Architectural Model Design Research Based on Social Morphology Mapping

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Abstract. This study aims to explore the issue of declining social mobility in China, against the backdrop of China's economic development since the initiation of reform and opening-up in 1978. This study introduces an innovative urban spatial concept that vertically distributes three major social strata within a building, aligning them with different functional spaces. By closely integrating production resources and factors of production, this study regulates workers' labor time on the one hand and encourages them to maintain substantial purchasing power on the other hand. This novel perspective constructs a distinctive urban landscape. Since the initiation of economic reforms and opening up in China, the economy has experienced vigorous growth. However, social mobility has gradually decreased. Against this backdrop, this study takes the three major social strata as its foundation and reimagines the spatial arrangement within cities. By integrating social strata with functional spaces, the spatial manifestation of various strata's status and roles is the goal. Meanwhile, the introduction of production factors guides the behavior of workers. On one hand, labor time is regulated to seek more production resources. On the other hand, workers are encouraged to maintain higher purchasing power. However, it's worth noting that the current notion of "humans should be doing the same things" is gradually evolving into a utopian aspiration. Through this study, the aim is to encourage individuals to reconsider the connection between social mobility and class, along with exploring ways to establish a more inclusive and fair future within urban environments.

Keywords: Urban Spatial Innovation; social mobility; utopia.

1. Introduction

The concept of social class rigidity refers to the lack of mobility between classes, where the pathways from lower social strata to higher ones become narrower or even blocked. The entrenched stakeholders, fearing that the deepening reforms would jeopardize their vested interests, have been tirelessly obstructing the progress of reform. This obstruction has intensified the resistance against upward mobility for marginalized and impoverished groups, further accentuating class divisions and exacerbating the polarization between the haves and have-nots. Consequently, social stratification has become increasingly distinct, leading to the visible solidification of societal classes [1]. Acknowledging the existence of social classes does not necessarily imply class confrontation or even violent revolution. Under the conditions of building a harmonious society, class conflicts will evolve towards class cooperation [2]. From the perspective of architectural design, this study focuses on exploring the profound impact of socio-morphological changes on architectural space. As time goes on, the feedback effects triggered by the transformation of architectural space have various impacts on society.

This paper takes the starting point of China's reform and opening up, delving into its historical context. Its aim is to employ Marxist theories regarding the relationship between producers and means of production, in conjunction with contemporary social formations, to explore the construction of architectural space and its forms. The historical context of the era will be utilized to examine how societal changes have influenced architectural spaces. Drawing upon the analytical framework of Marxism, this study will explore the correlation between societal progress and architectural structures. Furthermore, this study will build upon the diverse range of activities conducted by individuals within architectural spaces to anticipate the future trajectories of societal forms. Through the examination of interactions and behaviors among individuals within architectural settings, insights can be gained into the potential trajectory of future societies. The exploration of how alterations in architectural spaces

can mutually impact societal advancement allows for the development of more accurate anticipations regarding the shapes future societies might take.

Through this series of research methods, the objective of this paper is to gain a profound understanding of the interrelationship between social forms and architectural spaces and to reveal the reciprocal impacts of the passage of time on both. The significance of this study lies in providing a strong reference for future architectural design and social planning, thereby fostering the ability to better address the challenges and opportunities brought about by societal changes in the future.

2. Evolution of Social Forms and Economic Reform

2.1. Historical Background of Reform and Opening Up

As the early 21st century dawned, China's economic and social structure underwent profound transformations. Leveraging the rapid industrialization process, the Chinese populace emerged from poverty, with the majority of individuals achieving upward mobility, thereby manifesting a significant degree of social mobility [3]. Nevertheless, despite this relatively high level of social mobility, the probability of transitioning from lower-income strata to higher-income strata in China remains comparatively low. Recognizing the existence of class does not necessarily imply class conflict or even violent revolution. Under the conditions of building a harmonious society, class conflicts will evolve towards class cooperation [4]. This circumstance to a certain extent reflects the existence of class disparities, which are commonly perceived to gradually manifest as productive forces attain a certain stage, leading to the gradual marginalization of laborers within the distribution system.

2.2. Development Post-Reform and Opening-Up

Since the initiation of economic reforms in 1978, China has undertaken a series of pivotal steps, with the primary focus being a profound overhaul of its economic system. Initially directed at dismantling the planned economy system that was previously in place, these reforms were aimed at transitioning towards a socialist market economy. During the initial phases of reform, the government implemented policies that allowed a select portion of the population to reap early benefits, in a well-orchestrated effort to steer the overall societal development. The number of entrepreneurs composed of private business owners and individual merchants is continuously growing [5]. This strategy of "prosperity leading to poverty alleviation" gradually took effect and yielded remarkable results. In a relatively short span of time, the national economy achieved significant breakthroughs, marking a qualitative leap forward. A minority accumulated substantial wealth, swiftly advancing towards affluence.

