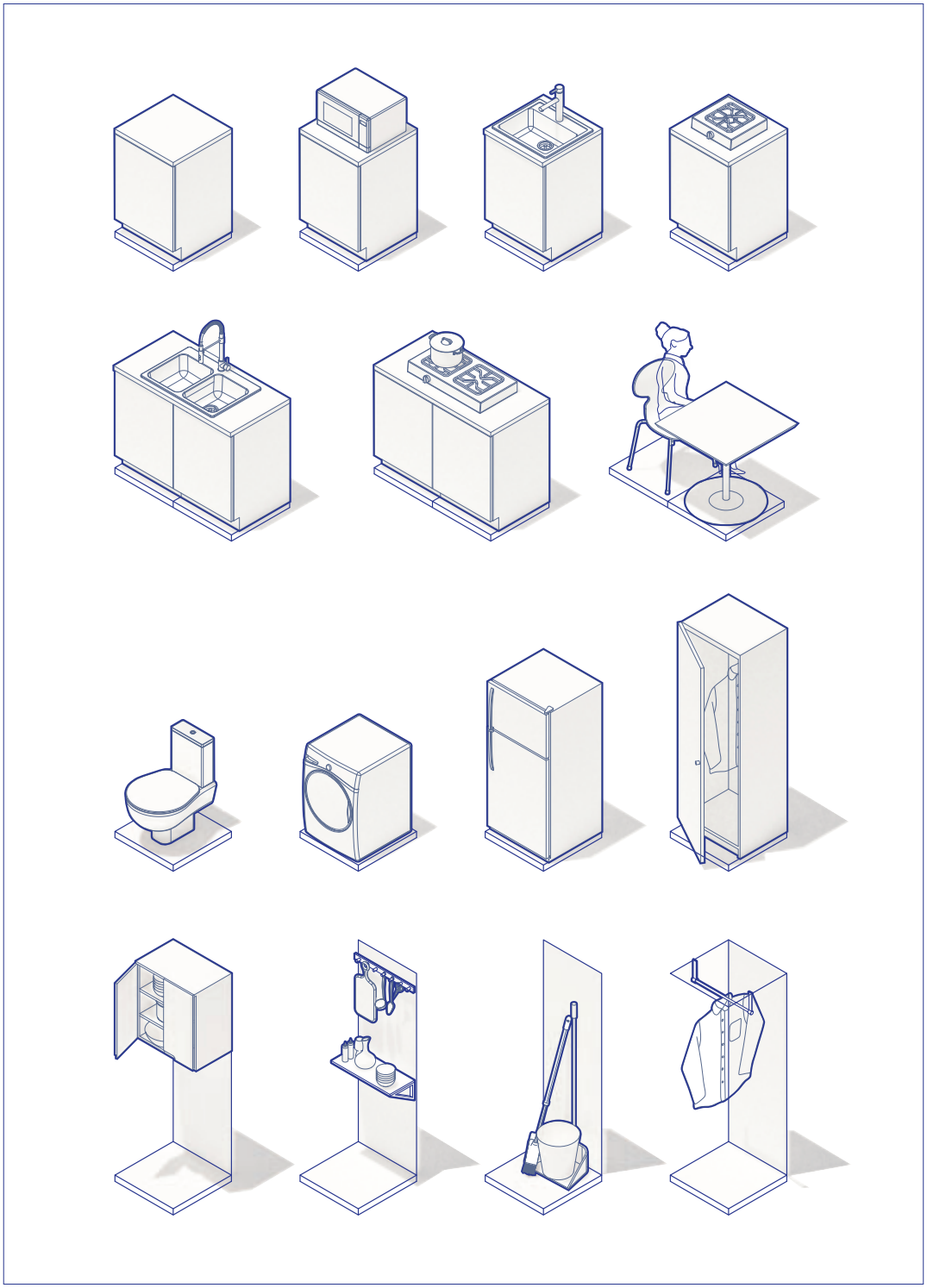


Fig3.6 Programmatic possiblities of 600x600mm Modular

## THREE BAYS EXTENSION

In principle, the amount of bays built out should be negotiated between the inhabitants and the upper-level government. This thesis demonstrates the scenario of a three bays support system, as the added area size of three bays is similar to the current privatization area of the public space.

The depth of the existing suspended additions range from 400mm to 1000mm. The corridor space is also encroached by personal items, the depth of which ranges from 400mm to 600mm. The three-bay extension has a depth of 1800mm, allowing the fitting of existing programs and offers the possibility of more. This slighter larger than existing extension free up the corridor to accommodate traffic, and more importantly, as social space to support social encounters.

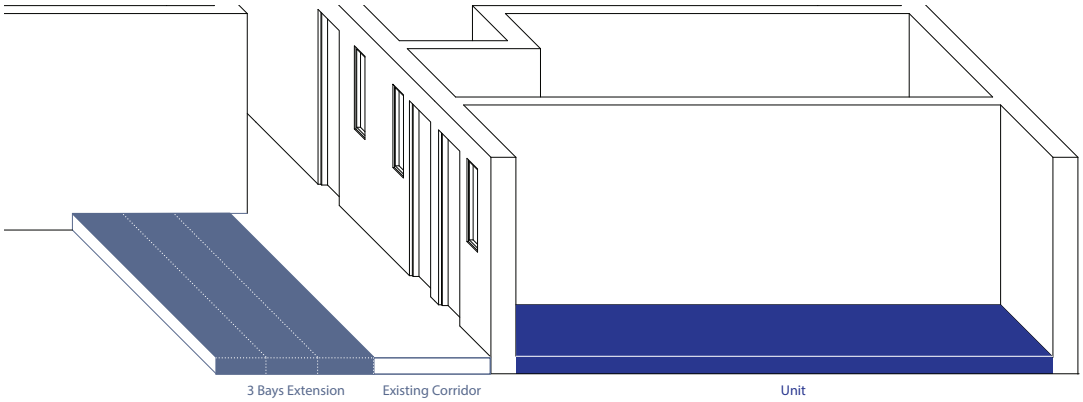



Fig3.7 Diagram of Three Bays Extension

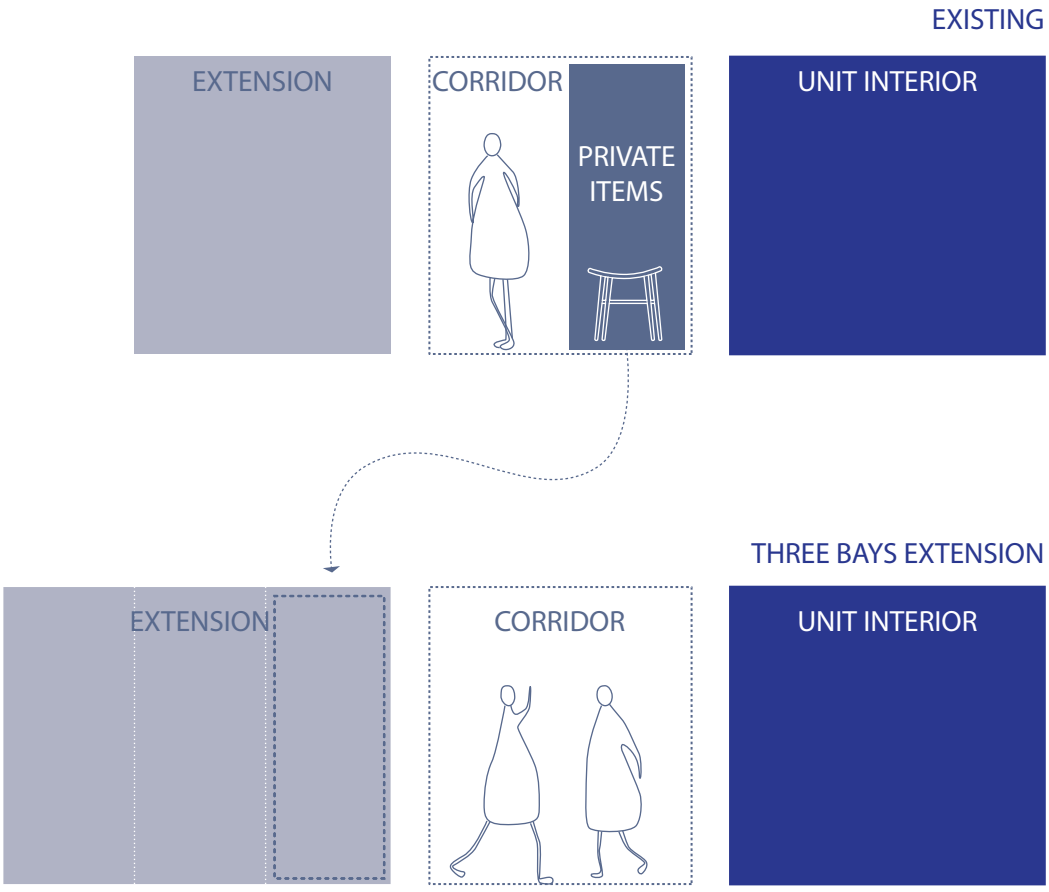



Fig3.8 Illustration of Three Bays Extension

## CONFIGURATION RULE

There are three possible configurations, which correspond to the three types of suspended additions described in Chapter 2.

Currently, the existing spatial configuration clearly distinguishes between the two sides of the corridor. A “stage” is located on the exterior side facing the extension where the performance of everyday life such as cooking and washing take place. The interior side of the corridor is the auditorium where the viewers quietly sit and watch the other side. The proposed design allows programmatic space to occupy both sides of the corridor, thus turning both sides into both the stage and auditorium, and everyone into both the performer and viewer.

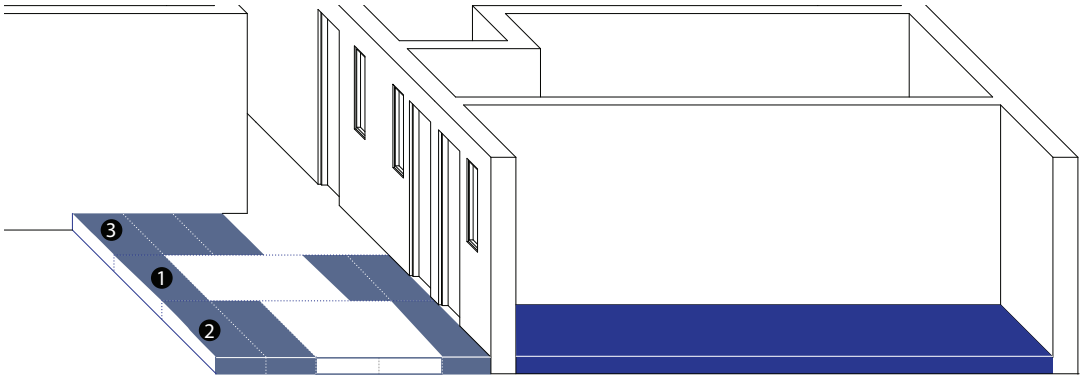
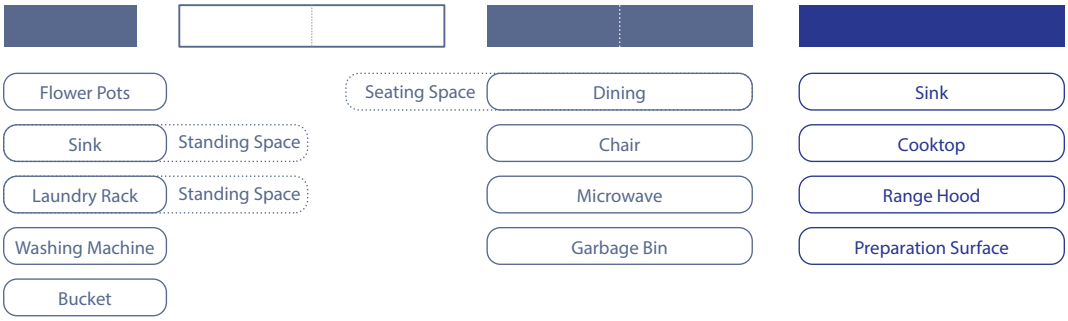
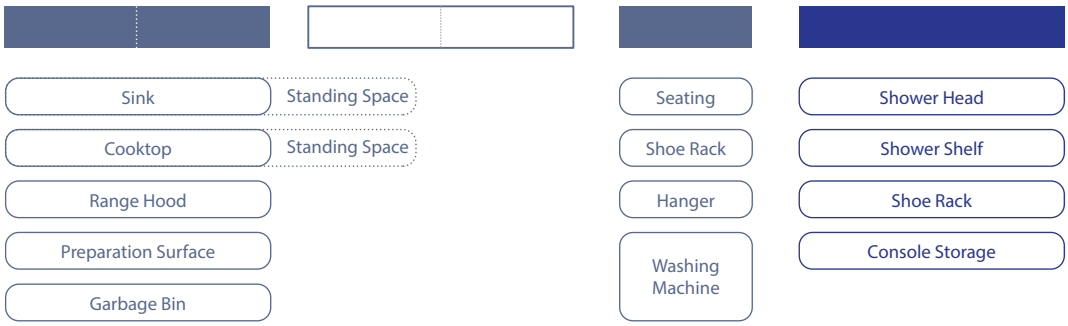



Fig3.9 Diagram of Three Configurations

## 1 CONFIGURATION 1 : 1+2




## 2 CONFIGURATION 2 : 2+1




## 3 CONFIGURATION 3 : 3+0

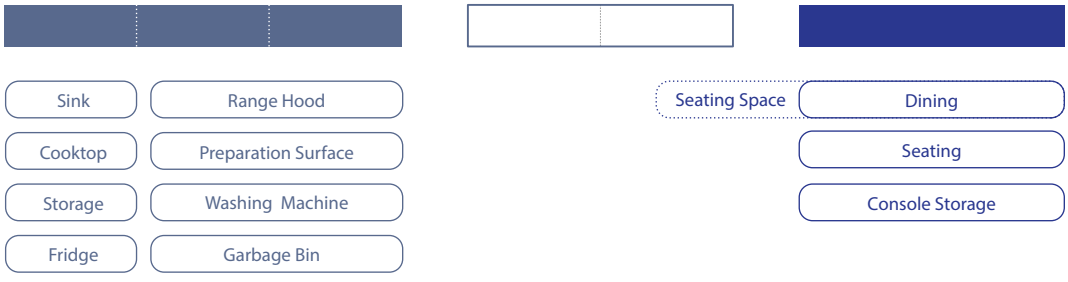



Fig3.10 Diagram of Programmatic Possibilities of Three Configurations

## CORRIDOR SOCIAL DYNAMIC RULE

The three boundaries are crucial to both the physical and social quality of the corridor. By including large windows at the exterior boundary of the corridor, daylight, fresh air, and views of nature can be brought into the space, making it a pleasant space for lingering and socializing. By following the existing spatial practice, the boundary between the extension and the corridor is designed to be blurry and may shift temporarily depending on the activities of the residents, such as pulling out chairs for sitting while eating or standing while cooking. The boundary between the corridor and the interior is designed to be porous, allowing the exchanges between the corridor and the entry room. A seating area is also encouraged to increase the likelihood of residents bumping into one another and interacting.

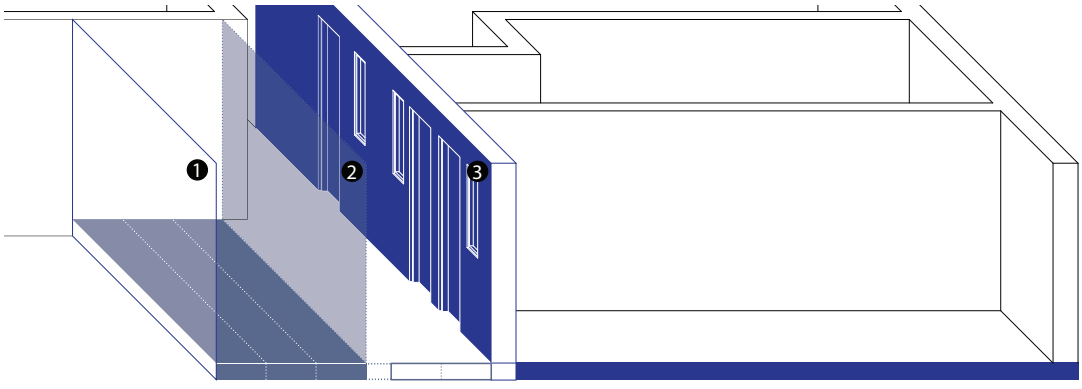
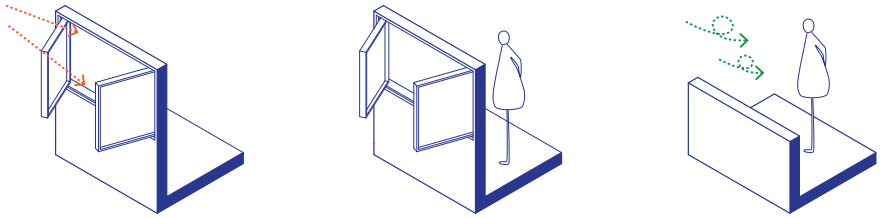
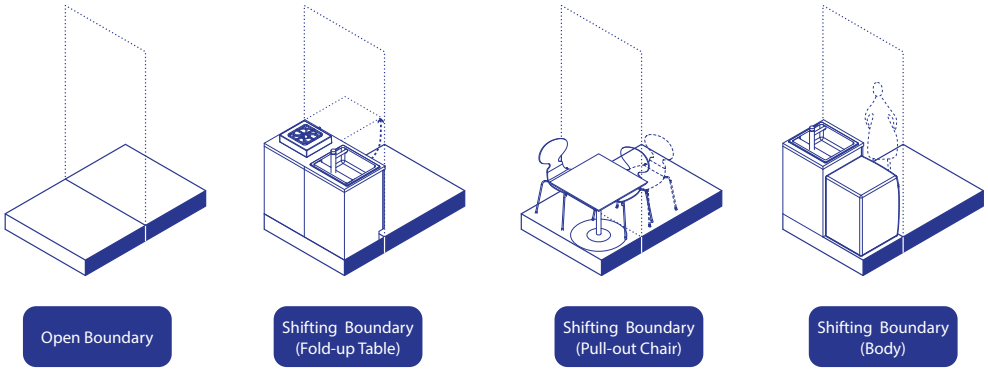



Fig3.11 Diagram of Three Boundaries

## 1 EXTERIOR BOUNDARY




## 2 SHIFTING BOUNDARY




## 3 POROUS BOUNDARY

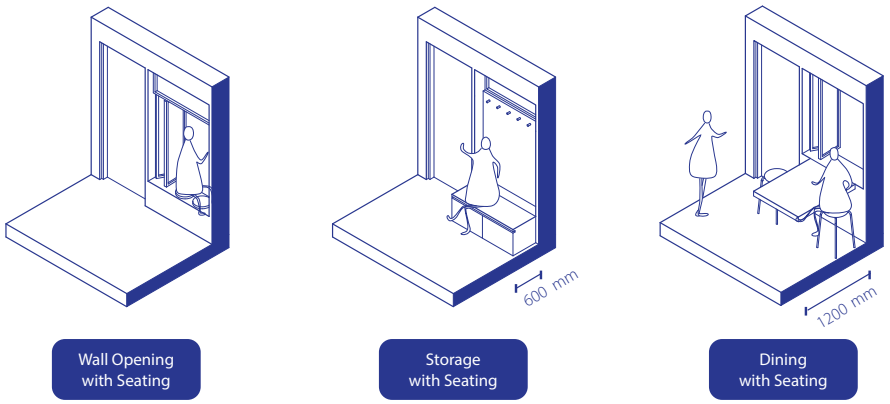



Fig3.12 Illustration of Three Boundaries

## CONFIGURATION 1
## 1+2

This configuration fits the needs of residents who have already modified their entry rooms into kitchens and are in need of a balcony for laundry drying and gardening. Through a large window, the dining area in the corridor is connected with the kitchen in the entry room.

