

From Large-scale Modernist Planning to Small-scale Urban Blocks: Spatial Transformation Experiments in China's Large Gated Communities

Zihan Ke, Yongjie Cai

Affiliation: College of Architecture and Urban Planning, Tongji University, Shanghai, China

Email: kezan0526@gmail.com

Abstract

This study reconsiders large-scale gated communities in China shaped by modernist planning, which often lead to spatial inefficiency, social isolation, and unsustainability. Drawing on the theory of “urban cells,” it explores spatial densification through theoretical analysis, case studies, and a design experiment in Shanghai’s New Jiangwan Town. The proposed design restructures urban form through fine-grained grids, mixed-use blocks, and redefined plot hierarchies, enhancing both vibrancy and permeability. It also examines challenges of property adjustment and stakeholder coordination. The findings demonstrate the feasibility of transforming gated communities into open, sustainable urban fabrics. The study offers a transferable model with strategic implications for rapidly urbanizing regions across the Global South.

Keywords: Modernist planning; Large-scale gated communities; Urban cells; Scale optimization; Densification

1. The Prevalence of Large-Scale Residential Areas in China’s New Towns

1.1 Emergence of a Homogenized Urban Model

Since the 1990s, Chinese cities have experienced unprecedented challenges brought by rapid urbanization. In response, extensive new town developments were launched across the country. Nearly all of these new towns adopted a standard model characterized by wide arterial roads, large-scale interchanges, superblocks, low-density land use, and generous spatial allocations. This formulaic approach has resulted in a repetitive spatial pattern across cities—manifested in new urban centres comprised of major roadways, expansive green landscapes, large gated residential enclaves, industrial parks, and mega commercial complexes (Sha, 2010, p. 3). These urban forms starkly contrast with the fine-grained fabric of traditional city centres, yet ironically appear highly similar to one another across different urban contexts.

This study focuses on one of the most representative units within this model—the large-scale gated residential community (Figure 1). First defined by Blakely and Snyder in 1997, gated communities are privatized residential areas enclosed by walls or fences, where services and amenities are internally managed and restricted to residents (Blakely and Snyder, 1997). In the Chinese context, these communities are often structured as “superblocks” characterized by functional monotony and structural uniformity. They reflect the spatial logic of modernist urban planning while exposing a growing disconnect between spatial form and contemporary urban lifestyles.



Figure 1. Typical Large-Scale Gated Residential Community Module

1.2 Structural Origins and Multidimensional Issues

The persistence of this urban form can be traced to two fundamental dimensions. Conceptually, it is a direct result of modernist urban planning principles, especially the concept of functional zoning, which promoted the separation and concentration of urban functions, leading to vast, single-use residential areas. Operationally, China’s response to rapid urbanization relied on a real estate-driven model guided by regulatory detailed planning. Under this framework, urban plots tend to be oversized and isolated from each other, with planning and design focused on intra-parcel configurations while neglecting public space formation and the integration

of urban systems.

Although this model has supported rapid urban expansion and short-term economic gains, it has simultaneously generated interrelated problems in three critical areas: sustainability, quality of urban life, and social-cultural cohesion.

In terms of sustainability, these communities rely on a “wide-road, sparse-network” structure, which reinforces automobile dependency. Their spatial segregation and functional exclusivity reduce walkability and mixed-use potential, frequently necessitating long-distance travel for everyday needs—thus aggravating traffic congestion and obstructing efforts toward sustainable mobility.

In relation to quality of life, the most significant issue brought by this development model is the lack of urbanity. Professor Pu Miao from the University of Hawaii famously likens oversized gated blocks to “tumors,” highlighting their destructive impact on urban space (Miao, 2004). These large gated communities are divided by wide roads and interchanges, forming isolated “islands” with limited connection to each other and to the broader city. As a result, urban vitality struggles to emerge. The streets between them are oversized, poorly defined, and functionally limited. Lacking human-scale design and everyday amenities, they fail to support active, livable public life.

At the socio-cultural level, this model diminishes the city’s cultural identity. Modernist, copy-paste-style residential designs turn housing into industrialized products, producing uniform “new heritage” landscapes that erode regional uniqueness. The physical and social enclosures further intensify social segregation, hinder neighborhood interaction, and reinforce class divisions—posing serious challenges to social equity and integration.

1.3 The Need and Potential for Redevelopment

As urban development in China enters a more stable phase, the spatial, functional, and social shortcomings of large gated communities have become increasingly evident. With growing societal expectations for high-quality urban life, the traditional residential model can no longer accommodate the demand for diverse, open, and adaptable urban living environments. A transition toward more urban and resilient residential forms is urgently required (International Panel on Social Progress, 2018).

Despite their limitations, modernist planning legacies retain a degree of spatial plasticity. Their low-density, large-scale structure presents opportunities for transformation. With thoughtful planning and design, these inherited urban forms can be reconfigured to align with contemporary needs, unlocking both spatial potential and renewed social value.

2. New Jiangwan Town: Lifeless Streets and Living Units

2.1 Site Selection

This study takes New Jiangwan Town in Shanghai as its primary design site (Figure 2). As a representative of new residential areas within the central urban area, it exemplifies the broader urban issues previously discussed—despite its location within the inner ring, the district suffers from a lack of urban vitality. Its challenges and potential for transformation hold valuable insights and relevance for similar urban contexts.



Figure 2. Status of New Jiangwan Town

Located in the northeastern part of central Shanghai, New Jiangwan Town was developed on the former site of Jiangwan Airport—once known as “an ecological oasis in the city”. In the early 2000s, the municipal government envisioned the area as a model “garden city” and ecological residential zone for the 21st century, oriented toward middle- and upper-income residents within a knowledge-based, international community (Figure 3).

This design research focuses on a 29.2-hectare site bounded by Zhengqing Road and Songhu Road, with Yinhang Road as its central axis. The site, measuring approximately 780 by 510 meters, encompasses the New Jiangwan Town metro station, ensuring convenient accessibility. It also reflects common issues of large gated communities, making it an ideal site for studying residential urban transformation. (Figure 4).



Figure 3. Planning Context: Spatial Structure, Functions, and Transport Networks



Figure 4. Design Focus and Existing Site Issues

2.2 Absence of Urbanity and Cultural Life

Despite its designation as a “town,” New Jiangwan Town lacks the spatial and cultural attributes expected of urban life. Influenced by modernist planning principles, its spatial organization is disconnected from everyday use, with limited continuity and permeability. In terms of spatial scale, wide roads and superblocks undermine human-scale connectivity; streets lack spatial enclosure, and elongated block edges create monotonous and fragmented pedestrian experiences. In terms of spatial form, residential compounds are developed independently with minimal attention to urban frontage. In pursuit of optimal orientation and floor-area ratios, buildings turn inward, and streets are flanked by blank walls or landscaped setbacks, lacking the spatial conditions needed for street life. Functionally, the area is dominated by residential use, with commercial and cultural facilities sparsely and unevenly distributed. Workplaces and cultural institutions are virtually absent. As a result, urban diversity and the informal rhythms of everyday life are missing. New Jiangwan Town presents an urban façade but fails to perform as a true urban environment, functioning instead as a closed residential enclave devoid of socio-cultural depth.

It resembles an urban form in appearance but functions as a mono-functional residential enclave—devoid of collective memory and civic culture.

The Yinhang Road site, for example, includes five gated residential communities, with an average building coverage of just 12.65%. The distance between buildings along main roads ranges from 65 to 91 meters, while secondary streets such as Ruida Road remain disproportionately wide. This functional monotony and disordered spatial form undermine both urban vitality and cultural expression (Figure 5).



Figure 5. Analysis of Existing Site Problems

2.3 Analysis Through the Lens of Urban Cells

To further understand the disconnection between space and culture, this study adopts the concept of the “urban cell” as a medium-scale analytical framework. The concept of urban cells, derived from biological metaphors, refers to the basic spatial unit of a city. Each cell is defined by its boundaries (walls, facades) and internal structure (courtyards, paths), which jointly determine its spatial performance and cultural capacity (Cai, Xu, Zhang and others, 2018).

In traditional urban forms, such as Beijing’s siheyuan or Shanghai’s lilong, urban cells are compact (typically 50–100 meters), fostering dense, permeable street networks and mixed-use environments (Cai and Xu, 2021). By contrast, modernist planning transforms these cells into isolated “functional warehouses,” disconnected from their surroundings. New Jiangwan Town exemplifies this new urban cell typology, marked by two key deficiencies:

1-Oversized Cells: The excessive scale of residential blocks lead to functional fragmentation, low traffic efficiency, and weak social interaction.