As the tertiary sector gradually emerged, the non-public sector of the economy experienced rapid growth, facilitating the more comprehensive exploitation and utilization of various resources. This phenomenon engendered diverse employment models and lifestyles, concurrently giving rise to a coexistence of various income distribution methods. During this period, social mobility remained at a relatively high level. While the economy progressed, there arose a necessity to further establish equitable conditions to ensure sustainable prosperity and comprehensive advancement of society.

Since the initiation of economic reforms and opening-up in China, the economy has witnessed robust growth [6]. However, social mobility has gradually weakened. Today, China's economy has entered a phase of high-quality development, with the process of new urbanization accelerating continuously and social mobility on the rise. Yet, the spindle-shaped social structure has not been fully realized, as the majority of the population still occupies middle to lower socioeconomic positions.

3. Architectural Model Design and Response to Societal Morphology Mapping

3.1. Application of Social Morphology Mapping in Architectural Model Design

Taking reference from Karl Marx's "Capital," the discourse vertically divides the entire building into three major strata: "Capitalists," "Owners of Means of Production," and "Proletarians," each equipped with correspondingly inferred functional spaces. The lower stratum residents contribute significantly to the overall productivity of the building, engrossed in their labor activities. The corresponding spatial layout is relatively uniform, meeting the basic needs of residents on each floor, including "bedrooms," "office areas," "cafeterias," and "public restrooms." The spatial arrangement strictly adheres to a grid-like pattern, facilitating efficient management and accommodating a higher population density. The increase in population and workforce is directly proportional, evident in the rising number of entrances, indicative of the elevation in production means [7].

The middle stratum inhabitants cultivate a cycle of intellectual and emotional value within the building, maintaining stable functionality. Concurrently engaged in their own work, they also supervise the labor efficiency of the lower stratum workers. With a considerable share of production resources managed by the lower stratum, they possess ample leisure time beyond work. Consequently, their living spaces are designed for relative comfort, featuring increased green areas and recreational facilities compared to the lower stratum. The upper stratum residents wield control over the entirety of the building's resources. Their living spaces exude a texture devoid of regularity, instead emphasizing freedom, individuality, and a heightened sense of privacy. Their lifestyle is uniquely personalized. The pursuit of further economic growth is inevitably linked to the sense of well-being in life. Significant reductions in wealth disparities and discrimination play a crucial role in diminishing residents' subjective sense of happiness, with variations in green spaces serving as an indicator of varying levels of resident happiness [8]. The color red symbolizes the extent of green areas owned by each stratum.

The construction process of a building can be likened to the formation of social hierarchies. Initially, a simple cuboid structure emerges within the cityscape, inconspicuous amidst the towering edifices surrounding it, neither overly attention-grabbing nor overly conspicuous. Nestled within the heart of this structure lies a distinctive entity, initially serving as both the fire safety layer for the skyscrapers and a source of energy for the entire edifice. As time passes, resources gradually converge from the periphery of the structure toward its core, forming what can be termed the resource layer. To equitably and justly allocate these resources, societal regulations are devised and adhered to, wherein individuals engage in labor exchange to obtain means of production. Resources ascend progressively to the apex of the building and then cascade through various tiers to the base, culminating in the completion of the entire building.

In this metaphor, capitalists bear semblance to the architects and controllers of the structure, manipulating abstract labor to govern concrete labor, and wielding the appreciation of exchange value to steer the production of use value. Analogous to the resource layer of the building, capitalists dictate the production relations of the entire edifice, possessing the means of production and harboring an interest in the surplus value embedded within these assets. Conversely, wage laborers are focused on their own production value, earning remuneration through their labor, mirroring the interdependence of different strata within the building, thus engendering a complex system of production.

Hospitals, as a concept of resources, are divided into two tiers, distributed within the living environments of the "owners of means of production" and the "employed workers" classes. As a concrete manifestation of the abstract concept, the allocation of hospital resources occurs in an environment characterized by a triangular hierarchical distribution, forming an inverted triangular distribution in spatial terms. When examined within the specific spaces of each class, hospitals for the "employed workers" class feature an abundance of repetitious and redundant spaces, with many rooms predominantly utilized for bed storage. On the other hand, the medical facilities for the "owners of means of production" class exhibit a greater diversity and personalization in their spatial layout.

The parliamentary institution, as a concept of power, is divided into the upper house and the lower house. Vulnerable groups are a unique product of societal transition periods, and addressing their political participation issues holds significant practical significance. However, limitations stemming from their socioeconomic status, information access, and educational levels restrict both the breadth and depth of their political engagement. Therefore, during times of societal transition, it is of great importance to explore ways to expand the political participation of vulnerable groups [9]. Upper-class citizens formulate and enact rules through the upper house, which are then disseminated downwards through various levels. The transfer of rules to the lower house is more inclined towards implementation and repression against the lower-class residents. Consequently, the futility of residents' protests gives rise to the emergence of religious spaces.