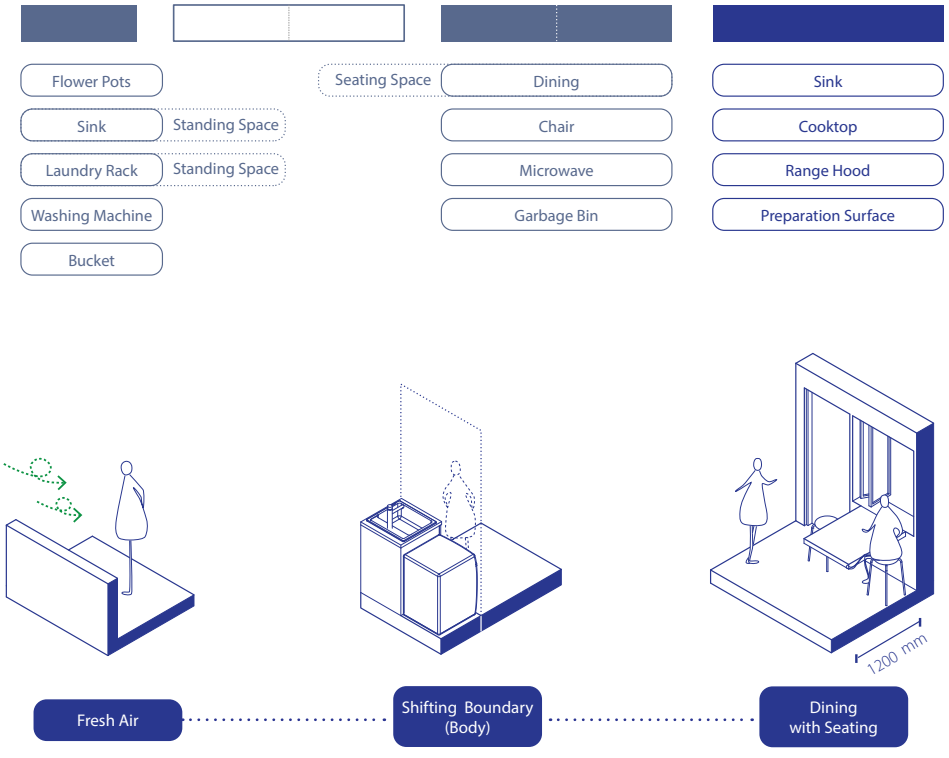



Fig3.13 Diagram of Programmatic Arrangement and three boundaries of Configuration 1

Fig3.14 Illustration of Configuration 1

## CONFIGURATION 2
## 2+1

Residents who converted the entry room into a shower benefit from the privacy provided by the small windows. The space underneath the window can be used for seating and hanging storage. Food is often a great excuse to start a conversation, so having the cooking area and seating on the other side makes a great space for socializing.

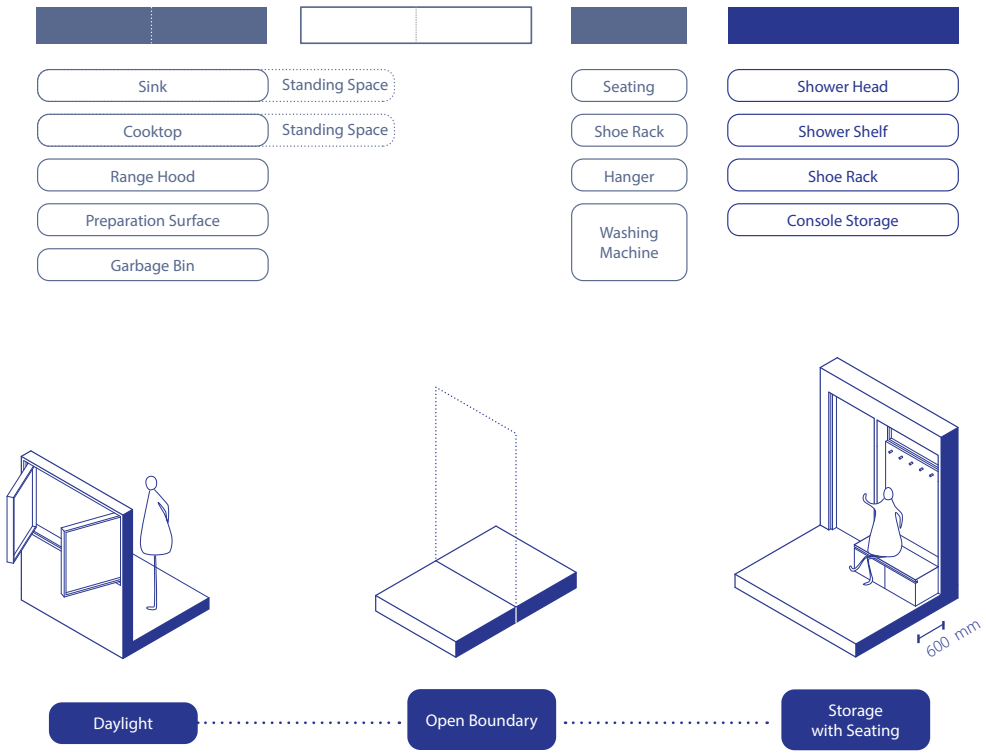



Fig3.15 Diagram of Programmatic Arrangement and three boundaries of Configuration 2

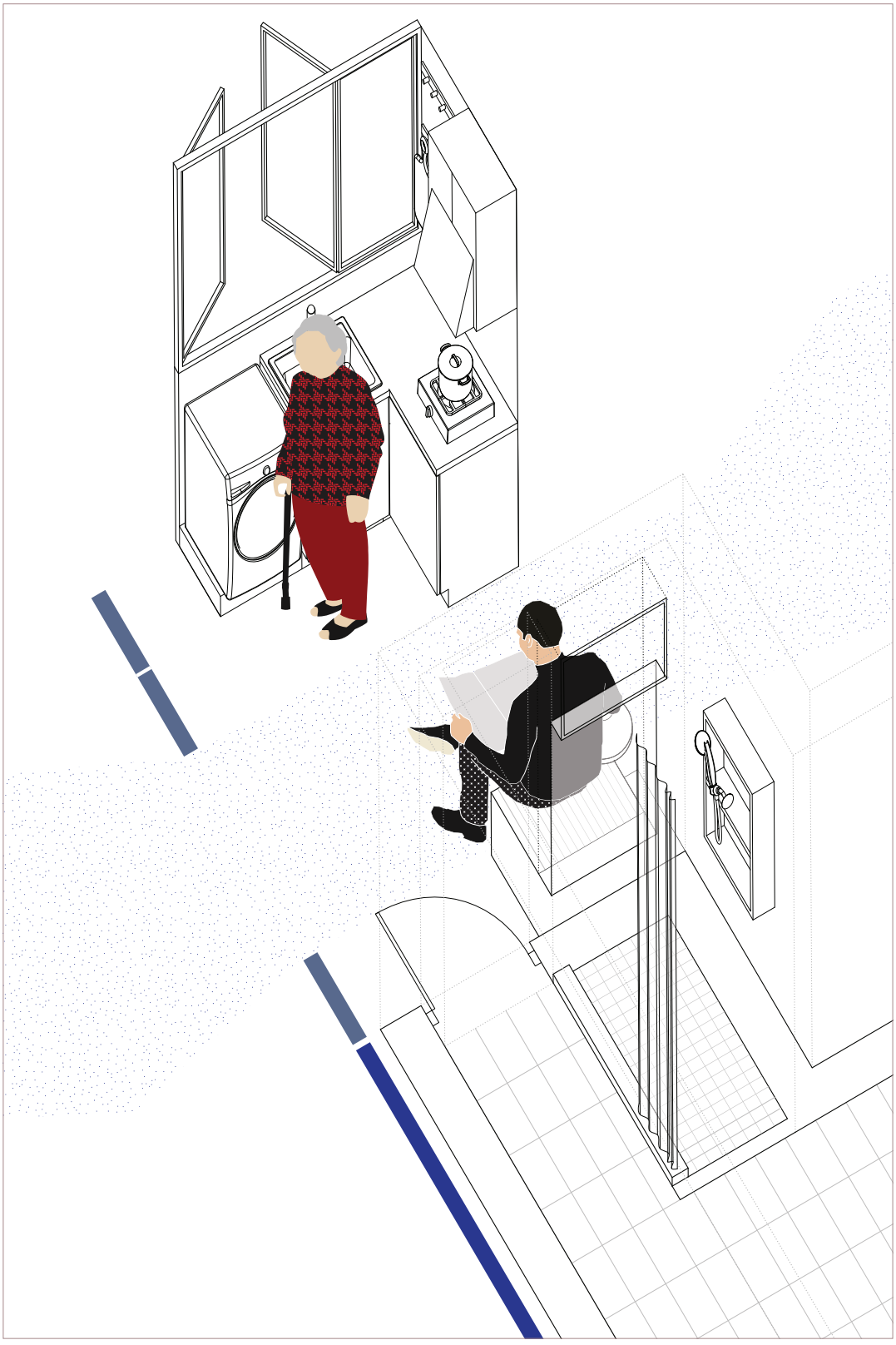


Fig3.16 Illustration of Configuration 2

## CONFIGURATION 3
## 3+0

Residents who require a larger extension can fill up all three bays without sacrificing the social quality of the corridor. There can be seating at the kitchen island or within the dining area for residents to gather and converse. The large opening of the entry room to the corridor can also act as a seating space.

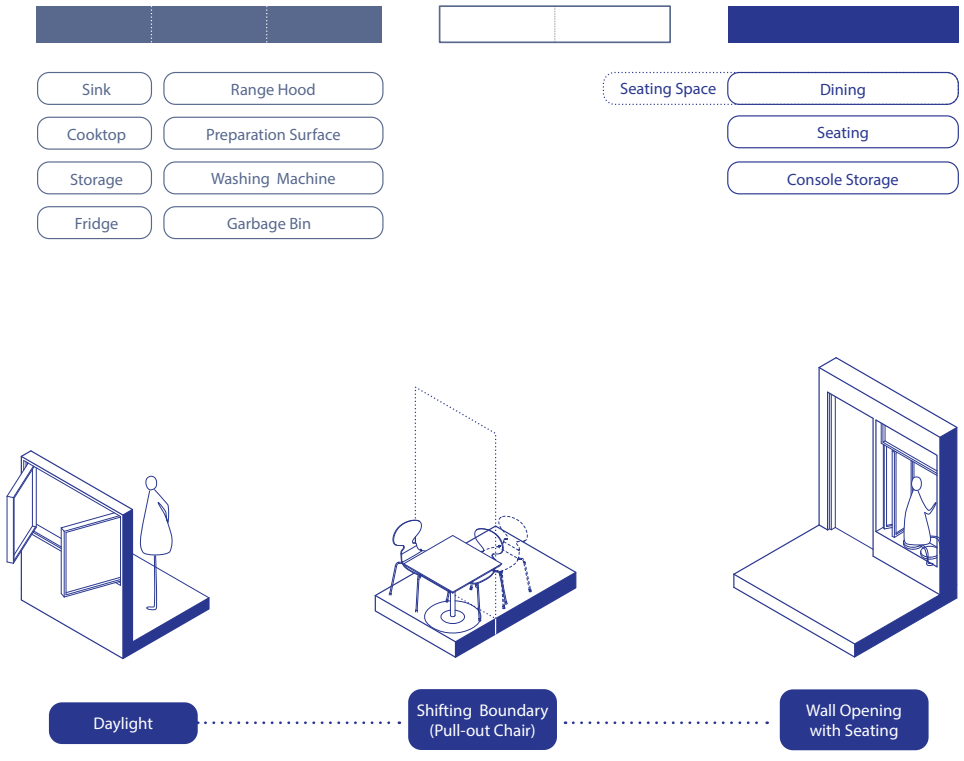



Fig3.17 Diagram of Programmatic Arrangement and three boundaries of Configuration 3

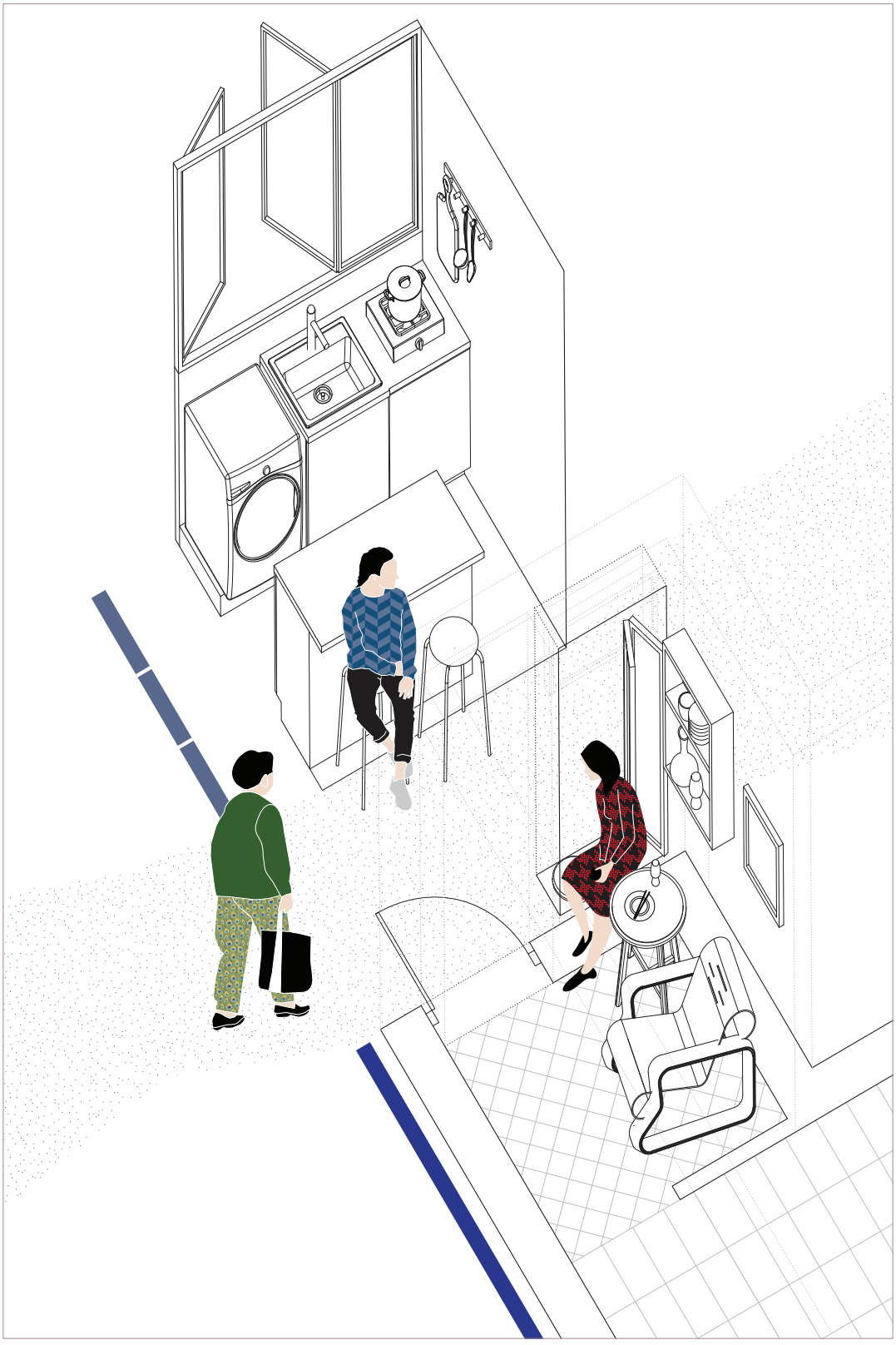
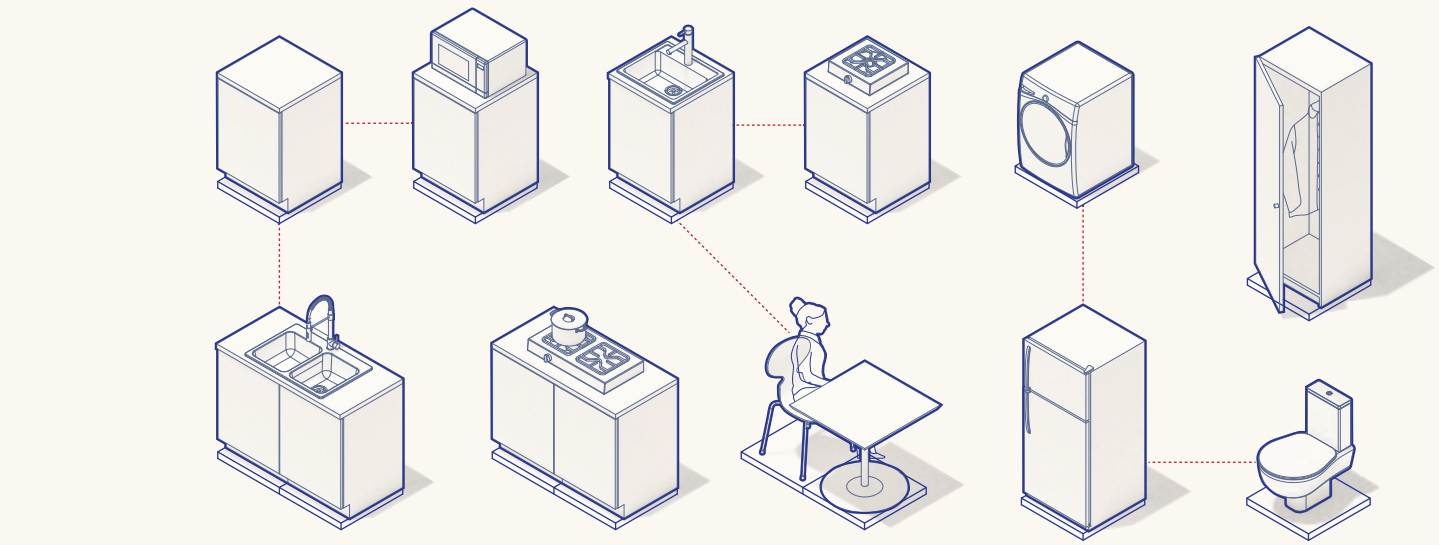


Fig3.18 Illustration of Configuration 3

## STAGE 2.1
## THE INFILL, WE-DESIGN TOOLKIT

A physical kit is designed to engage residents in the infill design process. It is a set of modular blocks that allows residents to play around and design their own configuration within the given support framework.