2-Inactive Boundaries: The compound walls and adjacent buffer zones function merely as physical separators. While they provide basic spatial division, they offer little depth, serve no additional functions, and ultimately fail to sustain urban life. As a result, the street spaces between these cells remain lifeless and underutilized.

These two core issues correspond to two main transformation goals:

1-Optimizing the scale of urban cells to rebuild spatial and social connectivity.

2-Restructuring interstitial and boundary spaces to enhance street quality and activate public life.

2.4 Site Potential

At the macro level, New Jiangwan Town holds strong redevelopment potential. Its central location, robust public transit, and diverse population offer strategic, economic, and cultural advantages. Rich ecological resources further support high-quality, sustainable urban living.

At the site level, the existing low-density pattern leaves ample room for densification. Underutilized spaces between buildings and streets create opportunities to reconfigure urban cells, implement open community models, and revitalize street edges.

3. Research Objectives and Methodology

Despite extensive critique and revision of modernist urban planning concepts within academic discourse, practical applications for transforming large-scale and low-density residential areas remain scarce (Wu, Yang, Xu, Zhang and Antwi-Afari, 2021). This study seeks to bridge that gap by translating theoretical insights into actionable design methods, addressing the prevalent challenges faced by new residential areas in China.

Through theoretical analysis, case studies, and a spatial transformation design experiment in the core area of Shanghai New Jiangwan Town, this study investigates the theoretical significance and practical approaches to spatial transformation in contemporary large-scale communities.

At the design research level, this study focuses on the prevalent large-scale gated residential model in China’s new towns. Taking the Yinhang Road area of New Jiangwan Town as a testing site, the core objective is to transform it from a large-scale, low-density, mono-functional residential zone into a network of small-scale, mixed-use, and street-oriented urban blocks that support greater urbanity. Importantly, the term urbanity here extends beyond physical form or centrality. It refers to the holistic spatial quality of the built environment, characterized by human-scale dimensions, legible urban form, programmatic diversity, and vibrant public life.

4. Theoretical Framework

This chapter establishes the theoretical foundation for the design strategies proposed in subsequent sections. It first traces the historical and cultural roots of gated community patterns in China, unpacking their spatial logic and sociopolitical underpinnings. It then reviews contemporary urban theories that advocate for openness, integration, and human-scale development. Together, these perspectives form a critical lens through which the challenges and potentials of reconfiguring New Jiangwan Town can be understood.

4.1 Historical Roots of Enclave Patterns in Chinese Housing

4.1.1 A Brief History of Residential Transformation in China

China's urban housing has undergone multiple stages of transformation, deeply shaping today's urban form.

During the planned economy period (1950s–1970s), residential development was primarily state-led, resulting in the widespread emergence of “danwei compounds” —enclosed residential blocks controlled by work units. In the absence of private property rights, walls served to delineate administrative boundaries, laying the groundwork for today's gated community model.

Since the late 1970s, reform and opening-up restored private property rights and introduced market-driven housing. Real estate developers emerged as dominant players, and under the influence of modernist planning paradigms, gated communities became the mainstream model emphasizing order, security, and property value.

In the 21st century, regulatory detailed planning became the dominant development mechanism, further entrenching the gated community model. However, this approach has been increasingly questioned. In response, the concept of open communities has gained attention, with pilot projects like Changde's Berlin International Community have shown the feasibility of fence-free designs in China (Wang, 2023).

4.1.2 Cultural DNA and the Shanghai Experience

Traditional Chinese housing has long favored inward-facing, enclosed environments, reflecting values of privacy and order (Deng, 2011). This is evident in the “lifang” system of ancient cities and residential types like Beijing's siheyuan or Shanghai's lilong. This spatial logic underpins contemporary acceptance of gated communities.

In Shanghai, a migrant city shaped by both indigenous tradition and Western modernism, hybrid housing forms such as “shikumen lilong”. These typologies combined the privacy of Chinese courtyards with the density of European row houses. Their “closed outside, open inside” spatial logic fostered vibrant alleyway life and strong neighborhood cohesion, becoming a key element of the city's collective memory.

In older urban areas, mixed-use configurations like “shopfront-residence” and “store below, residence above” created high-functionality environments within walkable neighborhoods. By contrast, contemporary gated communities, though superficially resembling traditional forms, often lack the scale, form, and programmatic richness needed to sustain urban life, losing not just permeability, but also the cultural depth rooted in everyday spatial practices.

4.2 Spatial Strategies of Re-Urbanization

4.2.1 The Open Block Model

At the turn of the 21st century, French architect Christian de Portzamparc proposed the “Open Block” concept in Paris's Rive Gauche project, highlighting the street as the core of urban life (Portzamparc, 2015). He emphasized that the key principles of open blocks included small block size, mixed functions, and open circulation to foster accessibility and social interaction. In China, the Green Neighborhood Standard echoes these principles, promoting integration of public space and civic functions into residential areas. Unlike gated compounds, open communities aim to create lively, inclusive, and adaptable urban environments.

4.2.2 Small Blocks and Dense Streets Networks

The 2016 State Council Guidelines marked a paradigm shift by stating that new residential developments should adopt a block-based model and avoid constructing enclosed communities. It promoted the “narrow streets, dense networks” urban pattern.

The model generates a series of interrelated benefits. By subdividing large parcels and introducing shared street rights-of-way, it facilitates multimodal mobility and improves overall connectivity (Zhuo, Wu and Xu, 2017). Enhanced permeability and activated street frontages contribute to a more articulated and adaptable urban form. Simultaneously, the model fosters social integration by aligning with human-scale spatial perception and promoting frequent, informal interactions within the neighborhood context.

Nonetheless, the model poses design and operational challenges. Smaller blocks may reduce development flexibility and increase management costs. Perimeter block layouts may limit solar access, while denser street grids can increase noise and pollution (Zhuo, Wu and Xu, 2017). Therefore, local adaptation and site-specific strategies are essential.

4.2.3 Mixed-Use Development Theory

As a critique of functional zoning, mixed-use theory promotes integrating residential, commercial, educational, and recreational functions within walkable urban areas.

Mixed-use development promotes proximity, diversity, and efficiency by integrating varied urban functions within a compact spatial framework. It shortens spatial distances between living, working, and service activities, enhances temporal vibrancy through overlapping uses, and optimizes land and infrastructure utilization. By countering spatial segregation and curbing urban sprawl, it also reinforces socio-spatial sustainability (Jacobs, 2011).

Yet, the approach also demands careful spatial balancing. Conflicts in privacy, noise, and circulation must be resolved through refined architectural and programmatic design to harmonize vibrancy with livability.

5. Case Studies

Building on the theoretical framework, this chapter investigates representative urban spaces and residential areas to clarify the spatial logic of “Plot-Building-Block-District” and identifies the key characteristics of vibrant, sustainable districts. Furthermore, by examining cases of urban space reconstruction, the study explores densification strategies for spatial transformation and categorizes specific operational patterns.