Schools, as a concept of aspiration, thread through the buildings. Residents from various social strata aspire to achieve class mobility through education. The younger generation, equipped with high-quality education, accumulates abundant human capital, including knowledge, skills, experience, and social abilities. This accumulation of human capital not only enhances their competitiveness in the job market but also aids in adapting to the ever-changing economic landscape. They are more likely to access higher-level career opportunities, thereby achieving personal growth and perpetuating their family's social status. Although class disparities impact access to educational resources, the acquisition of knowledge is not rendered futile. Acquiring more knowledge not only elevates one's social status but also provides access to more productive resources.

The economic base influences the superstructure; the living spaces of capitalists become more privatized and personalized. Cross-class architecture becomes more prevalent, and the living environment remains relatively insulated from external influences.

4. Case Study and Design Strategy of Architectural Models

4.1. A Comparative Analysis of Representative Case Studies in Industrial Engineering Conferences

Social Morphology Mapping refers to the concept of how factors such as social structure, values, and power dynamics are reflected and manifested in architectural forms. The concept of panoramic prisons exemplifies the significance of social morphology mapping in architectural and spatial design.

Modern penal systems generally measure the severity of punishment based on the duration of imprisonment. This gradient is still somewhat abstract, relying on human perceptions and experiences. It is an approximate and rough approach, although Bentham ardently sought to quantify it, attempting to create a precise hierarchy for criminal behavior and punishment design, akin to a ruler for measuring conduct and penalties [10]. Panoramic prisons represent a distinctive prison design aimed at achieving "panoramic" observation within the prison by establishing unobstructed lines of sight between various sections. This design emphasizes extensive surveillance of inmates by correctional authorities in terms of spatial layout. However, this design also triggers a series of concerns related to privacy, human rights, and psychological well-being, thereby reflecting the impact of social morphology on architectural forms.

Panoramic prisons embody social morphology mapping in the following aspects:

Power Dynamics and Control: The design of panoramic prisons highlights the power dynamics and control mechanisms within the prison system. Correctional authorities can easily monitor every action of inmates, conveying the strict control and management exerted by the prison system over prisoners.

Social Values and Notions of Punishment: The design of panoramic prisons reflects societal notions of punishment for offenders. By subjecting inmates to continuous surveillance, the design communicates a zero-tolerance attitude toward criminal behavior in society.

Privacy Rights and Human Rights Issues: The design of panoramic prisons raises concerns about the privacy rights and human rights of inmates. Prolonged surveillance may lead to psychological

stress and health issues among inmates, prompting humanitarian considerations in the treatment of offenders.

Spatial Dynamics and Social Interactions: The design of panoramic prisons can also reflect social interactions among inmates. Unobstructed lines of sight may facilitate interactions among inmates but could also intensify conflicts between them.

Projection of Social Issues: The presence of panoramic prisons projects societal issues such as crime, punishment, and rehabilitation.

As a reflection of social concerns, prisons in their architectural form showcase society's attitudes and solutions to these issues. In the case analysis, the panoramic prison was selected as a representative case to showcase the application of social morphology mapping in architectural design. This case has revealed that architectural model design encompasses more than just spatial organization; it also embodies social structures, power dynamics, and value systems. The design strategy of the panoramic prison reflects societal views on criminals, notions of punishment, and aspects of social interaction, thus echoing the expression of social issues in architectural design.

5. Conclusion

Through this study, an in-depth exploration has been conducted into the influence of social morphology mapping on architectural model design, as well as innovative architectural design centered around the theme of social mobility in the context of China's reform and opening-up. This research aims to re-conceive the spatial layout within the city, to investigate the vertical distribution of different social strata within buildings, and their organic integration with functional spaces, thereby reflecting the evolution of social morphology. By incorporating Marxist theories of producer-product relations and linking them with the current social context in China, a multidimensional urban scenario has been creatively constructed.

While this research has achieved certain accomplishments in exploring the impact of social morphology mapping on architectural model design, there are still aspects worthy of further investigation and development. Firstly, an in-depth study could delve into the long-term effects of different social morphologies on architectural model design, exploring how architectural spaces evolve and adapt to societal changes across various historical periods and cultural contexts. Secondly, by incorporating more practical cases, a deeper exploration of the manifestation of diverse social issues in architectural design could enhance understanding of the diversity and complexity of social morphology mapping. Furthermore, considering the significance of sustainable development, future research could approach the subject from a sustainability perspective, investigating how social morphology mapping can align with green building and sustainable design principles, thus contributing to urban sustainability.

In summary, by continuously deepening the research on the relationship between social morphology mapping and architectural model design, it can provide valuable references for future urban planning and architectural design, thereby promoting societal progress and spatial innovation.

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