Some industries offer incredible precedents of end-users engagement in component based design. Ikea develops digital platforms for users to design and visualize their wardrobe, kitchen or bathroom. This platform approach, however, is not feasible to the aging population in Tianlin second village, as many of them do not have the ability to navigate the digital interface. Hence, this thesis developed a physical set of modular blocks that are tangible and more intuitive compared to digital interfaces, allowing it to engage with every resident regardless of their age, education and profession.



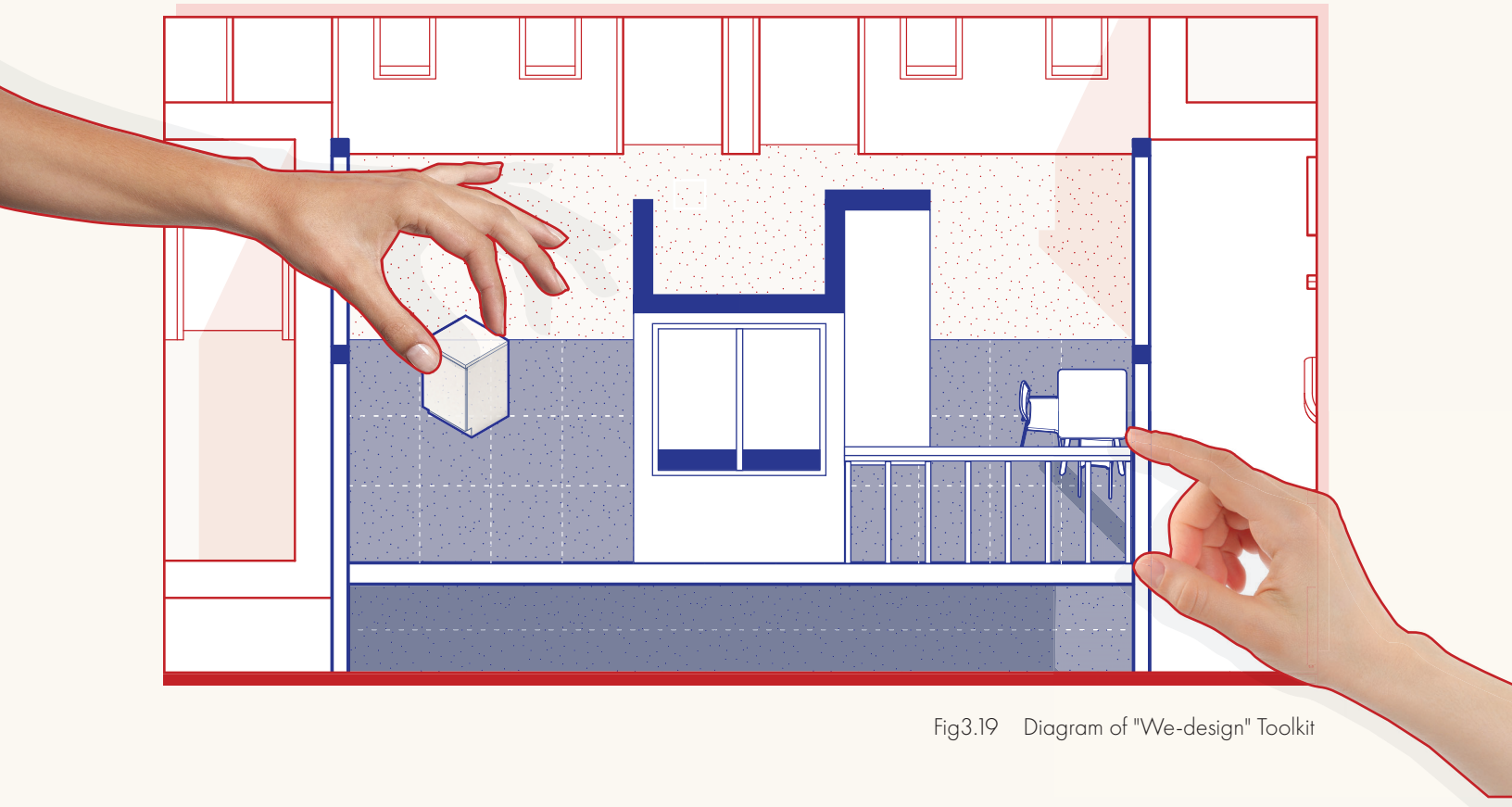
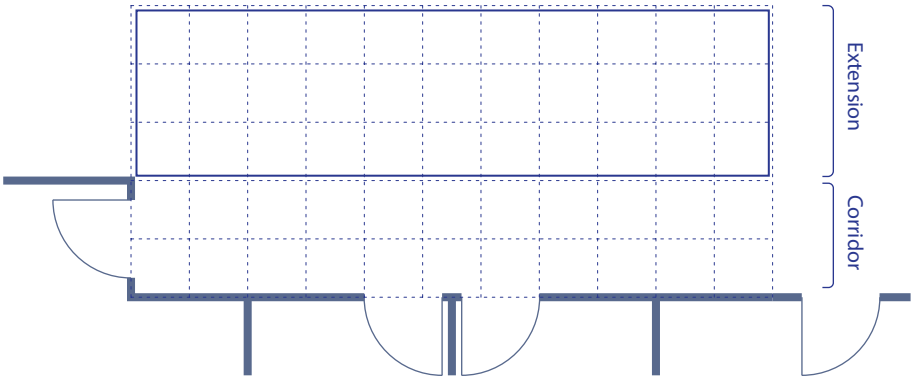
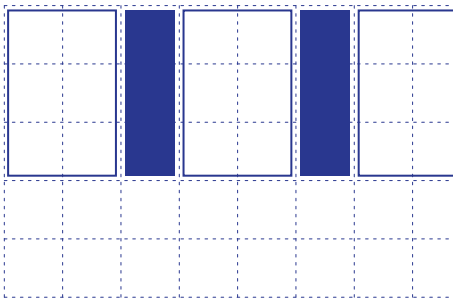


Fig3.19 Diagram of "We-design" Toolkit

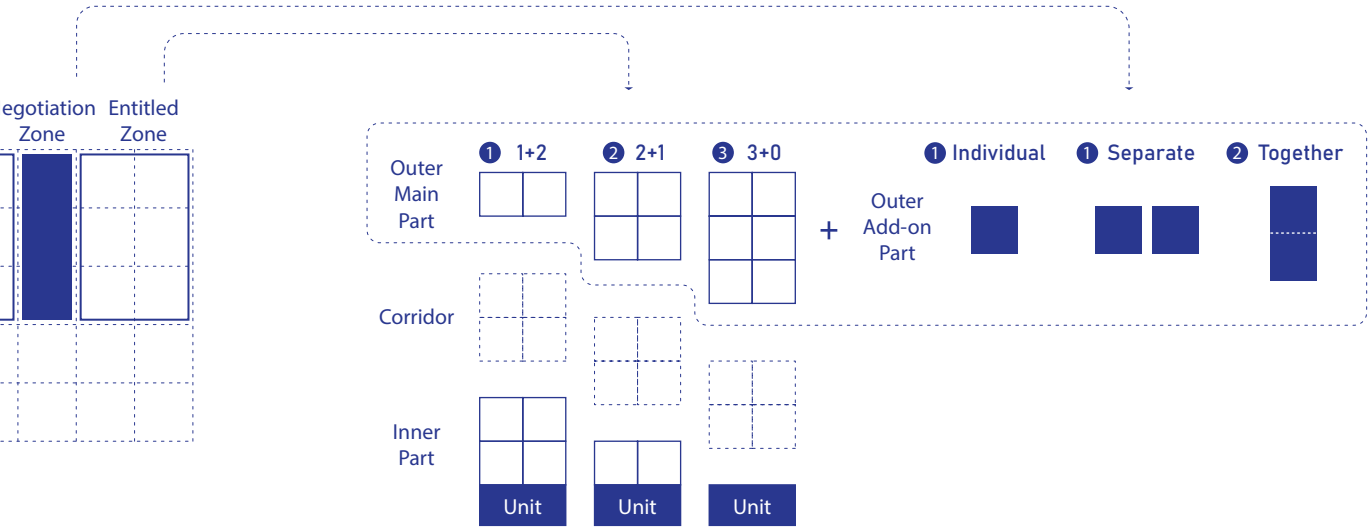
## INTERLOCKING POSSIBILITIES



The 600x600 grid divides the corridor horizontally into 11 columns. Each column has 5 bays, within which, 3 are allowed for private occupation and 2 are left empty for corridor traffic.

The 11 columns are divided into two entitled zones in white and the neg blue. Each unit is allowed to occupy ing entitle zones and up to 2 blocks tion zone, leaving at least one block tion zone for the residents to collect communal facility that would benef interest.

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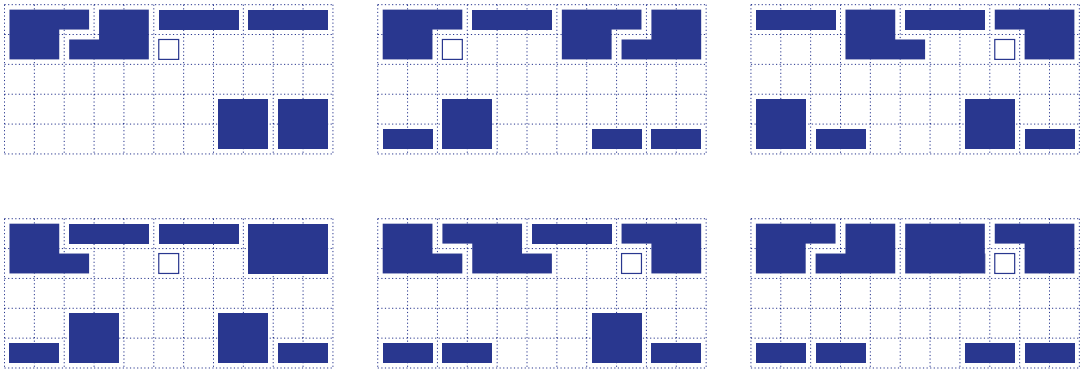
tively decide a
it the collective

There are 3 configurations available: 1+2, 2+1 and 3+0. In all configurations, the 3 bays are divided into two parts: the outer part facing the exterior and the inner part adjacent to the unit. The outer part can have one or two add-on attachments from the negotiation zones, while the inner parts cannot due to the constraints of door openings. The general principle is that every unit is allowed to have up to 2 blocks of add-ons. When there are not enough blocks in the negotiation zone for each unit to have 2 blocks, the priority is given to units with 3+0 configuration, then units with 2+1 configuration and the last units with 1+2 configuration, promoting the separation of residential programs from the private domain as a way to activate the public corridor space.

Fig3.20 Diagram of Interlocking Possibilities

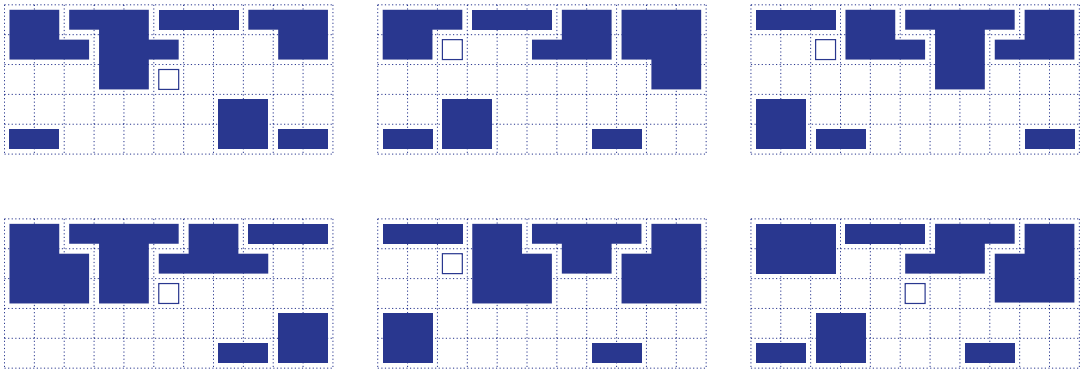
1

When all units chose the 1+2 or 2+1 configurations, most units can only have one add-on each.



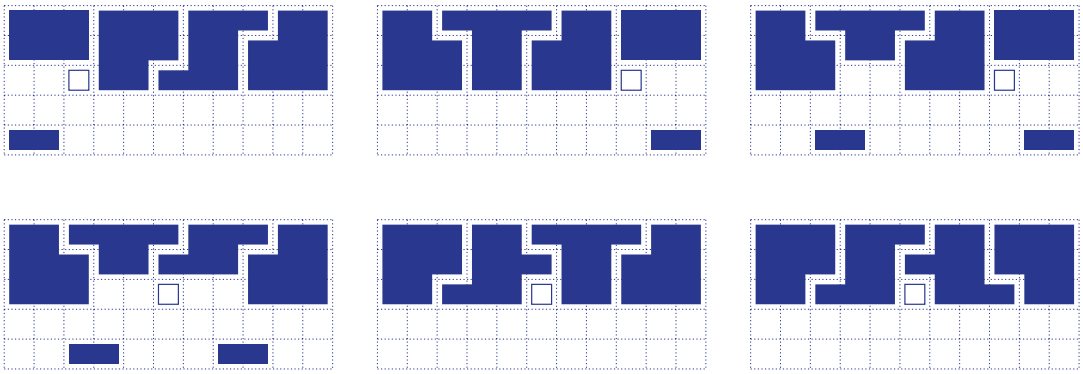
2

A unit with a 3+0 configuration is given priority to receive two add-ons, followed by a unit with a 2+1 configuration, and the last is a unit with a 1+2.



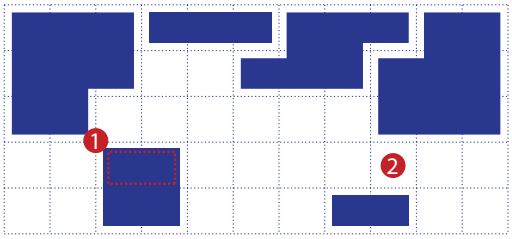
3

When most units choose the 3+0 or 2+1 configuration, all units can have two add-ons each.



4

Special Situations




1 In the event that there is no space remaining for passing traffic, the outer part will take precedence. Red dashed zones on the inner part can only be temporarily occupied while they are in use, leaving them empty for corridor traffic when they are not in use.

2 Building accessibility is impeded by the narrow corridor of only 600mm and the bump of the inner part. In order to ensure the safety of corridor spaces, architects should propose alternative solutions and mediate between neighbors.