5.1 Urban Blocks in Classic Cities

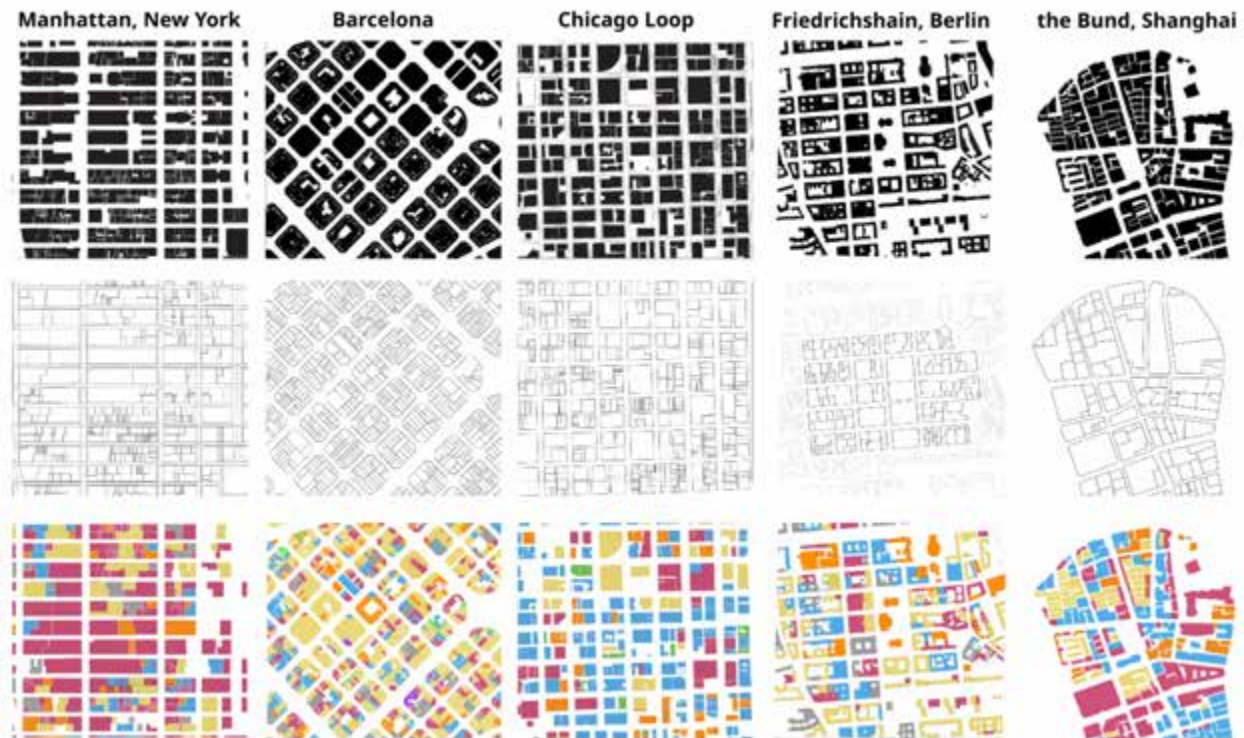


Figure 6. Case Study of Urban Blocks

This section examines 1 km² urban blocks in New York, Chicago, Barcelona, Berlin, and Shanghai's Bund to identify shared spatial traits (Figure 6). Comparative analysis of figure-ground patterns, parcel divisions, and functional layouts reveals a common logic: small blocks (70–160 m) within a coherent street grid, continuous frontages, fine-grained and flexible parcels, and diverse functions at the block scale. Together, these elements form a model of urban vitality marked by legibility, human scale, morphological richness, and integrated uses.

5.2 Urban Living blocks: The Case of Chuangzhifang

Located in Shanghai's Yangpu District, Chuangzhifang exemplifies the localized application of "small blocks" and "mixed-use" urbanism. The project integrates spatial, mobility, functional, and governance strategies to promote urbanity within a formerly underused area.

5.2.1 Spatial Construction: Small Blocks and Public Space

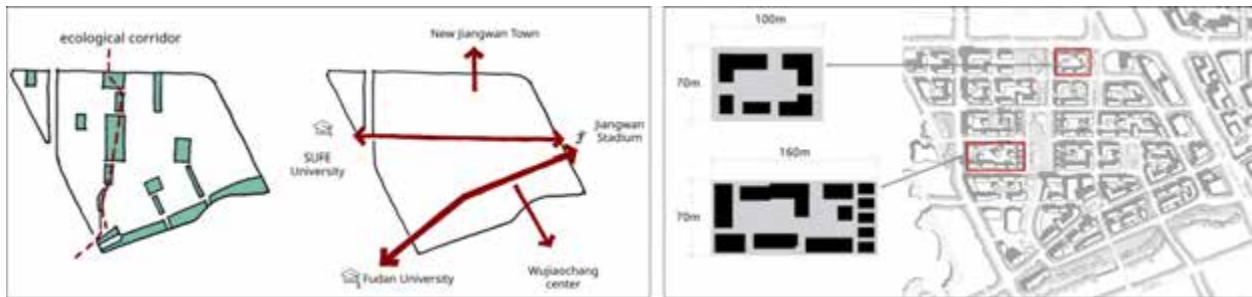


Figure 7. Spatial Structure and Block Analysis of Chuangzhifang



Figure 8. Public Space and Building Height Analysis of Chuangzhifang

The street grid is structured by a clear north-south ecological corridor and east-west urban axes (Daxue Road and Weikang Road), which connect key urban anchors including Fudan University, Shanghai University of Finance and Economic and Jiangwan Stadium, establishing a coherent spatial framework. Blocks adopt a compact scale (70–160 m), aligning with traditional urban grain and enabling seamless connection to surrounding neighborhoods. Public spaces are strategically placed at key intersections, with moderately scaled plazas (e.g., 40 × 50 m) that balance capacity with spatial intimacy (Qian, 2017). High near-line rate contributes to the integrity of the block form. Public space is closely tied to commercial functions, supporting a variety of events such as weekend markets and pedestrianized zones, enhancing spatial adaptability and user engagement (Figure 7, Figure 8).

5.2.2 Traffic Organization: Dense Networks and Pedestrian Priority

The district adopts a "narrow street, dense network" model, with open, shared streets seamlessly integrated into the city's broader traffic system (Yin, 2007). 8-meter-wide sidewalks are subdivided into outdoor dining, pedestrian, and furnishing zones, stimulating outdoor commerce and active street life. Tight corner radii (3–5 m) reduce vehicle speed, fostering a safer pedestrian environment (Figure 9).



Figure 9. Street Layout, Sidewalk Zoning, and Road Section of Chuangzhifang (Qian, 2017)

5.2.3 Functional Mix: Multi-Dimensional Integration

Functions are mixed across horizontal, vertical, and temporal dimensions. Horizontally, Plots are primarily mixed-use. Commercial functions line the main street while residential and office functions occupy interior plots. Residential units are preferentially arranged along north-south orientations, while non-sunlit areas are repurposed for offices (Wang, 2023). This horizontal integration is illustrated in the spatial organisation of Chuangzhifang. Vertically, buildings combine shops with "SOHO" (Small Office/Home Office) units, residences, or offices above, supporting ground-level activity without compromising livability (Figure 10). Temporally, LOFT-style SOHO units support dual-use functionality, accommodating shifts between daytime work and nighttime dwelling, exemplifying adaptable spatial design (Wang, Wang and Huang, 2023).

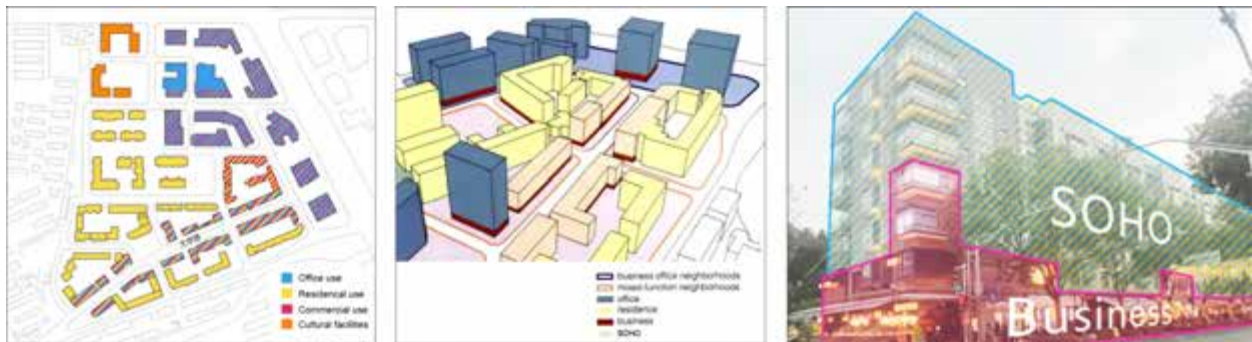


Figure 10. Functional Mix Analysis of Chuangzhifang (Qian, 2017)

5.2.4 Management Model: Flexible Governance through Subdivision

The district employs a decentralized governance model, subdividing the area into seven independently managed gated sub-blocks. Although this approach entails higher management costs, it enhances operational flexibility and security. In addition, these sub-blocks are physically and functionally integrated into a cohesive "super-block" through shared underground infrastructure, effectively balancing spatial openness with governance efficiency.

5.3 Densification: Strategies for Urban Block Transformation

In *Urban Transformations and the Architecture of Additions*, De Arce identifies three primary modes of urban transformation: extensive expansion, demolition-based reconstruction, and spatial densification (de Arce, 2014). In the context of land scarcity and rising demands for urban renewal, spatial intensification has emerged as a key strategy to activate existing urban fabrics and improve spatial efficiency. This section explores the mechanisms of densification at both the urban and residential scales.