■ Individual bock
□ Communal block

Fig3.21 Sample of Interlocking Possibilities

## OUTER "MAIN" PART
## "WE-DESIGN" TOOLKIT

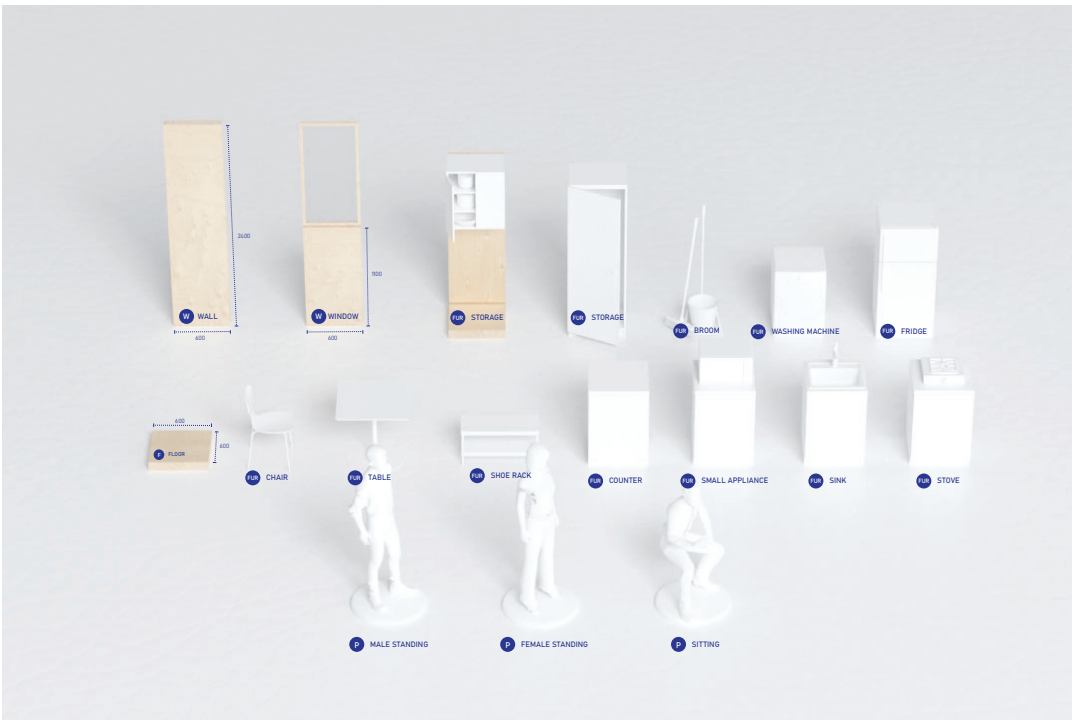



Fig3.22 Illustration of "We-design" Toolkit for "Main"

## OUTER "MAIN" PART
## COMPONENT LIBRARY

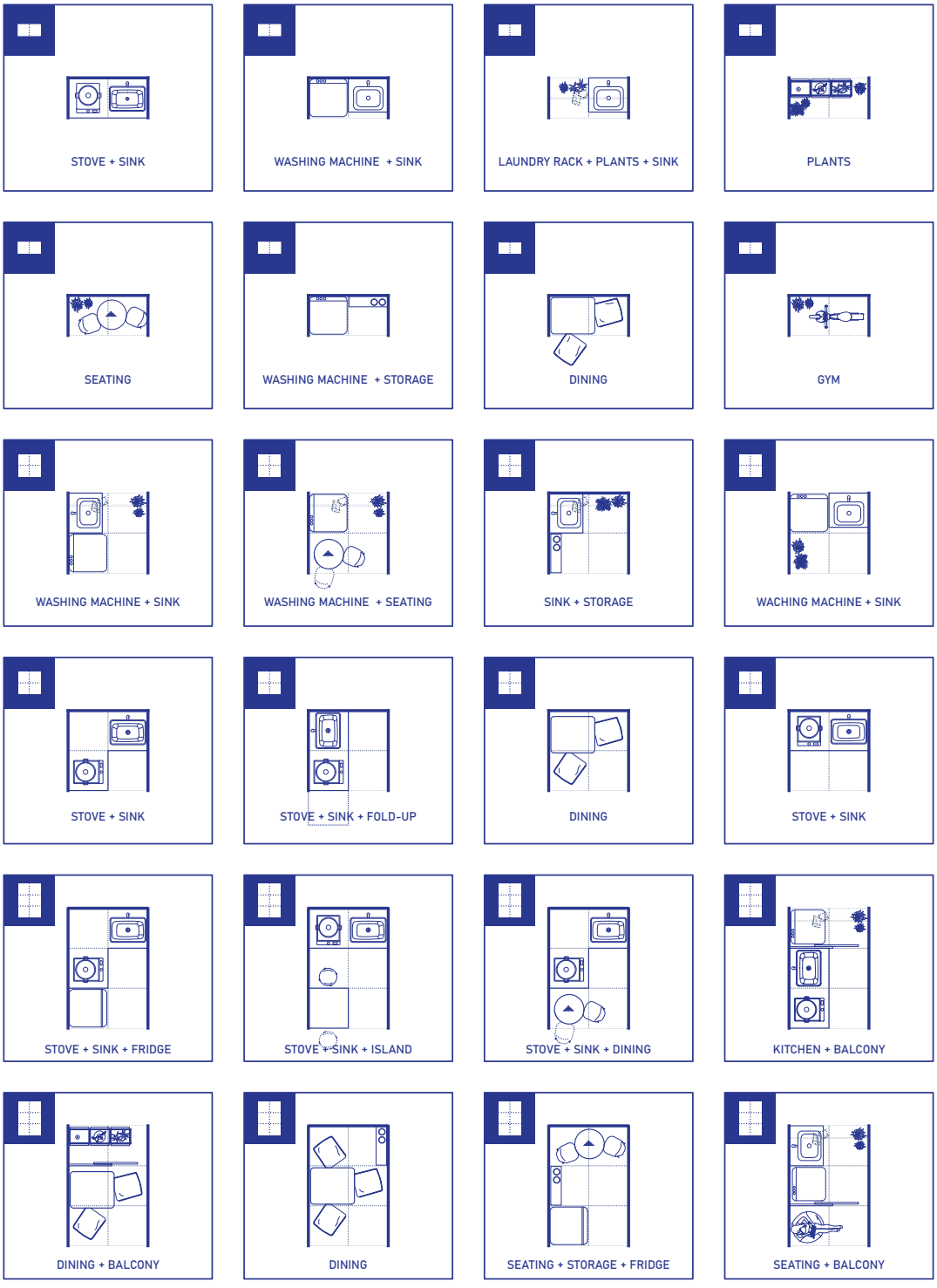



Fig3.23 Sample Component Library of "Main"

## OUTER "ADD-ON" PART
## "WE-DESIGN" TOOLKIT

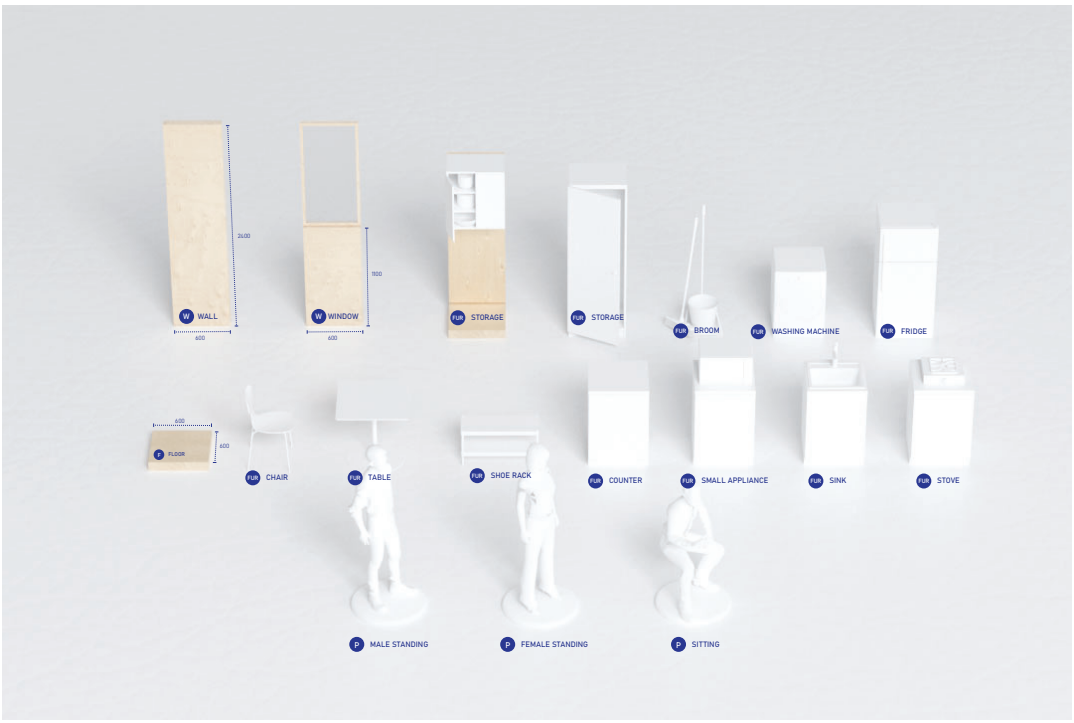



Fig3.24 Illustration of "We-design" Toolkit for "Add-on"

## OUTER "ADD-ON" PART COMPONENT LIBRARY


Fig3.25 Sample Component Library of "Add-on"

## INNER PART
## "WE-DESIGN" TOOLKIT

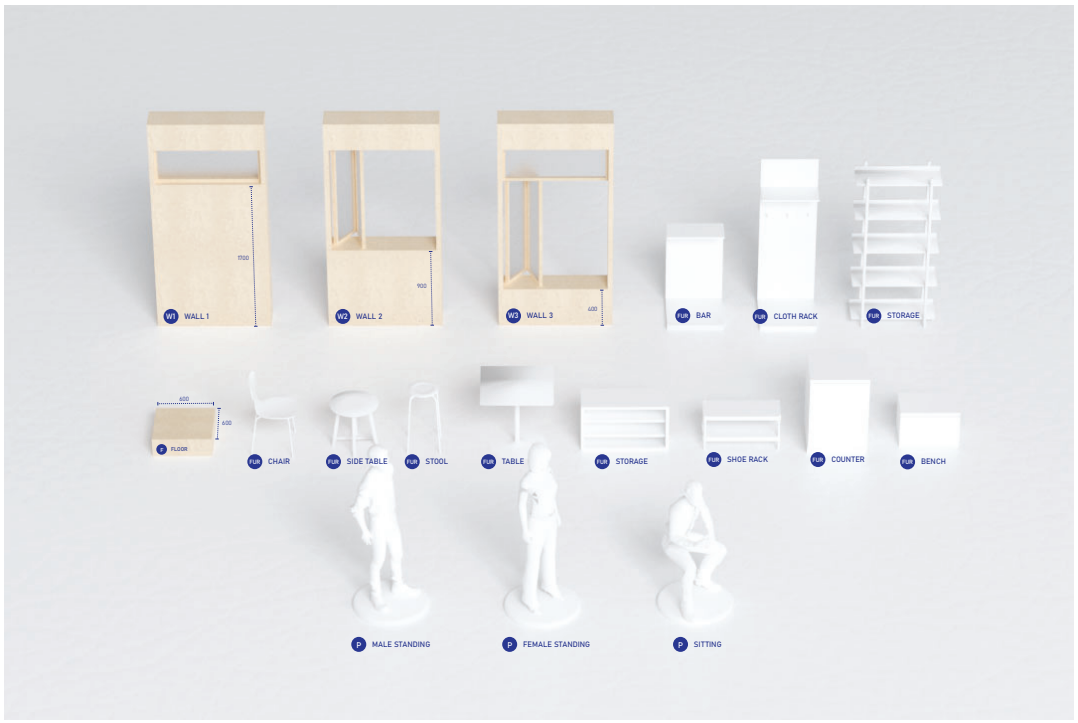



Fig3.26 Illustration of "We-design" Toolkit for Inner Part

## INNER PART
## COMPONENT LIBRARY

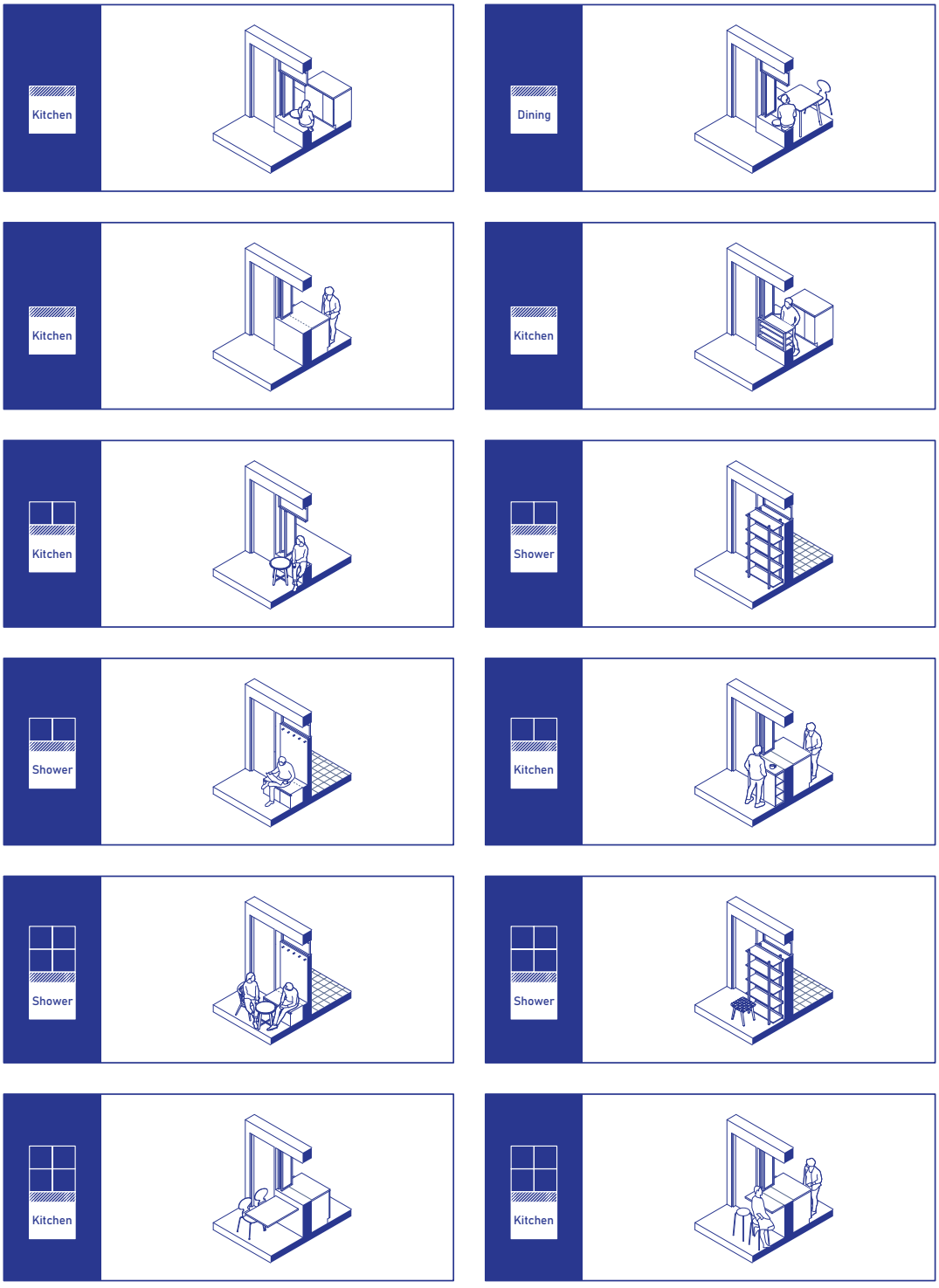
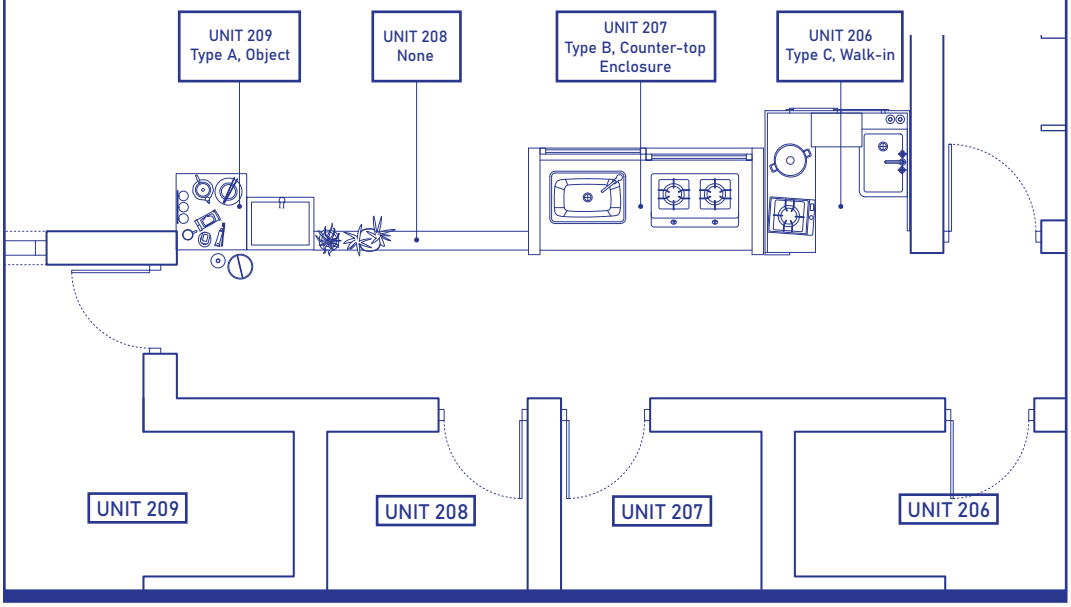



Fig3.27 Sample Component Library of Inner Part

## INFILL DESIGN SAMPLE

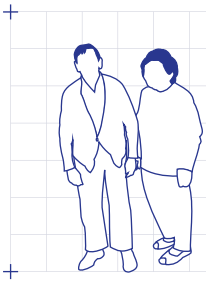
This section illustrates the infill design process and results through the imaginative reconstruction of four inhabitants within one corridor. The demographics of four residents reflect those of Tianlin second village as a whole; half are retired workers and half are migrant workers. Two of them are actual residents; however, their names and unit numbers have been changed in order to maintain anonymity. The couple Li in unit 207 are retired workers who were documented by Zhang Bin as part of his research into Tianlin second village.[1] The family in unit 206 is a migrant worker family of five that has been documented during students' design studio at Tongji University.[2] The charters for units 209 and 208 are fictional characters developed from rental listings, social media posts, and existing ethnographic of worker's villages. Furthermore, their unique spatial requirements are derived from their ages, occupations, and family sizes, as well as from the analysis of existing suspended additions and the forum postings presented in the previous chapter.




1. Bin 斌 Zhang 张, "From Overflowing to Mutualism, Study of Common Space in Tianlin Workers' Village 从“溢出”到“共生”，田林新村共有空间调研," Time + Architecture 时代建筑, no. 02 (2017): 47–55.

2. 保安大叔, “[20150921], 第2周第1次课，任务2–2汇报+老师点评 [20150921], Week 2, Session 1, Task 2–2 Debriefing + Teacher Comments,” 豆瓣 Douban, 2015, https://site.douban.com/126289/widget/notes/19030352 8/note/518583463/.

Fig3.28 Sample Corridor Existing Situation



UNIT 209

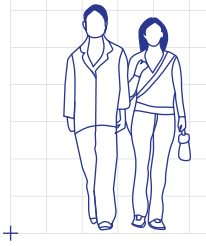
**COUPLE ZHOU**

AGE:
**70 & 68**

STATUS:
**Original Resident**

CURRENT ADDITION:
**Type A, Object**

Both Mr. and Mrs Zhou are retired workers. Several renovations have already been completed in their unit, including the addition of a kitchen as well as a bathroom. Currently, the corridor serves primarily as a balcony space for washing and drying laundry.(Fig 2.31 and Fig 2.32) Several plants and flower pots are displayed on the railing by Mrs. Zhou, who has a great passion for gardening. Mr. Zhou, on the other hand, enjoys sitting in front of his unit, taking in the fresh air and chatting with his neighbors as they pass by.



UNIT 208

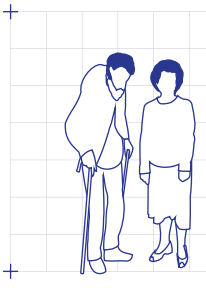
**CHEN & WANG**

AGE:
**24, 27**

STATUS:
**Migrant Workers**

CURRENT ADDITION:
**None**

Chen and Wang are a young couple who work in nearby factories. During workdays, the factory provides lunch and they usually cook at home for dinner. Even though the space is limited, it provides necessary facilities for this couple, a kitchen inside the unit and the shared bathroom across the corridor. As a result of the low rent, the couple is willing to put up with the inconvenience of going across the corridor to go to the bathroom. They are very rent sensitive and do not have any budget to invest in the property they are renting.



UNIT 207

**COUPLE LI**

AGE:
**60, 57**

STATUS:
**Original Resident**

CURRENT ADDITION:
**Type B, Counter-top Enclosure**

Li worked in a state-owned chemical factory since his early twenties and was assigned a suite in Tianlin second village following his marriage. It was during the 2000s that Mr. Li constructed a two-piece kitchenette, a counter-top enclosure addition described in Chapter 2(Fig 2.15). Later, their son got married and moved into another unit in the same building. The young couple are both busy professionals, so Mrs. Li often takes care of her grandson and prepares meals for the whole family. At dinner time, the whole family gathers together in Mr. and Mrs. Li's unit to share a meal.

UNIT 206

**FAMILY ZHANG**

AGE:
**36, 34, 8, 57, 58**

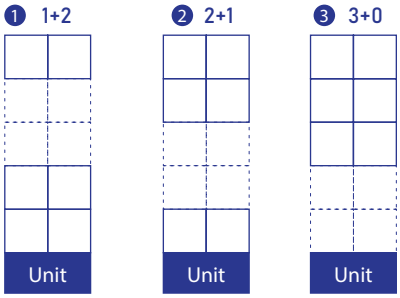
STATUS:
**Migrant Workers**

CURRENT ADDITION:
**Type C, Walk-in**

This is a family of five consists of Mr. and Mrs. Zhang, their parents, and their daughter. Both Mr. and Mrs. work nearby. While their father works at the Walmart nearby, their mother stays at home to care for their daughter and do the household chores. She would send little Zhang to school, buy groceries on the way back and cook dinner for the whole family. While the rest of the family leaves early for work, they return around dinner time to have a meal with the whole family. Despite the fact that Zhang's family is satisfied with the kitchen located in the corridor, they complain that it is not at all pleasant to share a bathroom with their neighbors.

Fig3.29 Inhabitants In the Sample Corridor

## 1. CHOOSE CONFIGURATION TYPE



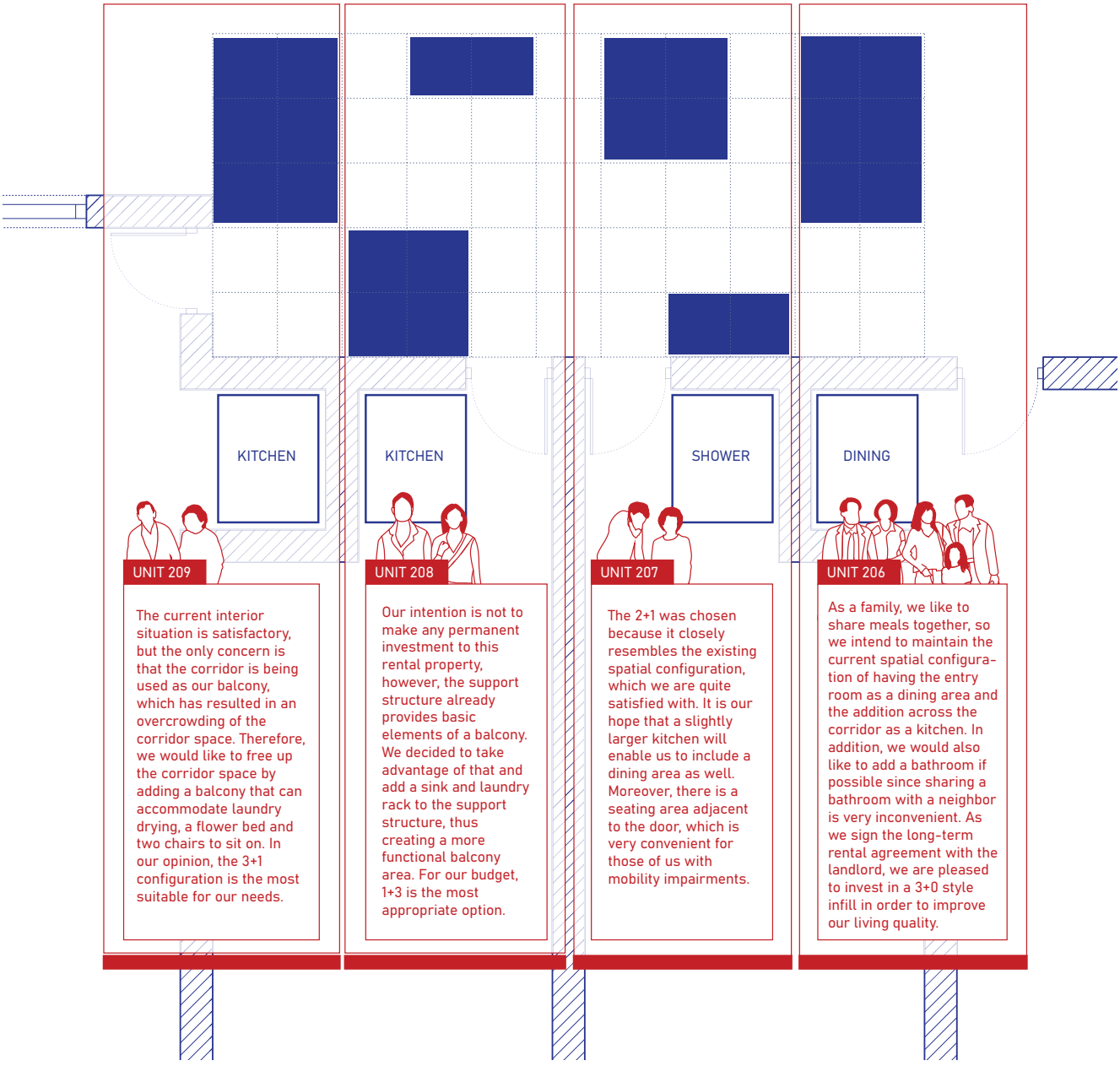
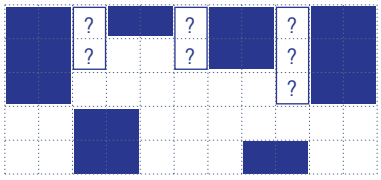
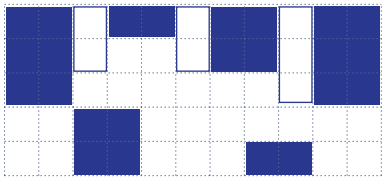




Fig3.30 Diagram of Configuration Selection

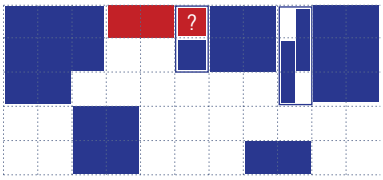
## 2. NEGOTIATE INTERLOCKING FITTING





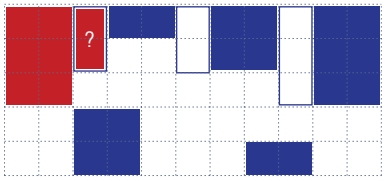
Due to the limited number of blocks in the negotiation zone, the two units with 3+1 configurations can each have 2 blocks and the rest of us can each have one block, leaving one for communal use.

UNIT 208 CHEN & WANG



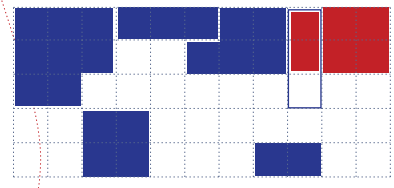
We don't mind having our block on the upper side. Having it directly attached to my main part is better.

UNIT 208 CHEN & WANG



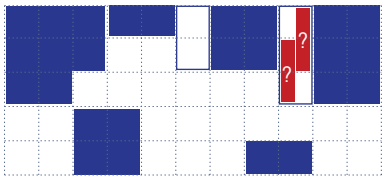
Our two blocks can only be placed here in this case.

UNIT 209 COUPLE ZHOU



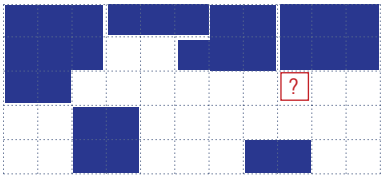
It's perfect, we can have two add-ons at the top, leaving one at the bottom for common use.

UNIT 206 ZHANG'S FAMILY



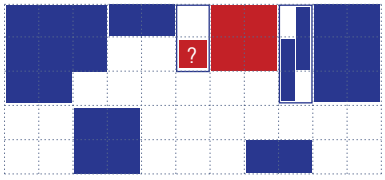
Our two add-ons would be better together since I want a shower room. It doesn't matter if it's the upper two or the bottom two.

UNIT 206 ZHANG'S FAMILY



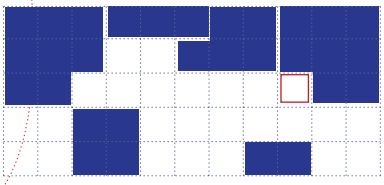
That's great. Any ideas on what we can put in the commual block?

UNIT 209 COUPLE ZHOU



With only one block, we'd like it to be adjacent to the corridor, so that we can use the corridor space temporarily.

UNIT 207 COUPLE LI



What about a small diaplay shelf where we can put some plants and arts?

UNIT 207 COUPLE LI

That's great idea!