5.3.1 Urban-Scale Densification

The fundamental strategy involves the insertion of new blocks into underutilized spatial voids without altering existing buildings, thereby preserving the original urban typologies. Based on Léon Krier's idea of urban space as composed of figure elements such as monuments and landmarks, and ground elements that form the spatial fabric of daily life, (Krier and Thadani, 2009) (Figure 11), this method overlays new "ground" elements onto modernist figure-dominated environments, resulting in a form of additive spatial repair.

For instance, de Arce's intervention in Chandigarh introduces 50m×50m blocks into the administrative district. These additions respect the axial order and iconic architecture while enclosing new communal spaces that enhance livability (Figure 12). Similarly, Rob Krier's interventions in central Stuttgart reinforce street edges and public squares through carefully placed infill (Figure 13), while Léon Krier's work in the Luxembourg suburbs re-establishes block perimeters and fine-grain urban texture, restoring spatial coherence at the human scale (Krier, 2010) (Figure 14).

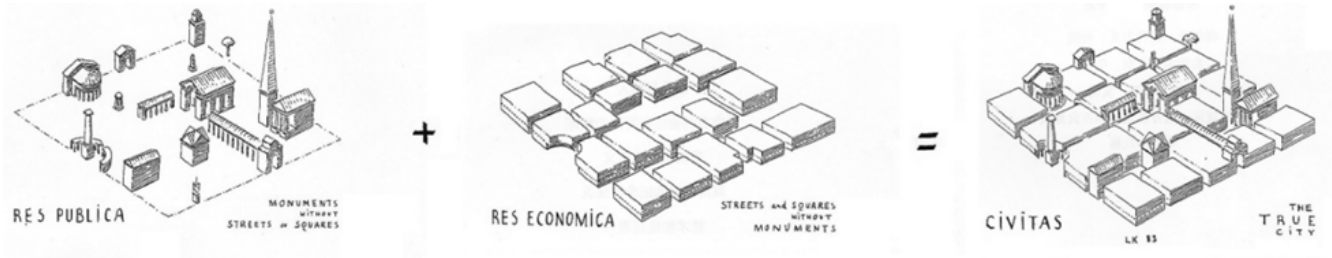


Figure 11. Typological Logic of Urban Spatial Structure (Krier, 2010)

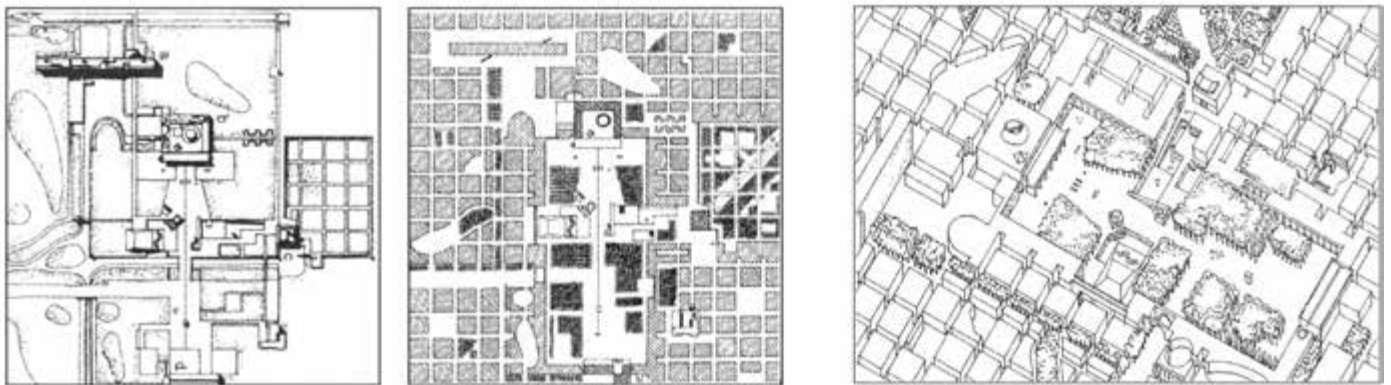


Figure 12. Spatial Densification in Chandigarh New Town (Zhang, 2022)

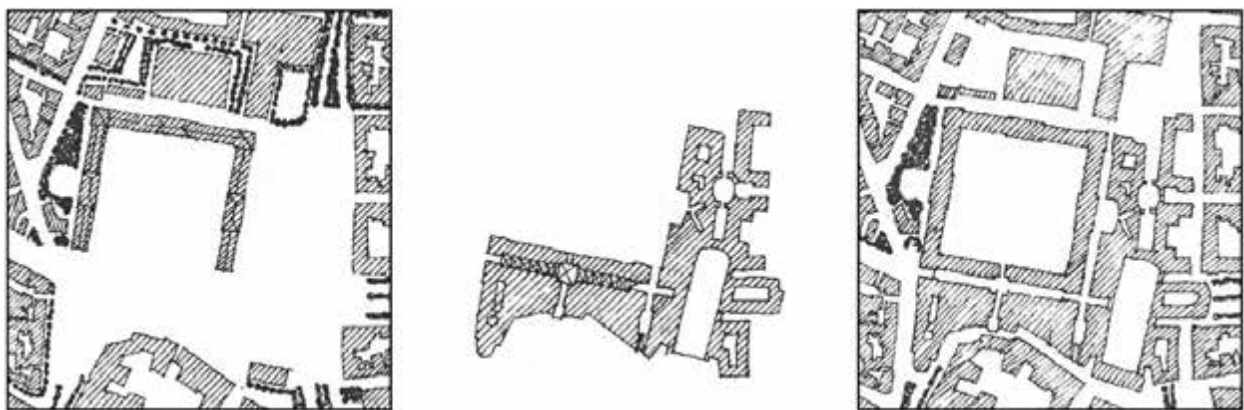


Figure 13. Spatial Densification in Central Stuttgart (Krier and Thadani, 2009)

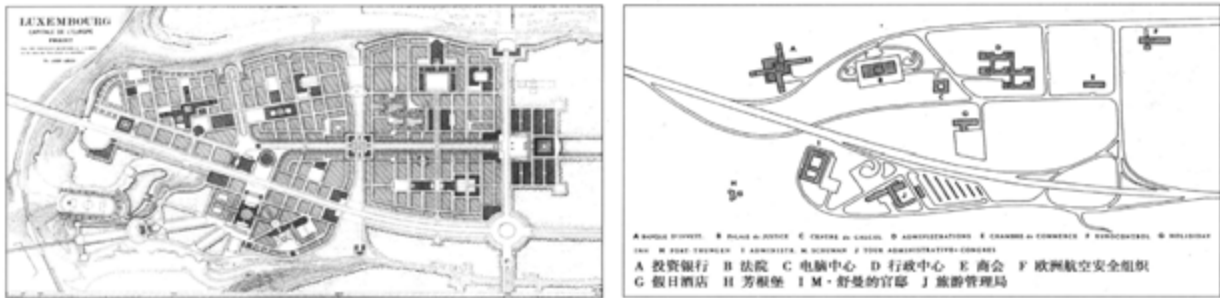


Figure 14. *Spatial Densification in the Suburbs of Luxembourg (Krier, 2010)*

5.3.2 Typological Transformation through Densification

Another strategy involves transforming existing building typologies through new additions. In the case of the Parliament Complex, de Arce's design infills street-facing volumes, converting isolated towers and slabs into a "enclosing block + tower" hybrid form (Zhang, 2022). This typological shift enhances enclosure, scale, and interface continuity, producing a more legible urban form (Figure 15). Such transformation represents a structural redefinition of urban form through densification.

This approach is echoed in Rob Krier's work in Runcorn New Town and Léon Krier's interventions in suburban Florence, where additions create cohesive and human-scaled urban environments through collaborative interplay between new and existing buildings (Figure 16).

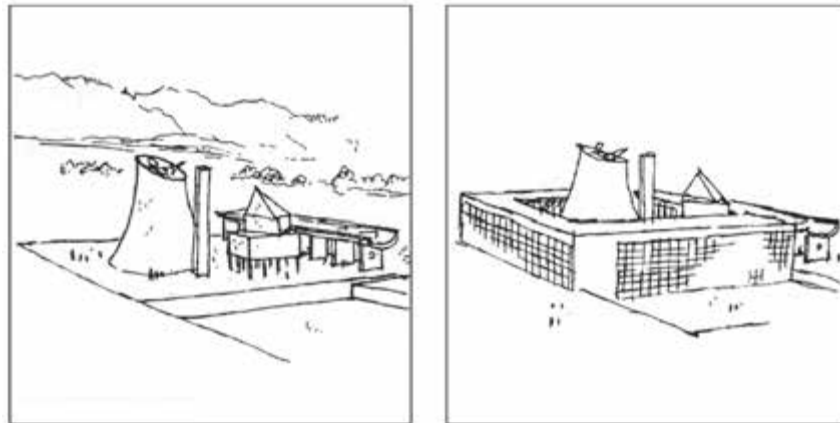


Figure 15. *Transformation of the Parliament Complex Into a Hybrid Form (Zhang, 2022)*

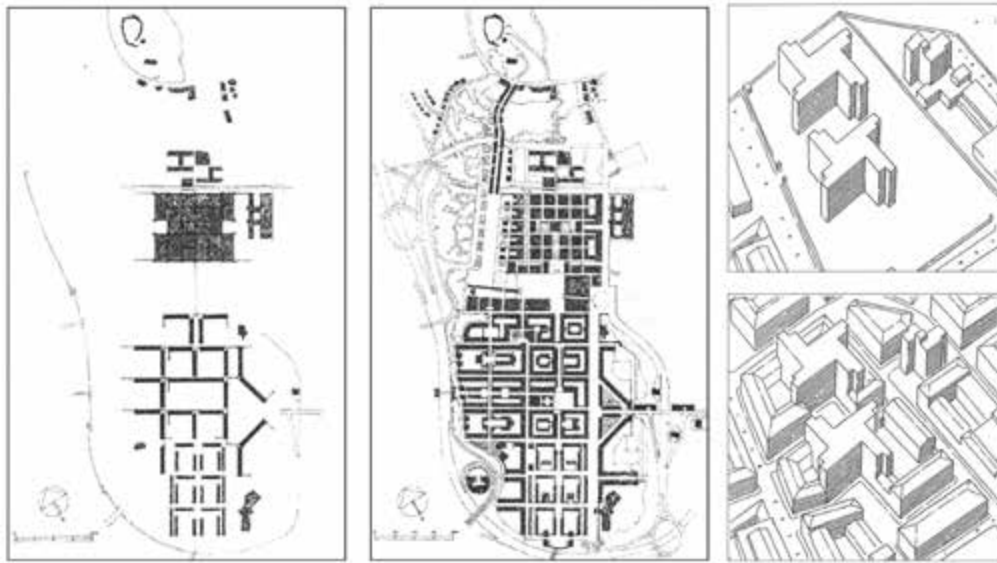


Figure 16. *Densification Strategies in Runcorn New Town (Krier and Thadani, 2009) and Suburban Florence (Krier, 2010)*

5.3.3 Residential Densification: A Prototype

While real-world examples of low-density residential densification remain limited, Léon Krier's experimental proposal for the St. Louis-Laurent Torres neighborhood offers a compelling model. In this scheme, formerly privatized land is re-parceled into traditional urban plots, reducing the public space ratio from 80% to 32% (Krier and Thadani, 2009). New low-rise additions (2–3 stories) are carefully integrated into the existing fabric, introducing housing, gardens, and civic amenities, while repurposing ground floors for mixed uses. This strategy of “small-scale accretions” demonstrates a viable approach to restructuring low-density environments by layering new spatial and programmatic complexity onto largely preserved built forms (Figure 17)

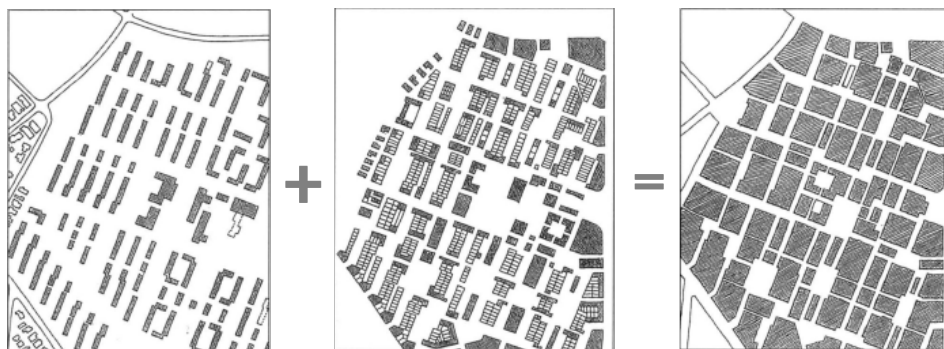


Figure 17. *Spatial Densification of the St. Louis-Laurent Torres Neighborhood (Krier, 2010)*

6. Design Experimentation

Building on the preceding analysis, this study proposes a strategic redevelopment of the core area of New Jiangwan Town. The design focuses on adjusting the scales of urban cells and their interstitial spaces, using spatial densification as a tool to restructure the urban framework and cultivate vibrant, resilient block patterns.

6.1 Three “Basics”

The design framework is anchored in three core aspects—Basic Task, Basic Strategy, and Basic Principle—which establish the foundation for targeted and responsive interventions.

6.1.1 Basic Task: Scale Adjustment

The design intervention addresses scale optimization at both the block and street levels, aiming to improve spatial functionality and social cohesion. At the macro scale, the current superblocks significantly exceed the optimal urban dimensions. Studies suggest that block sizes between 50 and 150 meters per side are most conducive to pedestrian accessibility and everyday convenience in central urban areas (Huang and Sun, 2012). However, all four study plots surpass this range, indicating the necessity of subdividing and reopening existing gated communities.

From a social standpoint, the household scale of residential clusters plays a crucial role in fostering neighborhood cohesion. Psychological research indicates that groups of 5–10 households encourage mutual support, 50–150 households cultivate a sense of belonging, while clusters exceeding 500 households tend to weaken interpersonal ties (Zhang, 2015). With current residential clusters exceeding 400 households, the need for finer subdivisions and more intimate social units becomes evident.

At the street level, the existing road network is characterized by excessive widths that undermine walkability and spatial articulation. The proposed design introduces strategic infill to reduce roadway dimensions, reconstruct fine-grain street interfaces, and enhance overall urban permeability.

6.1.2 Basic Strategy: Spatial Densification

Spatial intensification is the core design strategy. Studies show that vibrant urban districts typically achieve a built density of around 50% (Zhang, 2022), whereas the current average in New Jiangwan Town is only 12.65%, underscoring the need for densification development.

Following principles of spatial hierarchy, the site is divided into zones of differentiated intensity: The southern Wujiaochang node, designated as a city-level core, accommodates high-density, mixed-use development. The Yinxing Road area, identified as a community-level centre, is moderately densified to activate communal functions. The remaining sectors function as basic neighborhood units, subject to limited or deferred interventions. This gradient-based strategy seeks to produce a balanced urban fabric that integrates open space and functional intensity, aligning development with varying urban roles and scales.

6.1.3 Basic Principle: Contextual Adaptation

A critical challenge lies in integrating new interventions within the existing built fabric. The design adopts a strategy of contextual adaptation, in which existing structures inform the alignment, function, and articulation of new additions. Rather than imposing a uniform order, the approach leverages the irregularity of the current fabric to generate spatial variation within a coherent morphological logic. In this way, new and old elements co-produce block structures that are both legible and adaptive.

6.2 Spatial Reconstruction

At the structural level, the design introduces a reorganized framework to reshape the macro spatial logic of the site. To address the traffic and environmental burdens of Yinhang Road posed by the oversized scale, the design introduces a primary “urban vitality loop” that weaves through the site, interconnecting residential clusters. This loop extends westward to Ruida Road, integrating with the existing road network to establish a multi-dimensional street system. Additionally, a north-south ecological corridor is introduced to connect the waterfront edges on both sides of the site, forming a continuous green infrastructure. City-level public nodes are distributed along the primary loop, while secondary community-level nodes are embedded within residential clusters, forming a hierarchically structured public space network (Figure 18).



Figure 18. Overall Spatial Structure Plan

Building upon the structural reconfiguration, the macro-level strategy focuses on optimizing spatial scale and transforming gated communities into open urban blocks. This is achieved by dismantling and reorganizing the oversized, monolithic urban cells, introducing a finer-grained street network (Figure 19).