Fig3.31 Diagram of Fitting Negotiation

## 3.1 UNIT 209
## INFILL DESIGN

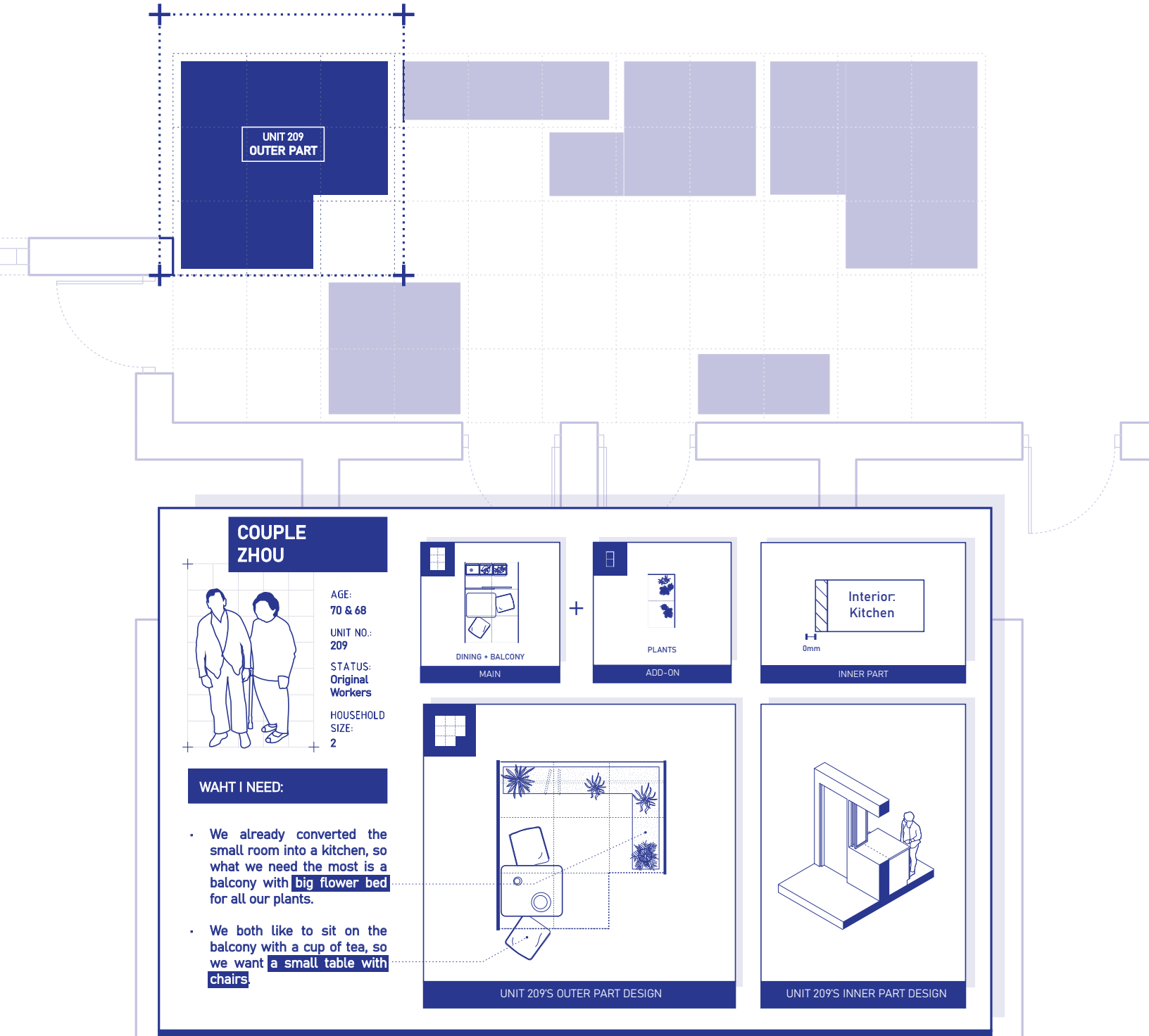



Fig3.32 Diagram of Unit 209's Infill Design

## 3.2 UNIT 208
## INFILL DESIGN

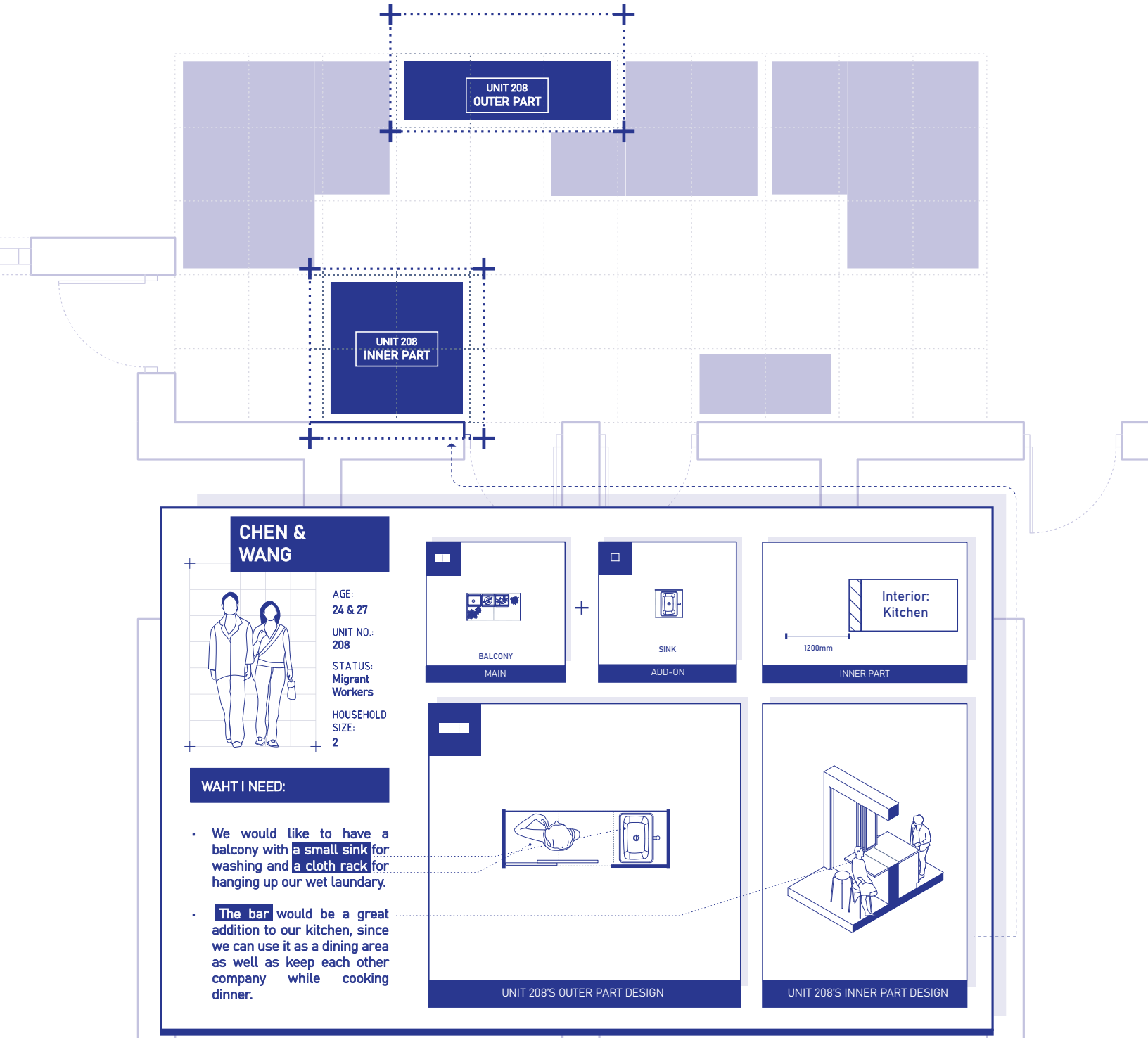



Fig3.33 Diagram of Unit 208's Infill Design

## 3.3 UNIT 207
## INFILL DESIGN

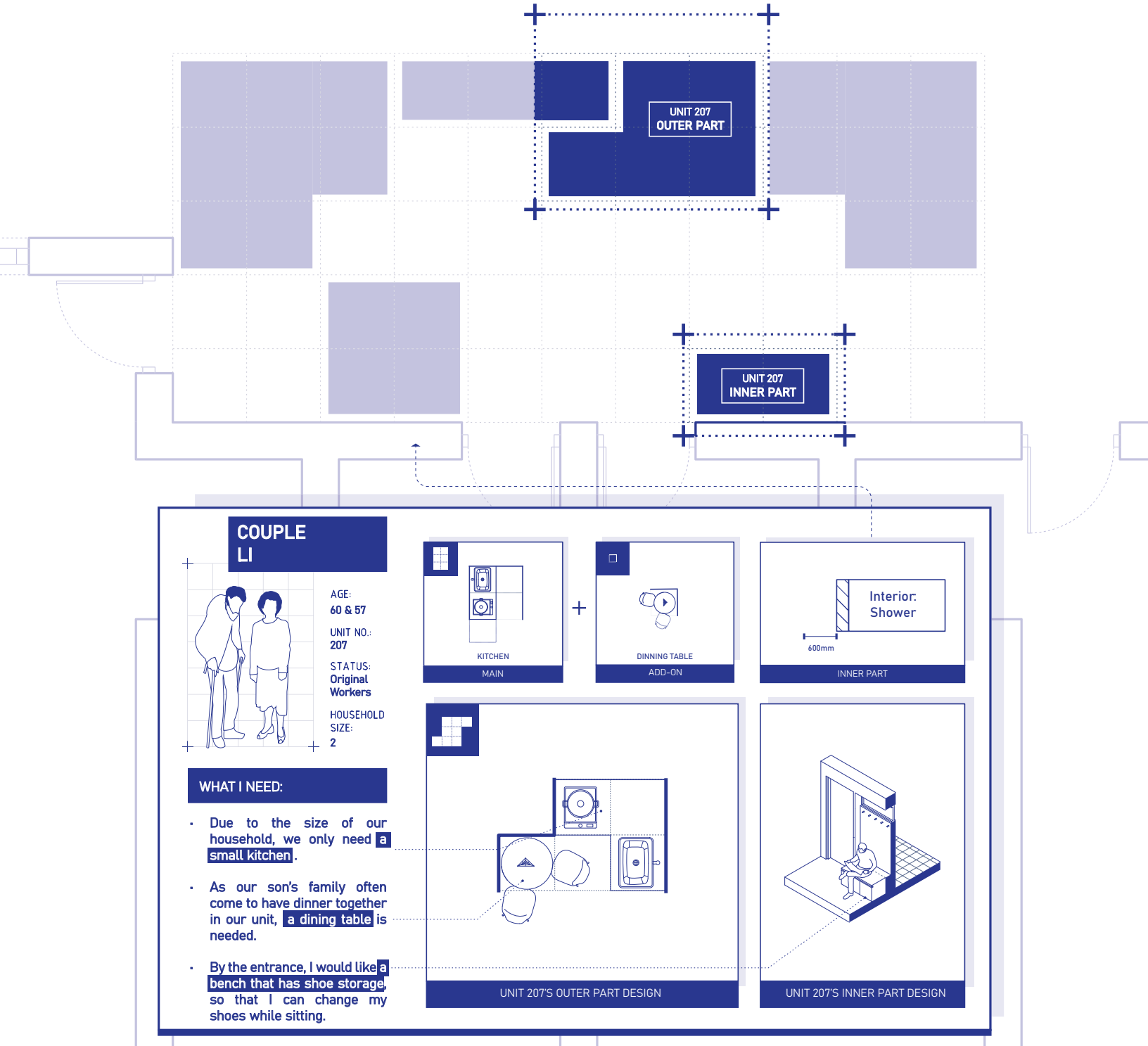
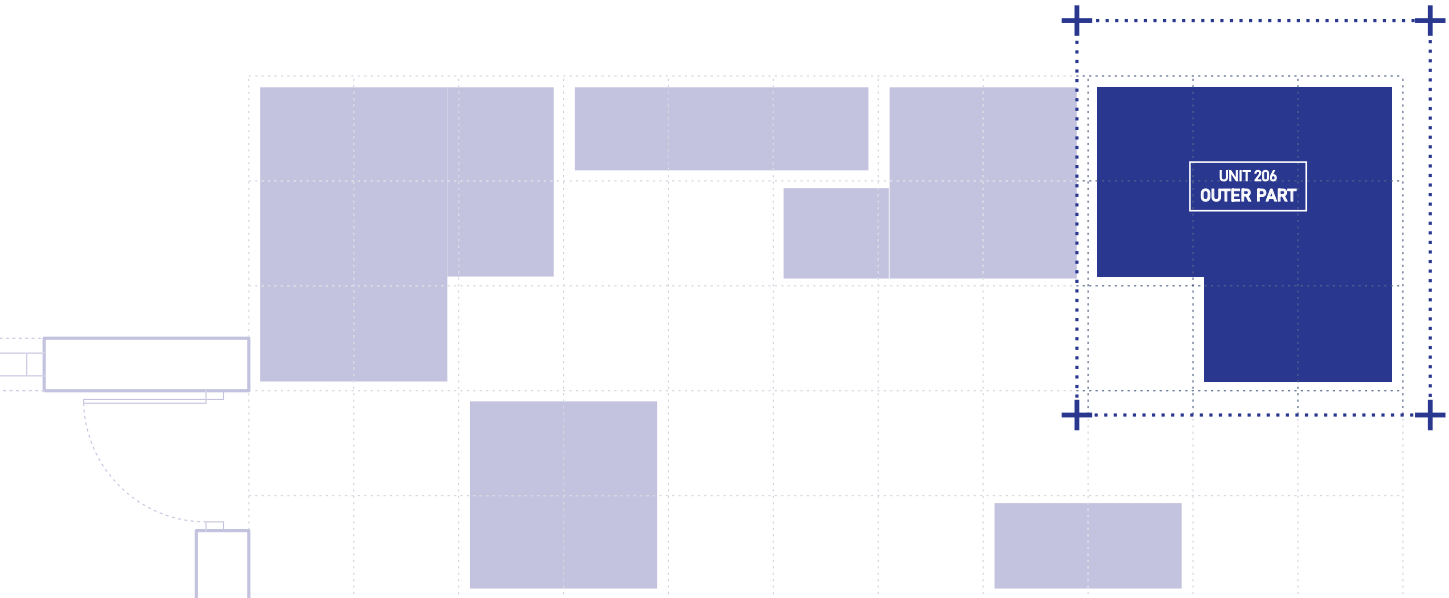



Fig3.34 Diagram of Unit 207's Infill Design

## 3.2 UNIT 206
## INFILL DESIGN



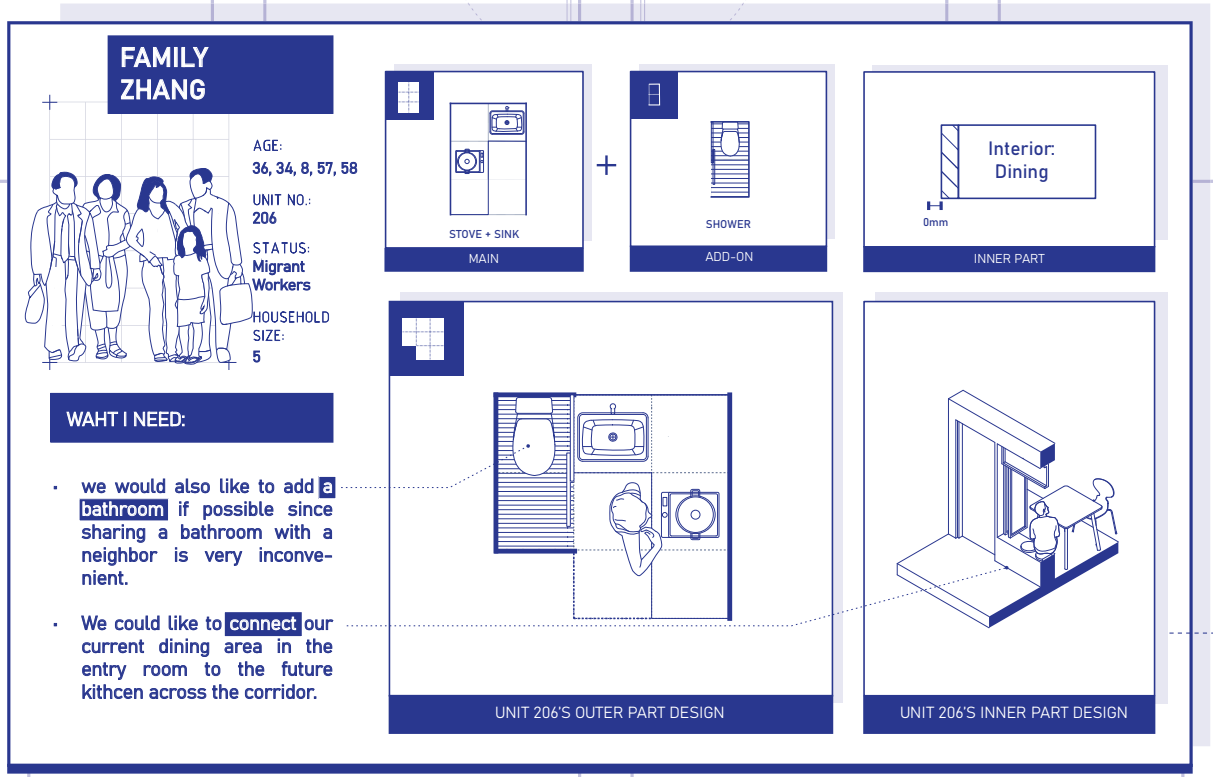
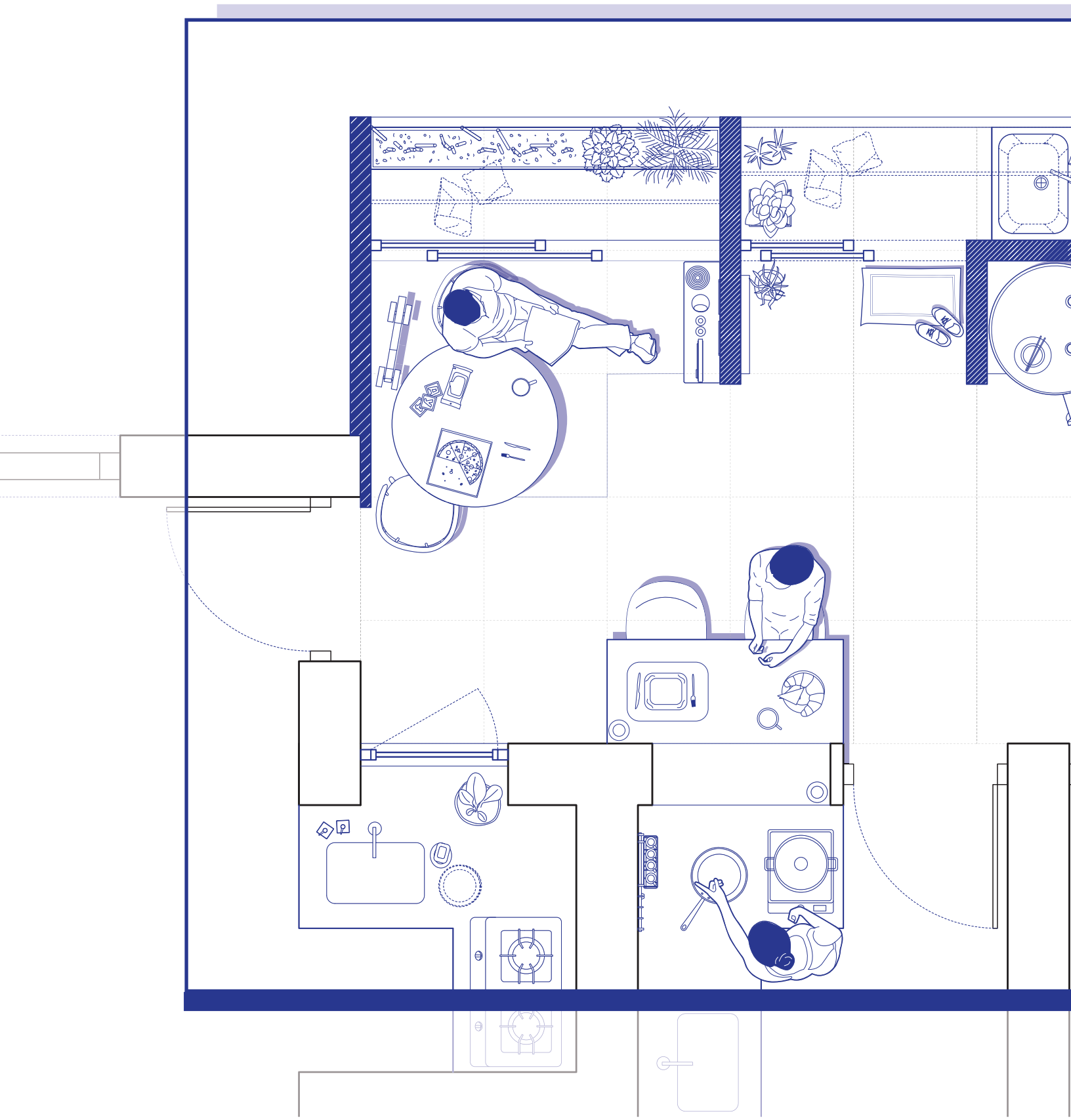




Fig3.35 Diagram of Unit 206's Infill Design



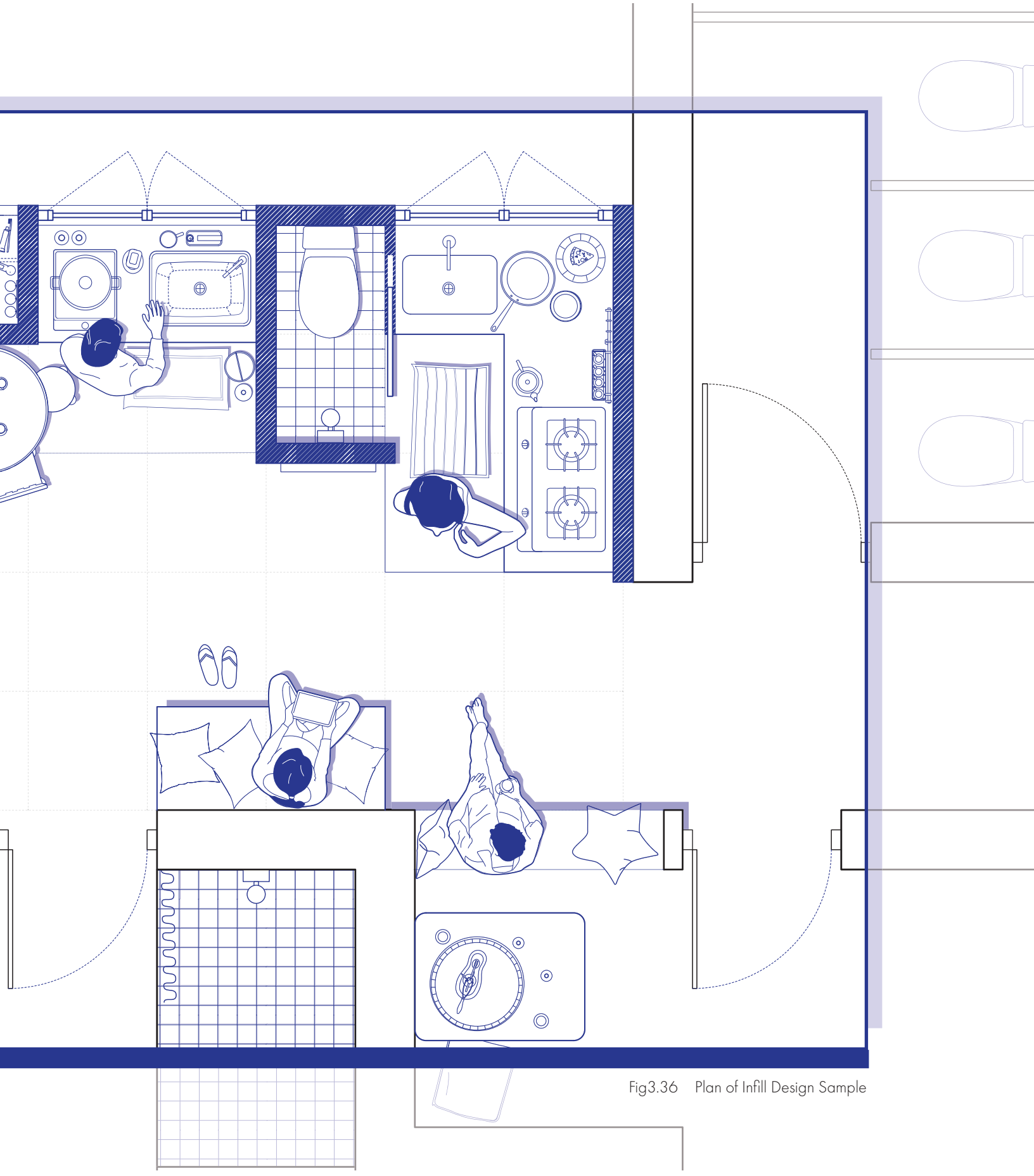


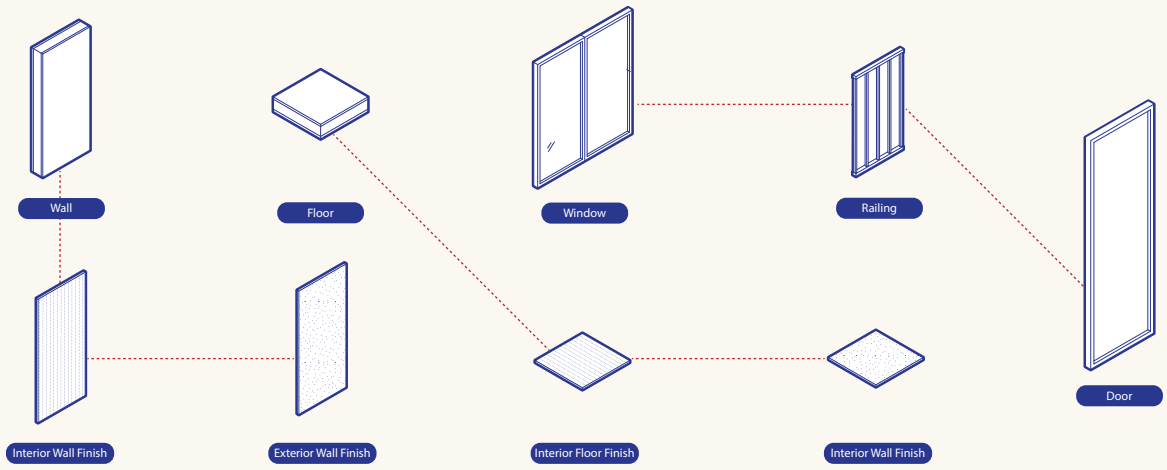
Fig3.36 Plan of Infill Design Sample


Fig3.37 Illustration of Infill Design Sample

## STAGE 2.2
## THE INFILL, WE-BUILD KIT-OF-PARTS

While the “we-design” toolkit allows the inhabitants to design their infills, the “we-build” kit-of-parts empowers them to realize their design in real life. It is clear that the traditional building construction requires skilled labour and does not allow the users to carry out the assembly and disassembly process on site. In light of this, this thesis considers a kit-of-parts approach consisting of prefabricated modular blocks, to simplify both assembly and disassembly process. Similar to Lego blocks, standardized modules can be disconnected and connected again, allowing them to be recycled, reused or sold to other residents. Infill systems, therefore, can include both the property owners (the original workers) who can modify their infill to suit their future spatial requirements, and the subrenters (migrant workers) who can purchase second-hand modules for a cheap price or get reimbursed for selling them when they move out.