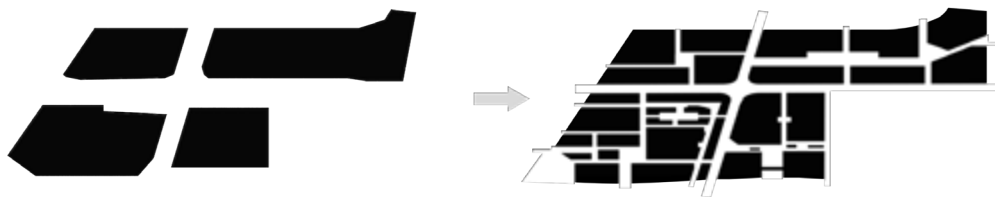


Figure 19. Macro-Level Strategy: Before-and-After Comparison of Open Spatial Morphology

At the micro scale, spatial infill is implemented through strategic insertions of new buildings that engage with existing structures to define new block perimeters and public interfaces. Three primary relationships are identified:

1-Full Intersection: New volumes overlap with existing buildings, often requiring ground-floor adaptation or replacement.

2-Partial Intersection: Including four subtypes—short-side intersection, inner long-side alignment, outer long-side alignment, and interlocking. Short-side contact entails minimal intervention, while the others require context-sensitive ground-floor modifications.

3-No Intersection: Including buffered spacing, enclosure, and juxtaposition, offering the least impact on existing structures.

These relationships are systematically categorized in a typological summary that guides design interventions (Figure 20). Based on these typologies, the design adopts a context-sensitive approach where new 3-4 story buildings are inserted in response to existing conditions. As a result, the district transitions from traditional slab-type blocks to a new hybrid model of "enclosing blocks + towers", enabling dynamic dialogues between new and existing structures in terms of both scale and form.

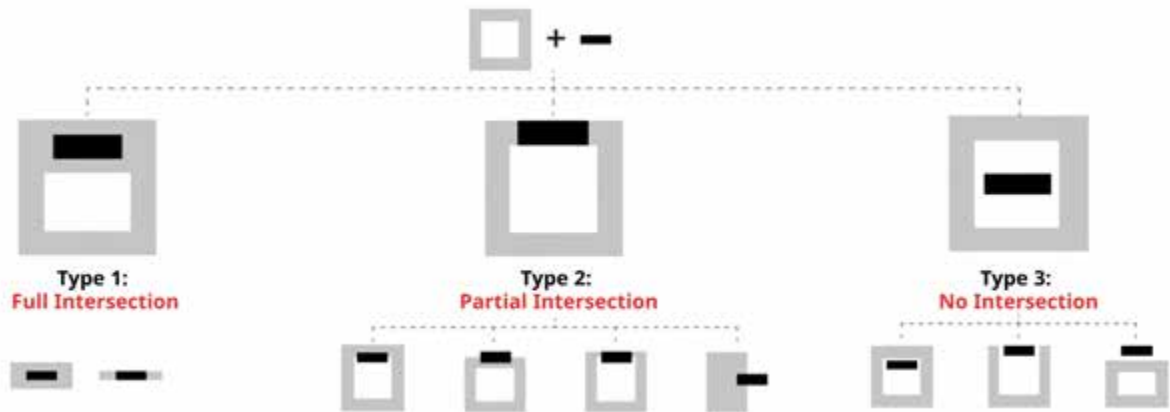


Figure 20. *Typological Summary of Spatial Relationships Between New and Existing Buildings*

The visual transformation of block morphology is illustrated through a series of before-and-after black-and-white diagrams, revealing changes in spatial structure and permeability (Figure 21). Building on a spatial hierarchy of "Plot-Building-Block-Cluster-District," the design introduces a multi-tiered public space system including city-scale nodes, community-scale nodes, and semi-enclosed courtyards embedded within blocks. This framework generates an "inward courtyard, outward street" configuration that transitions gradually from quiet and private to vibrant and public, accommodating diverse behavioral and psychological needs. Additionally, variations in building layout, height, and façade are used to shape and enrich spatial nodes, enhancing the overall experiential quality of the public space (Figure 22).

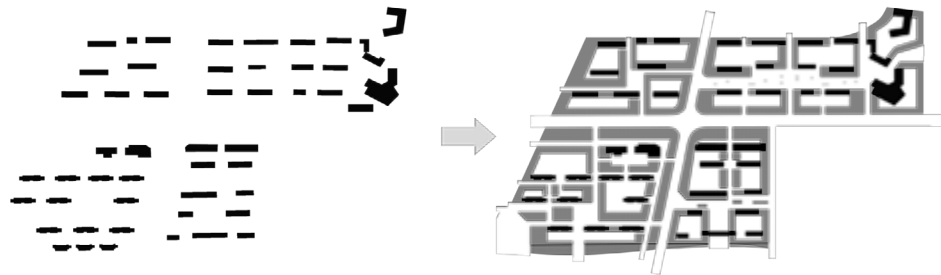


Figure 21. *Before-and-After Figure-Ground Comparison*

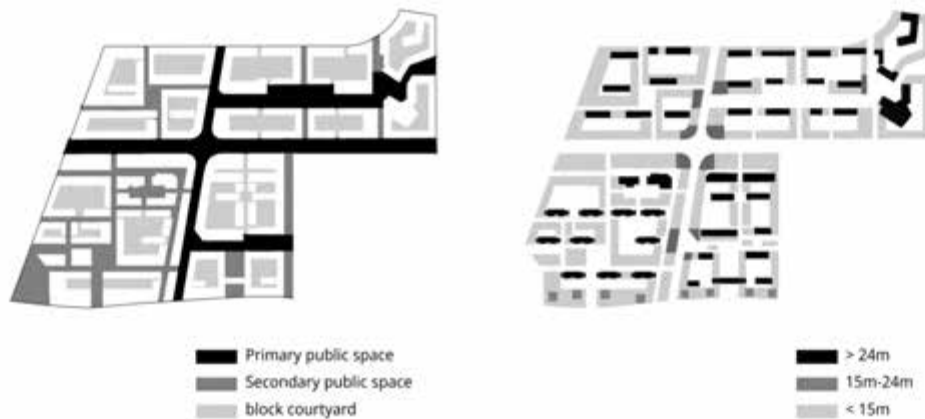


Figure 22. *Public Space Hierarchy Diagram (Left) and Building Height Control Diagram (Right)*

6.3 Traffic Reorganization

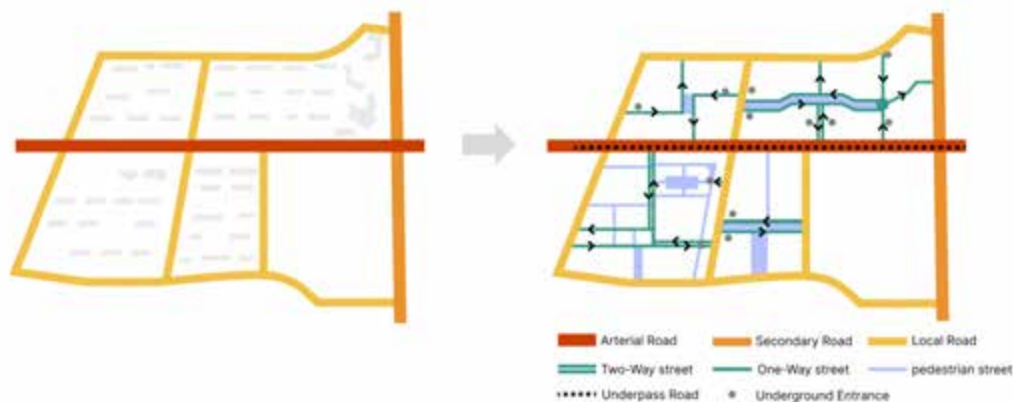


Figure 23. Before-and-After Traffic System Comparison

The reorganization of traffic operates at two levels: dealing with the existing urban road network and designing new intra-block circulation systems. The focus lies in coordinating the internal slow-mobility network with the external vehicular system while maintaining a clear distinction between the two (Figure 23).

For the external system, existing urban roads are retained as the foundational framework. While maintaining the primary traffic function of Yinhang Road, its scale and spatial form are optimized. A partially sunken traffic strategy is employed to redirect a portion of vehicular flow underground, thereby reducing the surface roadway width and significantly improving pedestrian spatial quality.

Internally, the newly introduced circulation system prioritizes pedestrian and low-speed traffic. In contrast to the external arterial roads, internal streets are narrower, consisting primarily of one-way lanes and pedestrian streets, with selective sections upgraded to two-way streets to ensure connectivity. To minimize disruption at points of integration, buffer lanes are added along both sides of major roads, alleviating the impact of the denser internal grid on regional traffic performance.

To further protect the residential environment, the design incorporates traffic-calming strategies, drawing from precedents such as Shanghai's Anting New Town. These include reducing vehicular lanes, introducing curved alignments, implementing one-way traffic patterns, installing roundabouts, and selectively closing intersections, thereby discouraging through-traffic and enhancing neighborhood tranquility.

6.4 Functional Supplementation

To transform the mono-functional residential area into a vibrant urban district, the design incorporates a mix of residential, commercial, and office functions into the newly inserted blocks. Drawing from mixed-use urban residential blocks in cities such as Berlin, where commercial functions generally occupy between 5% and 20% of the gross floor area (with up to 20% in central districts like Mitte and Kreuzberg), the proposed program the new buildings are assigned an approximate distribution of 55% residential, 30% office, and 15% commercial and community services. This ensures a residentially-oriented urban environment while differentiating from the regional commercial centre of Wujiaochang.

Functional layout is carefully aligned with the public space hierarchy. Continuous commercial and office frontages are positioned along the primary loop, forming a vibrant urban corridor comparable to the character of Daxue Road in Chuangzhifang. Community-scale public spaces are framed by smaller retail, cultural, and service facilities that support everyday life within each cluster. Along Yinhang Road, office functions dominate to strengthen its identity as a commercial corridor.

Functionally and spatially, the district adopts both horizontal and vertical integration strategies. A base typology emerges—commercial units at the ground corners, offices at middle levels, and residences above—offering flexible adaptation based on site-specific needs (Figure 24). This layered integration not only enhances daily

convenience and street-level vitality, but also positions the district for a gradual shift toward a more mixed-use, urban character, without compromising its residential identity.

The urban block adopts a both vertical and horizontal mixed-use typology, with a foundational model of "commercial units at the ground corners, offices at middle levels, and residences above" This model is flexible and adaptable to specific needs while maintaining a coherent logic.

Through this integrated approach, the design reinforces New Jiangwan Town's residential character while gradually transitioning it toward a more urban, multifunctional neighborhood.



Figure 24. Functional Layout: Before-and-After Comparison and Vertical Mixed-Use Typology

6.5 Spatial Diversity Strategies

The creation of urban diversity is guided by a balance between spatial order and variation. At the urban design scale, new buildings align with existing structures while introducing articulation through axes, plazas, and T-intersections. These elements generate a rhythm of compression and openness, encouraging interactions across multiple scales (Figure 25).

At the block and cluster level, spatial patterns respond to both function and contextual character. Western clusters adopt inward-facing layouts for residential quietness, while eastern clusters open toward the urban edge to foster vibrancy. Northern clusters favor an ordered and structured layout to ensure clarity, whereas southern clusters use looser, fragmented patterns to create maze-like spatial experiences. These contrasting strategies collectively enrich the spatial texture of the district.

At the architectural level, future interventions will introduce further variation at a finer grain. Designers are encouraged to employ diverse architectural expressions, including pitched roofs, setbacks, arcades, and varied façade treatments, combined with a rich palette of materials. This flexibility supports architectural individuality while maintaining overall coherence, contributing to a layered and engaging urban environment.

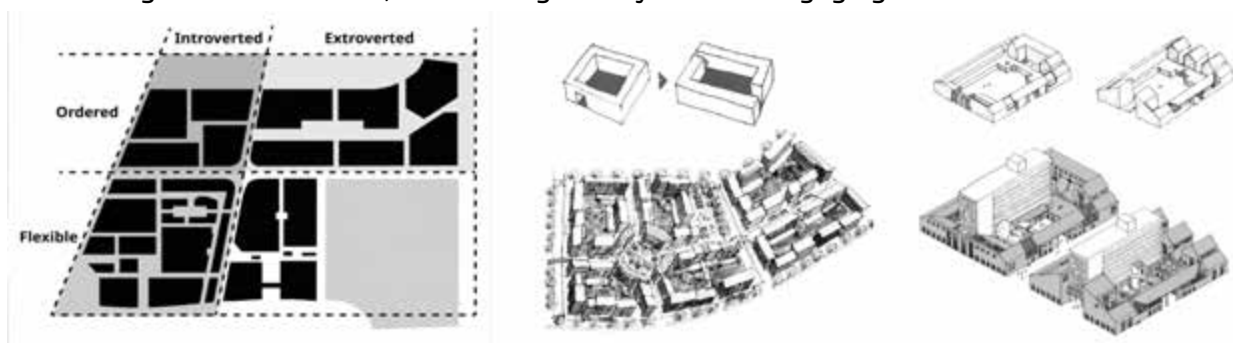


Figure 25. Spatial Diversity Strategies

7. Technical Challenges

The transformation from gated compounds to open communities involves not only physical spatial restructuring but also complex negotiations at the operational level such as land ownership, residential privacy, and socioeconomic equity. This chapter analyzes key technical challenges encountered in the implementation process.

7.1 The Change of Land Ownership

Extending urban streets into residential compounds and adjusting the scale of peripheral roads inevitably requires a reconfiguration of land ownership and plot boundaries. The design must therefore directly address how spatial densification strategies impact plots subdivision and property rights (Figure 26). Two primary approaches are identified:

Approach 1: While the primary loop inevitably subdivides the original parcel, other internal streets remain within existing property boundaries. These streets, though publicly accessible, are not designated as municipal roads and remain under community ownership. This minimizes legal transformation and avoids conflicts with current regulations, but may compromise long-term public governance.

Approach 2 designates all newly introduced roads as urban infrastructure, subdividing parcels into smaller units and requiring more extensive adjustments to land rights. Although more demanding in terms of implementation, this approach offers greater clarity in urban form and block structure. As a forward-looking urban design strategy, the second approach is considered as a more future-oriented and structurally coherent solution.

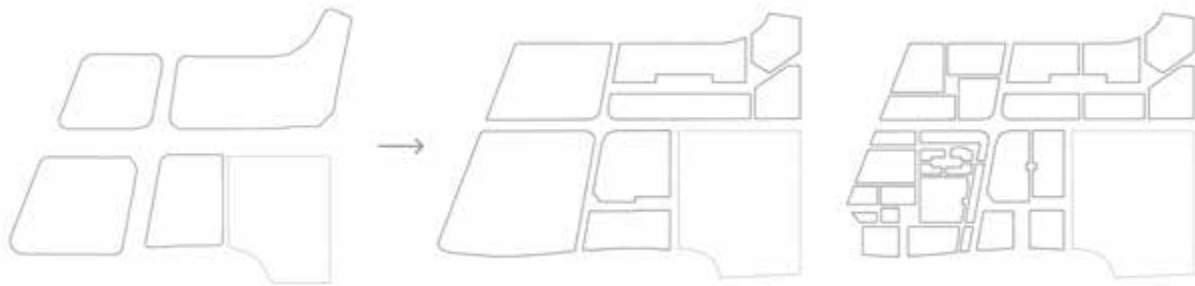


Figure 26. Before-and-After Parcel Subdivision Comparison

7.2 Avoidance: Negotiating New-Old Building Interfaces

While the design is guided by the principle of contextual adaptation, its technical implementation must address potential physical conflicts between new and existing structures, particularly with regard to residential buildings' needs for light and ventilation. To mitigate these impacts, the location and height of new additions are carefully controlled through staggered massing, spatial offsets, and deliberate gaps (Figure 27).