For the development of the "we-build" kit-of-parts design, two emerging prefabricated systems were explored: CNC digitally fabricated panels and structurally insulated panels. Within the scope of the thesis, however, it is not feasible to conduct enough material research and testing to generate a detailed constructional design. Thus, the “We-design” kit-of-parts would only be a diagrammatic idea.



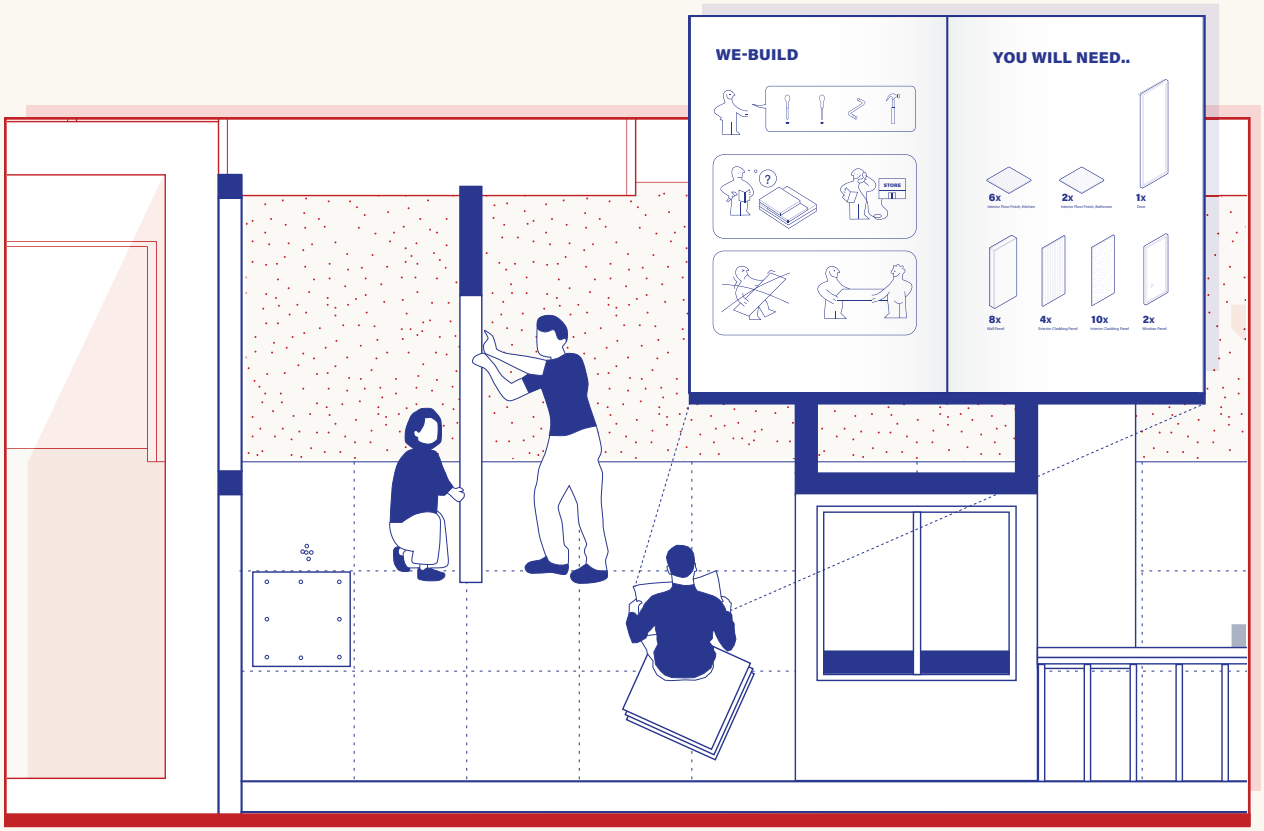




Fig3.38 Diagram of "We-build" Kit-of-Parts

## CASE STUDY
## CNC FABRICATED PANELS

At present, CNC milling has shown great potential for creating fully digitally produced building blocks with friction-fit connections that enable plywood sheets to be assembled easily like a jigsaw puzzle. It was Professor Larry Sass at MIT who pioneered this technique. The Instant House he developed is a digitally fabricated structure assembled from 984 CNC-cut, interlocking parts cut from 114 sheets of 4' x 8' x ¾'' plywood sheets.[1] During the assembly process, rubber mallets were used to attach each component after aligning it manually or with a crowbar, as the frictional connections held the components together without requiring nails or screws.

1. Lawrence Sass and Marcel Botha, "The Instant House: A Model of Design Production with Digital Fabrication," International Journal of Architectural Computing 4, no. 4 (Dec, 2006): 109–123, https://journals.sagepub.com/doi/full/10.1260/147807706779399015.

Additionally, the PD lab at Delft University of Technology investigates and tests the architectural implications of CNC digital fabrication. Pieter Stoutjesdijk, a researcher from the PD lab, later founded the company called the NewMakers, which sells commercially available CNC-produced modular buildings.[2] Owning its own manufacturing facility, the NewMakers can design and produce modules that incorporate mechanical systems, such as electrical wiring and plumbing.[2] All modules are transported as individual elements and can be easily mounted on site with an Allen key. Even the water supply module snaps into place without any tools required.

2. Open Building NOW! 2. Academic Lecture, Lego for Building, directed by Pieter Stoutjesdijk 2021), https://www.youtube.com/watch?v=Tx-iyYnAvg58

U-Build is another commercially available CNC milled self-build system. It is developed by Studio Bark in the UK.[3] The U-build system is characterized by its simplicity, since only one module is needed - the structural box. Boxes are stacked and bolted together to form a variety of sized walls, floors and roofs. U-build uses a smaller module compared to other similar systems, allowing only 1-2 people to assemble it. If the building's useful life has come to an end, the boxes can be disassembled, recycled, or sold to another U-Builder.

3. Studio Bark, "U-Build by Studio Bark," https://u-build.org/ (accessed Oct 29, 2022).

## STRUCTURAL INSULATED PANELS

Originally developed in North America, structural insulated panels are prefabricated panels made of three layers: an insulating foam core sandwiched between two structural panels, usually plywood or oriented strand board (OSB). With SIPs, a much smaller crew is required for assembly on site due to their factory-controlled manufacturing process and ability to be connected quickly and precisely.

The Liina Transitional Shelter developed by Aalto University Wood Program, utilized the SIPs system so it can be deployed quickly and efficiently.[4] Using only common non-electric tools and a cartoon diagram, two adults can assemble the shelter by fitting together 600 mm wide modular panels in six hours. The frame is constructed by joining six panels with simple, repeated wooden-dowelled joints and tightening them with nylon straps. A shelter is then formed by stacking the frames one by one and tying them together with 3 straps. In the post-disaster reconstruction phase, it can be moved, disassembled, re-used, or recycled.

4. "Liina Transitional Shelter / Aalto University Wood Program." https://www.archdaily.com/174909/liina-transitional-shelter-aalto-university-wood-program (accessed Oct 20, 2022).

People's Architecture Office (PAO), an international practice based in both Beijing and Boston, developed Plugin house using prefabricated SIPs to modernize dilapidated traditional Chinese courtyard houses without involving extensive renovations. Insulation, exterior and interior finishes, wire, electricity and plumbing are incorporated into one single prefabricated "plugin panel".[5] Each panel can be attached to another in various ways through an integrated locking mechanism using only a hex key, making it easy for someone without prior construction experience to assemble.

5. Zhang Feng, "A Prefabricated Regenerative Society," World Architecture 世界建筑, no. 07 (2021): 43–47, http://www.peoples-architecture.com/pao/storage/app/uploads/public/610/a0c/8ca/610a0c8cab1a1121524508.pdf.

## DISCUSSION
## CNC FABRICATED PANELS

The CNC router can precisely pre-cut plywood panels with joints and notches and those plywood panels can be delivered by flatbed trucks to site as packaged components. Assembling the panels can be carried out on site with embedded joinery that supports assembly by friction only, eliminating the use of mechanical fasteners such as screws and nails. With a modular kit of building parts, anyone can assemble the whole structure following the simple instruction manual of inserting tab A into slot B and hammering it with a mallet. Additionally, standardized modular systems allow flexibility and adaptability. Similar to Lego blocks, each module can be disconnected and connected again. Consequently, the infill system is flexible over time and can change according to the changing needs or the changing owners of a unit.

The amount of different parts and connection types, however, can hamper the assembly process when the users need to match and orientate pieces in a specific way to fit them together. For instance, the Instant House has over 900 parts, making the construction process less straightforward compared to U-build that only has one type of module consisting of 5 parts. Additionally, plywood is not a common material in the Chinese construction industry and may not be a cheap source. Cutting each piece customly by commercial CNC routers can drive up the price of the system, making it less affordable.

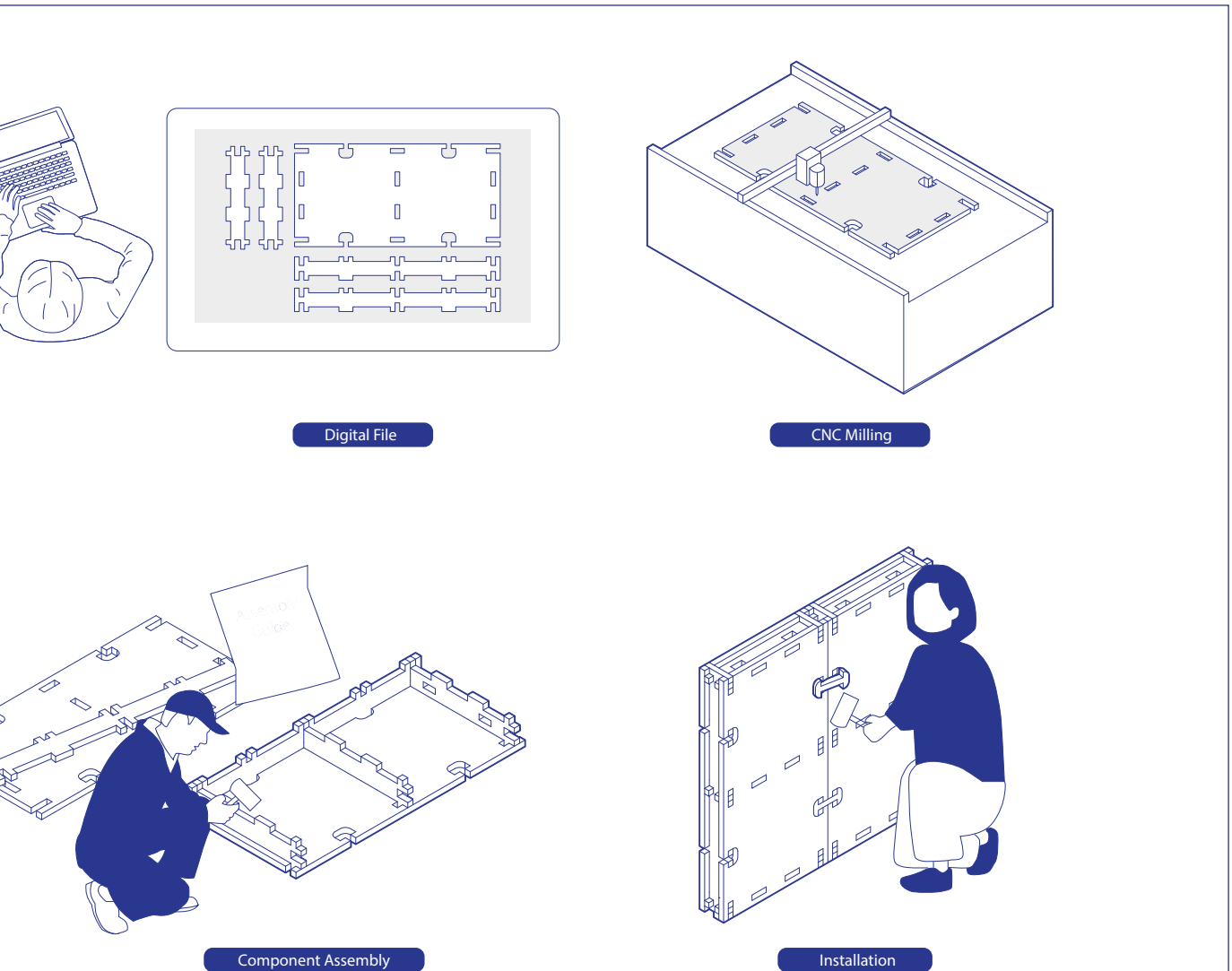
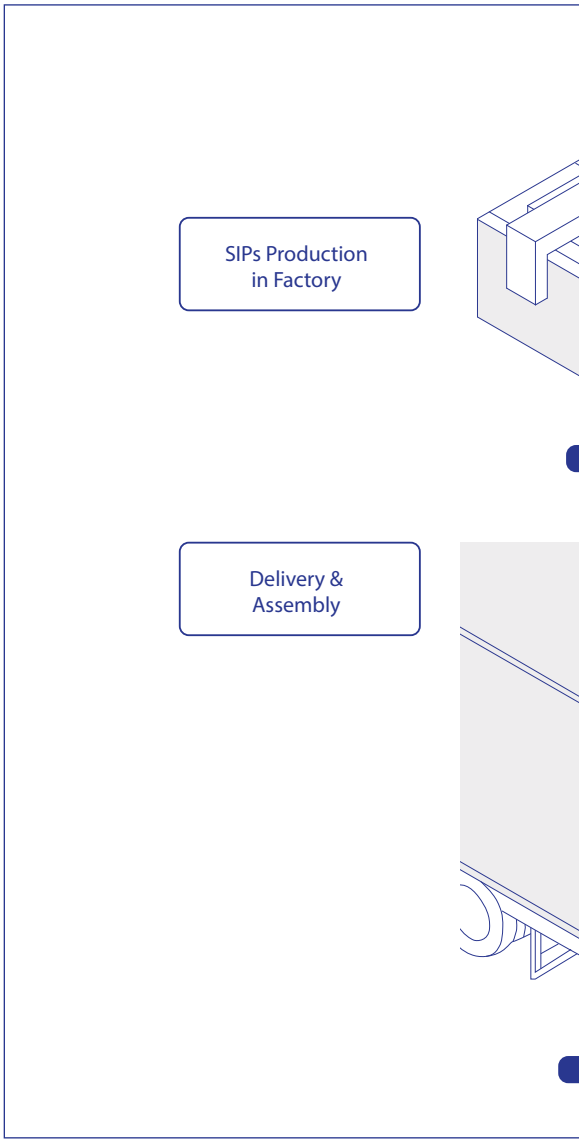



Fig3.39 Diagram of CNC Fabrication and Assembly

## DISCUSSION
## STRUCTURALLY INSULATED PANEL

The SIPs system benefits from the simplicity of all-in-one factory manufactured panels that integrate structural, insulation, interior and exterior finishes, and sometimes even utilities. Each system uses a universal connection technique, wooden-dowelled joints and straps in the Liina Transitional Shelter and the locking mechanism in Plugin House. All connection methods are dry connection and allows for easy disassembly without damaging the panel. The mass production possibility of industrially manufacturing large amounts of SIPs can lower the price of each panel, making it affordable for the lower income population in Tianlin second village.

While SIP panels can be manually moved and handled, some components such as full-height wall panels are big and heavy, requiring multiple people, sometimes even a crane or forklift to install. Additionally, as a relatively new material, its structural performance, thermal performance, durability and cost is still undergoing research and testing.