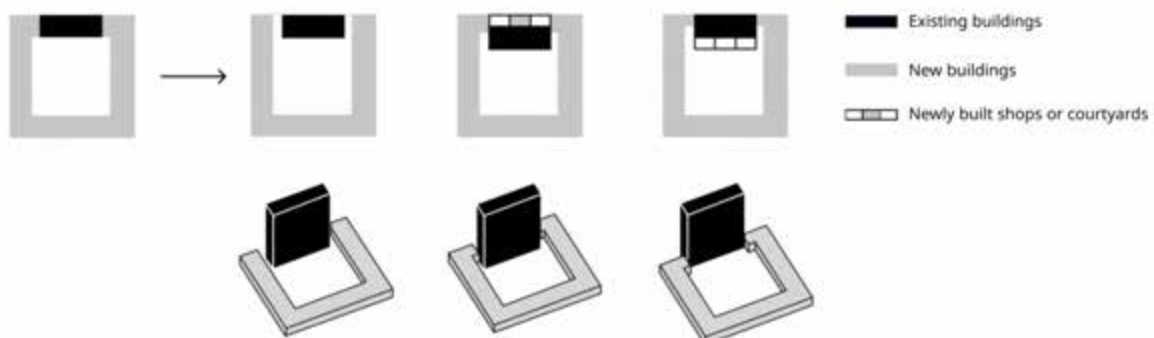


Figure 27. Strategies for Managing Conflicts Between New and Existing Buildings

7.3 Balance: Ensuring Privacy and Safety in Open Communities

To preserve privacy in a more open, mixed-use urban environment, the design incorporates spatial buffers such as building setbacks, ground-floor retail and courtyards (Figure 28). These elements create gradual shifts from public to private space. Although open communities inherently offer less privacy than gated compounds, the improved spatial quality and lifestyle afford greater long-term appeal.

Regarding safety, the scheme follows Jane Jacobs' principle of "eyes on the street." Active ground-floor commercial frontages replace blank compound walls, enhancing natural surveillance. The blocks become the fundamental unit of communal defence, contributing to both social cohesion and environmental security.

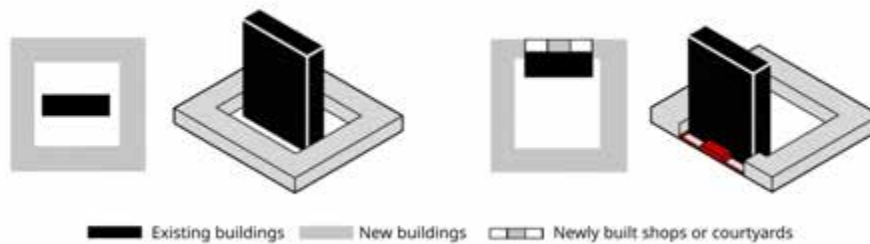


Figure 28. Privacy Enhancement Strategies in Open Communities

7.4 Compensation: Economic Viability and Social Equity

The proposed densification strategies may generate friction through shadowing, view obstruction, or reduced privacy, especially those living on lower floors. It is therefore essential to establish a multidimensional compensation framework. Compensation could be economic or spatial. Economic compensation refers to direct financial reimbursement. Spatial compensation can take the form of private gardens, balconies, or retail opportunities offered to affected residents within the new developments. Additionally, residents may be relocated to high-quality new housing units.

Beyond resident-level responses, a broader framework must define responsibility and benefit: who invests, who builds, and who gains. A public-led, multi-stakeholder renewal model is recommended to manage investment and ensure equitable value distribution. Additional floor area from densification should be used to generate returns that are reinvested locally, forming a closed-loop of value regeneration. This framework underpins not only financial feasibility, but also social acceptance and long-term sustainability.

8. Conclusions

Within the context of China's urban regeneration, this study critically examines large-scale gated residential communities shaped by modernist planning principles, directing the urban design perspective toward spatial quality and sustainable development.

Using New Jiangwan Town in Shanghai as a case study, it employs the concept of urban cells to examine the technical feasibility of transforming closed compounds into open communities. Through scale optimization and functional integration, the study demonstrates the feasibility of this transformation, offering a flexible and operable design framework. The spatial densification approach is shown to have broad applicability in urban regeneration.

Beyond its local context, the study contributes to the evolving discourse on urban renewal in comparable global contexts. It offers insights into redefining urban heritage and reconstructing public life, with strategic implications for Global South cities seeking sustainable approaches to legacy transformation.

Reference

Blakely, E.J. and Snyder, M.G. (1997) *Fortress America: Gated communities in the United States*. Washington, DC: Brookings Institution Press.

Cai, Y. and Xu, K. (2021) *Zaizao Lujiazui [Recreating Lujiazui]*. Shanghai: Tongji University Press.

Cai, Y., Xu, K., Zhang, Q. and others (2018) *Xincheng gaizao zhong de chengshi xibao xiubuzhu — Lujiazui zai*

chengshihua de jiaoxue shiyan [Urban cell mending in new town transformation: A teaching experiment of re-urbanization in Lujiazui]. *Chengshi sheji*, (01), pp.64–73. DOI:10.16513/j.urbandesign.2018.01.009.

Deng, F. (2011) Woguo fengbishixiaoqu yu xifang siyou shequ bijiao yanjiu [Comparative study of Chinese gated communities and Western private communities]. *Chengshi wenti*, (11), pp.2–8. DOI:10.13239/j.bjsskxy.cswt.2011.11.017.

De Arce, R.P. (2014) *Urban transformations and the architecture of additions*. Abingdon: Routledge.

Huang, Y. and Sun, Y. (2012) Jiedao shiyi chidu de panding tezheng ji lianghua zhibiao [Determining features and quantitative indicators of appropriate block scale]. *Huazhong ligong daxue xuebao: Ziran kexue ban*, 40(9), p.8. DOI:10.3969/j.issn.1000-565X.2012.09.022.

International Panel on Social Progress (2018) *Rethinking society for the 21st century: Volume 1, socio-economic transformations*. Cambridge, MA: Cambridge University Press.

Jacobs, J. (2011) *The death and life of great American cities: 50th anniversary edition*. London: Random House Publishing Group.

Krier, L. and Thadani, D.A. (2009) *The architecture of community*. London: Island Press.

Krier, R. (2010) *Town spaces: Contemporary interpretations in traditional urbanism*. Basel, Switzerland: Birkhäuser.

Miao, P. (2004) Chengshi shenghuo de aizheng — fengbishixiaoqu de wenti ji duice [The cancer of urban life: Problems and countermeasures of gated communities]. *Shidai jianzhu*, (5), pp.46–49. DOI:10.3969/j.issn.1005-684X.2004.05.011.

Portzamparc, C. de (2015) Open block — Taking Les Hautes Formes and Massena New District as examples. *Urban Space Design*, (Z2), pp.38–41.

Qian, C. (2017) Daxuelu shinian yanbian dui jiedao fuxing de qishi [Ten years of transformation of University Road and its implication on street revitalization]. *Shidai jianzhu*, (6), p.7.

Sha, Y. (2010) *Zhongguo chengshi de xintiandi [New Xintiandi in Chinese cities]*. Beijing: Zhongguo jianzhu gongye chubanshe.

Wang, B. (2023) Kaifangshi zhuzhai xiaoqu de sheji tansuo [Design exploration of open residential communities]. *Juye*, (6), pp.106–108. DOI:10.3969/j.issn.2095-4085.2023.06.037.

Wang, L., Wang, S. and Huang, S. (2023) Gongneng hunhe xing shequ huwai gonggong kongjian de sheji celue — yi Shanghai Yangpuqu Daxuelu Chuangzhi SOHO weili [Design strategies for outdoor public space in mixed-use communities: A case study of Chuangzhi SOHO on University Avenue, Yangpu District, Shanghai]. *Guihuashi*, 39(10), pp.105–112.

Wu, Z., Yang, L., Xu, K., Zhang, J. and Antwi-Afari, M.F. (2021) Key factors of opening gated community in urban area: A case study of China. *International Journal of Environmental Research and Public Health*, 18(7), p.3401.

Yin, X. (2007) *Gongneng hunhe xing shequ sheji yanjiu [Research on mixed-use community design]*. PhD thesis. Tongji University.

Zhang, P. (2015) Mansu jiedao de tezheng yu celue — Quyang xincun gaizao sheji yanjiu [Characteristics and strategies of slow streets: A design study of Quyang neighborhood renewal]. Master's thesis. Tongji University.

Zhang, Q. (2022) Jiyu midi yu leixing de dangdai Zhongguo xincheng zhongxin qu zhuanxing yanjiu — yi Shanghai Lujiazui weili [Research on transformation of contemporary Chinese new town centres based on density and

type: A case study of Lujiazui, Shanghai]. PhD thesis. Tongji University.

Zhuo, J., Wu, Z. and Xu, Y. (2017) Luquan gongxiang daoxiang de kaifang jiedao guihua sheji celue [Open block planning and design strategies oriented by shared right-of-way]. Guihuashi, 33(7), pp.19-25.