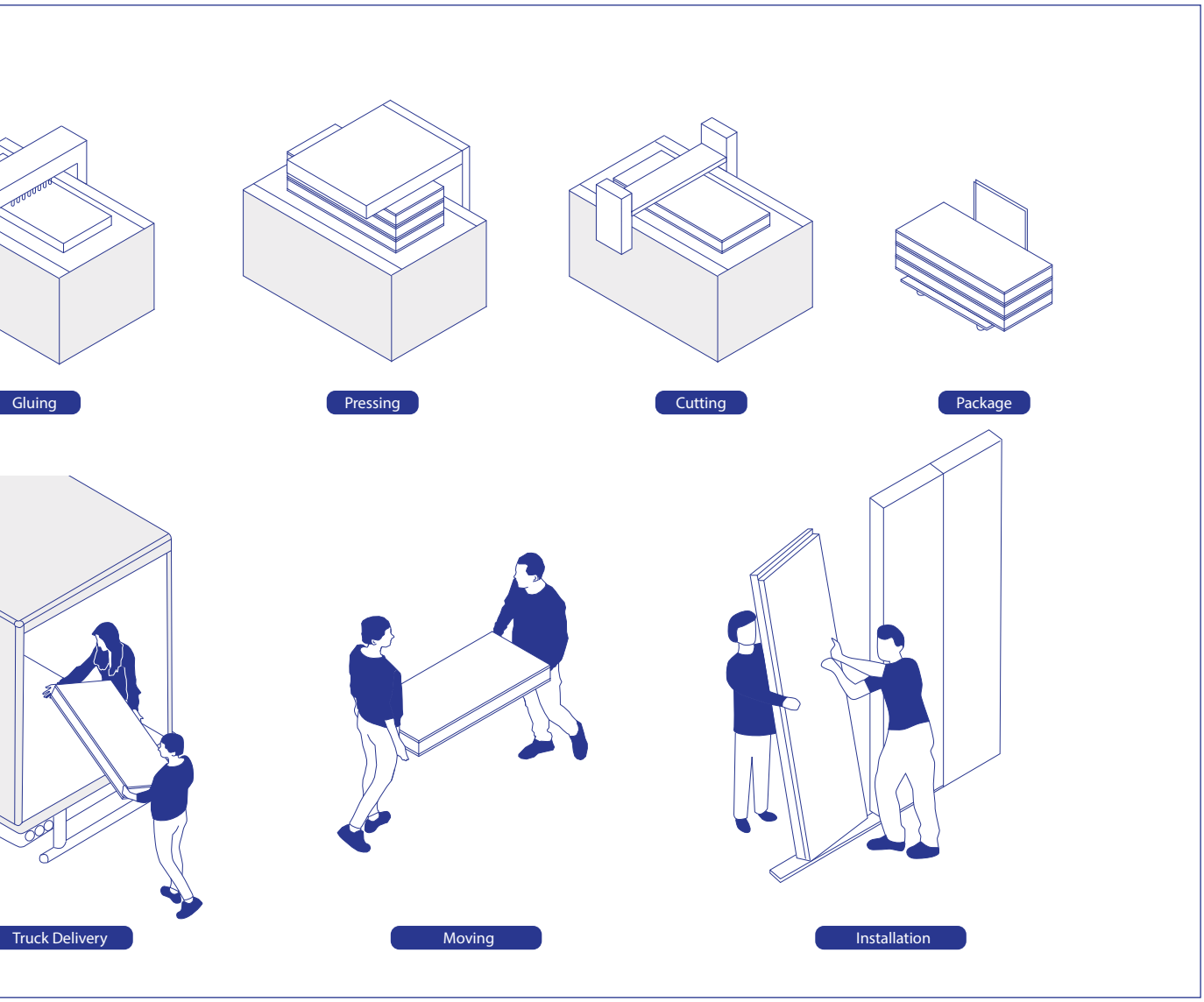
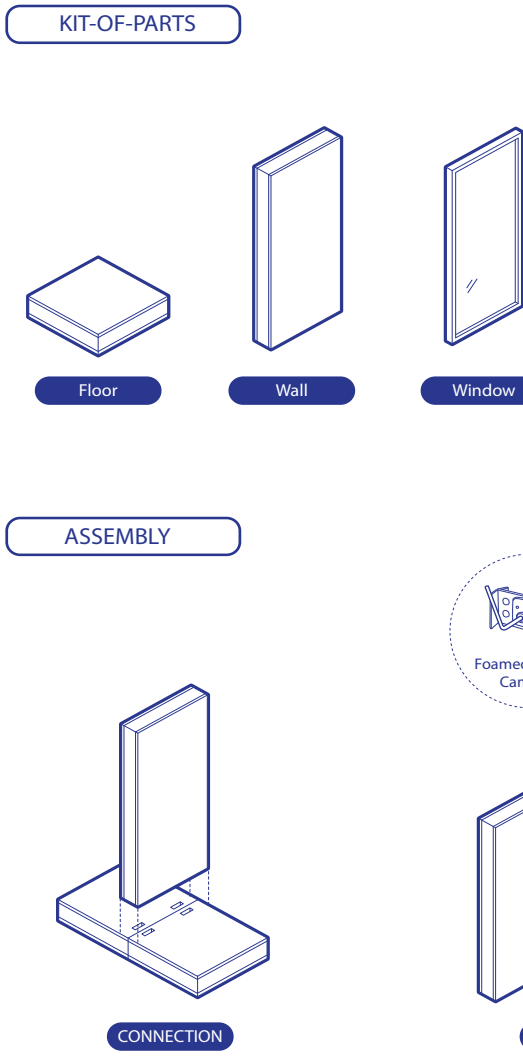


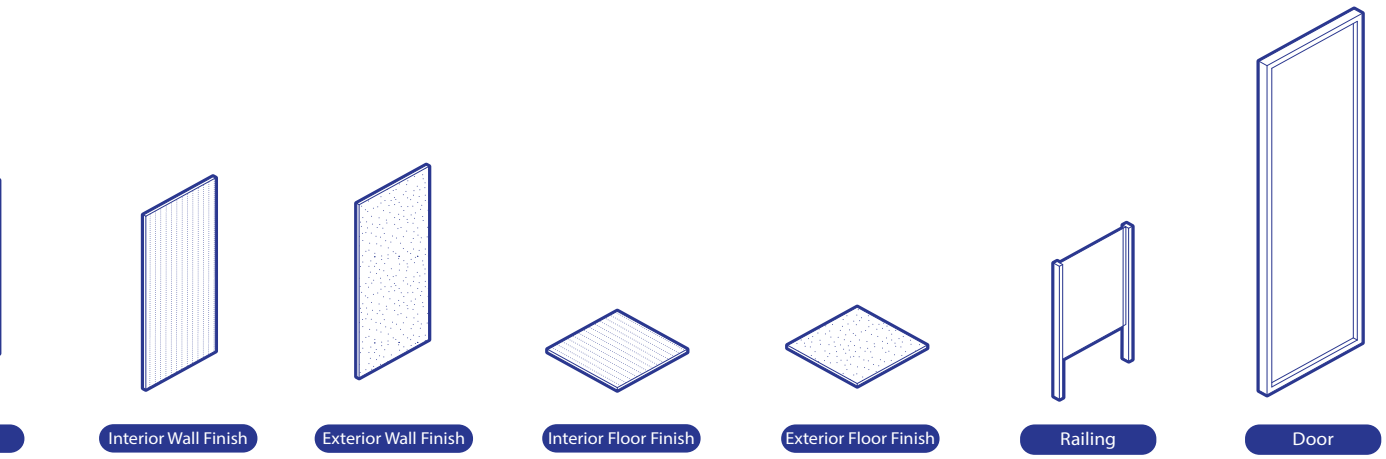

Fig3.40 Diagram of SIPs Fabrication and Assembly

## WE-BUILD
## KIT-OF-PARTS

Both CNC and SIPs are emerging building systems that are undergoing material research and field testing. Within the scope of this thesis, it is not feasible to conduct performance comparison between these two systems. The affordability of each system highly depends on the context the system is used. Compared to SIPs that are produced in a large factory with a whole production line, CNC panels can be fabricated using a 4'x8' CNC machine in local micro-facitories. With mass production possibility, however, the SIPs can become more affordable than the CNC panels. As one of the case studies, the plugin house, is developed and constructed in Chinese context, combined with the limited Chinese plywood supply, the main material of CNC panels, the thesis illustrates a diagrammatic idea of "we-build" kit-of-parts using structurally insulated panels.

The "we-build" uses the same modular system as the "we-design" tool kits and it is essentially a scaled up version of "we-design" toolkits. The floor panel is 600mm by 600mm with premanufactured sockets to receive the wall panels. The wall panel with integrated wire, electricity and plumbing is 600mm by 1100mm, which is only half floor-to-floor height. The reduced height allows only 1 to 2 people to move and handle the panel. The wall panel can stack on another wall panel to construct a full wall, or it can be combined with a window panel to construct a window wall. The finishing panels can be selected by residents based on their budget, performance requirement and aesthetic preferences.





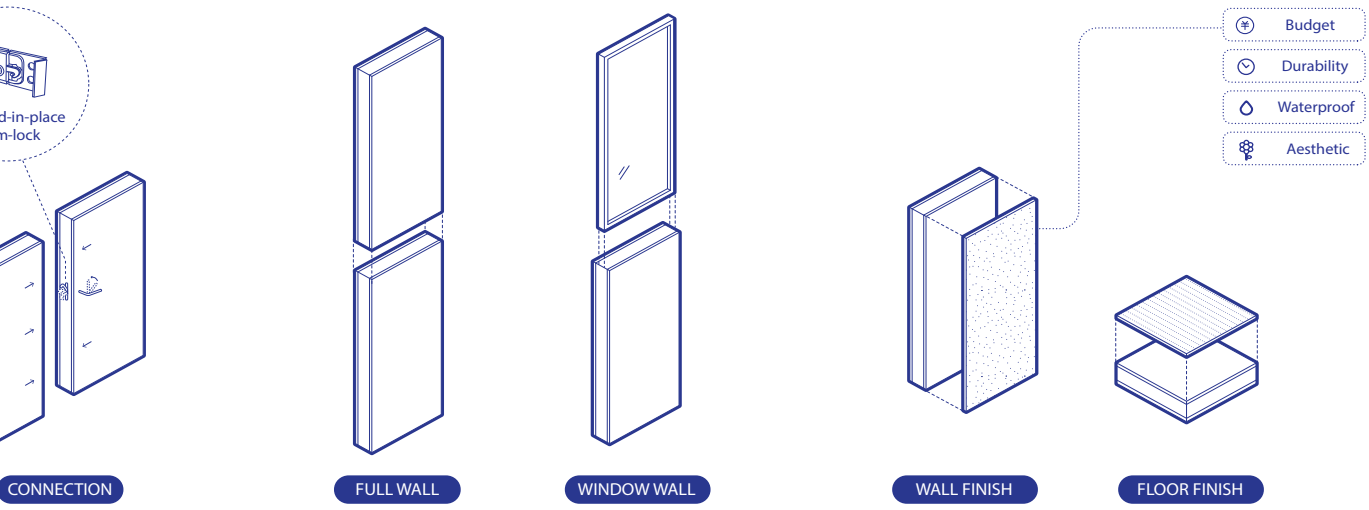




Fig3.41 Diagram of "We-build" Kit-of-Parts Assembly Process

# 4. CONCLUSION

## CONCLUSION

Can the inhabitants take responsibility for their own homes without professional designers? With the exhibition titled Architecture Without Architects in 1964, Bernard Rudofsky was one of the first ones to introduce us to an unfamiliar world of user ingenuity in vernacular construction that predated modernization. Such ingenuity in the contemporary cities, however, remain largely hidden behind the mega-projects and highrises shaped by the rapid flow of capital.

This thesis study of suspended additions in Tianlin second village presents a glimpse at this largely invisible layer of urban vernacular through an assemblage of visual and textual materials. In Chapter 2, the interesting phenomenon of suspended urban vernacular was unpacked architecturally, including its dimension, layout and materiality. More importantly, from the assemblage of drying racks, plants, kitchens, chairs and bottles, the built environment provides traces, for those willing to look more closely, of its inhabitants, their intrinsic needs and desires and their everyday "life narrative". The infinitely mutable, yet consistently meaningful narratives of inhabitants' everyday lives provide this thesis a fertile ground for the formulation of a design solution. The practice of architecture, however, is often governed by hierarchical chains that serve capital and power. Architecture surrenders itself to real estate and market forces and grows further away from its inhabitants, who interact directly with it, walk around in it, touch it, breathe the air within it and gaze upon it. I argue, as architects, we should return to the fundamental question of: who do architects design for.

Furthermore, this thesis reaffirms the idea offered by architectural theorists such as Christopher Alexander, John Habraken and Aldo van Eyck, who view architecture as a continuous work-in-progress in which its inhabitants have a critical influence, rather than as finished product. Buildings begin their journey as live-in volumes as soon as they are

completed and occupied by inhabitants, who are free to accept, adjust, integrate, or adapt spaces in order to best meet their needs. In recognition of the influence that inhabitants have on their built environment, it is crucial for architects to support open-ended and flexible frameworks that allow individual expression and future evolution. The design solution proposed in this thesis offers a vision of such design in the specific context of Tianlin second village. It explores the delicate balance between preserving the role of the architect and seeking to liberate the inhabitants from their conventional subordinate role as passive consumers. The architecture, thus, becomes a dynamic process that embraces the individualized influence from each inhabitant and the possibilities of future trajectories.

The prevailing everyday transformations of space, which are often viewed as banal or even illegal, have a profound evolutionary significance that is largely overlooked. While many architects have made unsuccessful attempts to re-image the space of the corridor, the corridor in Tianlin second village, "designed" by its inhabitants, is full of life. The rich, chaotic and vibrant corridor atmosphere the inhabitants created showcases the substantial spatial innovation. Here, cooking and dining, normally in the private domain, are located in the suspended additions across the corridor from the private unit. The corridor, thus, is no longer a simple passage that accommodates traffic, but part of inhabitant's shared living space. It challenges the conventional concept of a home as an entity with a clear demarcation that separates the private and the public domains. Consequently, it raises important questions about how we live together, in an urban environment that becomes increasingly dense while people feel more isolated. This somewhat bizarre, but functional, spatial organization also urges us to question the known typologies that we, the professionals, customized to turn to when we start a new project.

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## APPENDIX

田林二村拍摄说明

Instructions for taking photos of Tianlin second village

拍得越多越好!!! 也欢迎你记录下你觉得有趣的建筑细节，居住者的生活瞬间。

Task 1: Overall Environment

任务1：小区环境

The more photos you take, the better, and you are welcome to record the details and the moments of the life of the occupants that you find interesting.

- 拍摄目标：越多越好，方便后期对应照片与楼栋

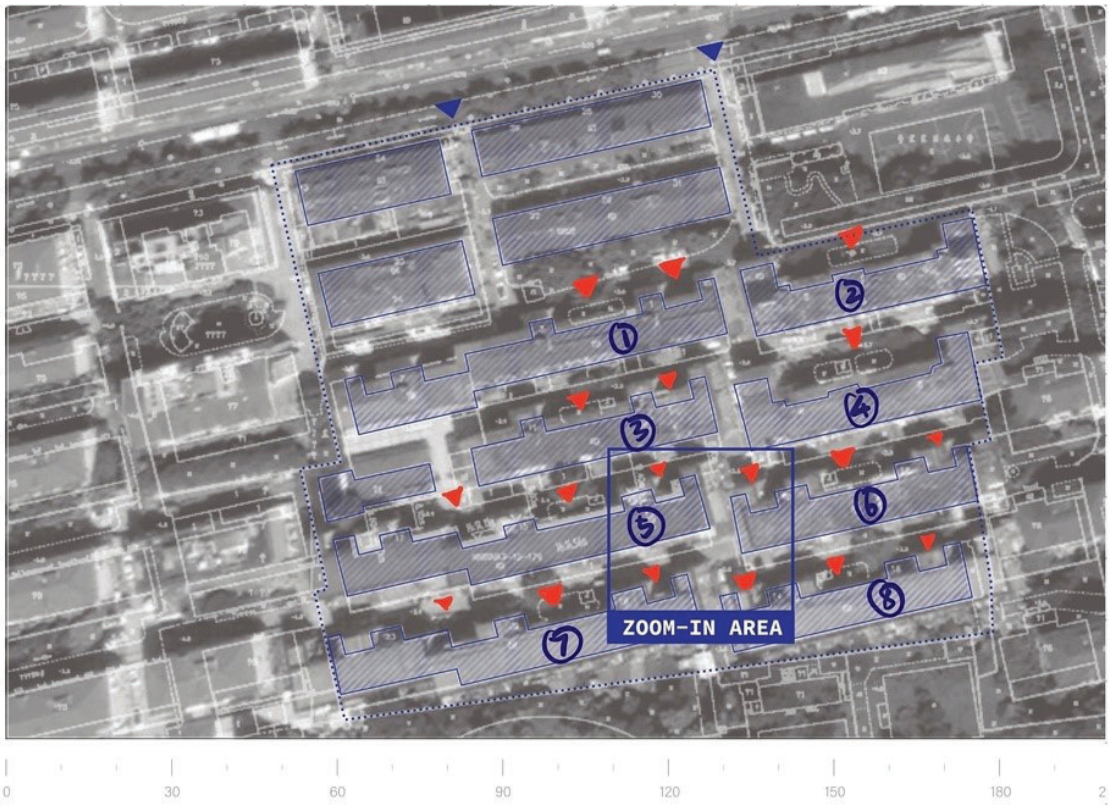
Goal: the more the better. The more photos taken, the easier it is to match them with the building

任务2：外立面 Task 2: Building Facade

Reference image: 参考照片：

- 拍摄目标：▼标记部分外立面。
- 要求：横平竖直

Goal: the facade marked by the red triangles
Requirement: keeping horizons horizontal

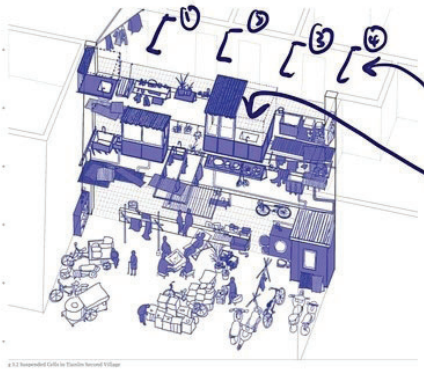


## 任务三：楼道内部

Task 3: Inside the Building

- 拍摄目标：选2栋楼拍摄走廊情况（每层记录）
  选择加建方式比较丰富的楼

Goal: Select 2 buildings to document the corridors (every floor)
(Select the buildings with rich suspended additions)

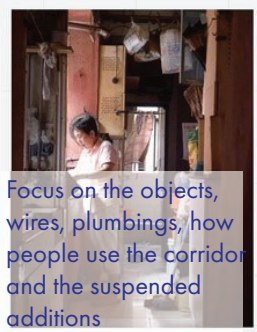


- 选2个选择的楼.
- 记录每层走廊内部情况
- 每层需拍摄多张.
- 记录加建内部的使用情况

- Select 2 building
- Document corridors on every floor
- Multiple pictures needed in each floor
- Document the interior of the suspended additions

- 走廊参考图：Reference image for corridor:

尽量多记录，重点关注物品，各种管道，电线，人们如何使用走廊+加建空间（最好每层都拍）



Focus on the objects, wires, plumbings, how people use the corridor and the suspended additions

- 加建内部参考图：Reference image for suspended addition:

可直接拍一张
或多张我后期拼接

It is OK to capture it with multiple pictures, I can collage them later