Remodeling Community Space: Research on Inclusive Development of Public Space in Old Community

He Lei[1,a,*]

[1]Gold Mantis School of Architecture, Soochow University, Suzhou, China
[a]1065557351@qq.com
*Corresponding author

Abstract: *With the continuous advancement of urbanization, the inclusive development of public space in aging communities has become the key to improving residents' quality of life and promoting harmonious coexistence in the community. This article reviews the research progress on the inclusive development of public space in urban aged communities and analyzes the current research themes and hotspots, including residents' participation, age-friendly design, spatial resilience, as well as the impact of policy changes on inclusive development. The article discusses the development trend of inclusive development of public space in urban aged communities, including the multiple participation model, intergenerational interaction and spatial justice, the combination of residents' autonomy and inclusive design, and the importance of ageing and resilience enhancement. Finally, the article presents conclusions and expectations, suggesting the adoption of participatory design, attention to spatial flexibility and multifunctionality, enhancement of environmental quality, and the use of big data and smart technologies in community transformation in order to realize the effective transformation and sustainable development of public spaces in aging communities, and to promote harmonious interactions among social groups.*

Keywords: *Aging communities; Public space; Inclusive development; Community renewal*

1. Introduction

Older communities are an important part of urban renewal, which involves the well-being of hundreds of millions of residents, most of whom are aging, mobile, low- and middle-income groups, which is a manifestation of the inclusive development of the city, and at the same time puts forward the specific requirements of providing a livable environment for the abovementioned groups[1]. However, as the basic living unit of the city, old neighborhoods are generally characterized by high building density and high population density. However, as the basic living unit of the city, old communities are generally characterized by high building density and population density, and their public space is characterized by the contradiction between scarcity of resources and inefficient utilization, and the diversity of the population to be served and the limited number of groups actually using the space.[2-3] It is difficult to satisfy the daily needs of the diversified groups of residents, which reveals the insufficiency of inclusiveness of the old communities and its main crux.

2. Research Topics and Focused Hot Spots

The inclusive development of public space in older urban communities refers to the process of urban renewal that focuses on the social and physical attributes of community public space, meets the needs of different groups and promotes harmonious coexistence within the community. This process emphasizes resident participation and demand satisfaction, and improves the quality of life and sense of well-being of residents by improving the public environment, upgrading the quality of facilities, and enhancing spatial accessibility and usability in older communities. In addition, inclusive development involves equity and parity in public space to ensure that all residents, regardless of age, gender, race, and economic status, have equal access to the services and benefits of public space. The sustainable development of public space can be achieved by taking into account the historical and cultural background of the community, the needs of the residents, the spatial characteristics and other factors.

In this paper, a cross-combination search was conducted on different categories of search terms, and Web of Science was selected as the literature database to search, and the relevant research literature in the last 15 years up to August 2024 was collected. After several screenings and additions, 582 documents with high relevance to this study were finally selected respectively, and the articles were analyzed by cluster analysis (see Fig. 1) and timeline spectrum analysis (see Fig. 2).
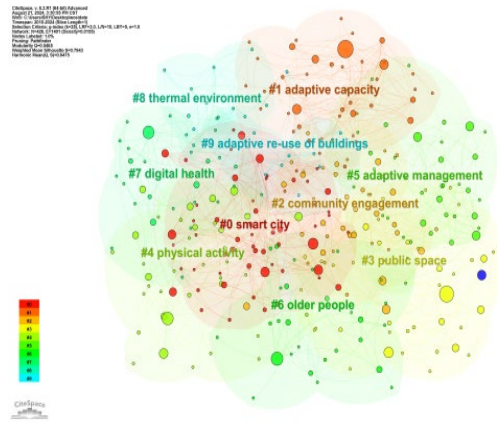

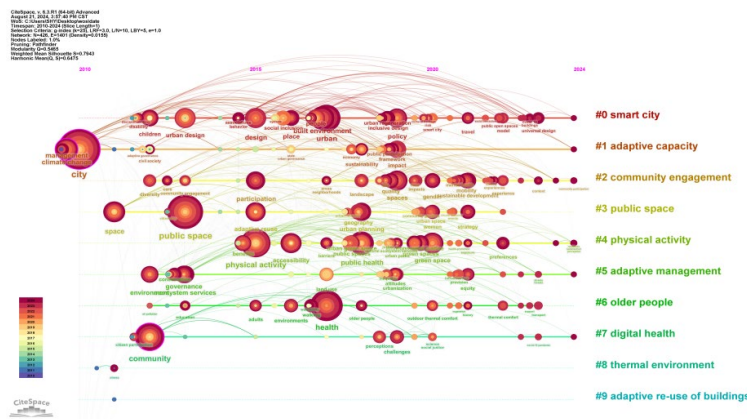*Figure 1: Literature cluster analysis*

Figure 2: Spectral analysis of the literature timeline

2.1. Research themes

In the study of inclusive development of public space in urban old communities, the research themes in recent years have focused on three aspects, namely, residents' participation, ageing-friendly design and spatial resilience, which are reflected as follows:

(1) Resident participation: resident participation is an important factor in enhancing the vitality of community public space. Encouraging residents to take the initiative to participate in community governance not only enhances their sense of belonging, but also promotes the rational use of public space. The introduction of the mechanism of residents' opinions in community governance can make the design and management of public space more in line with the actual needs of residents. This mode of participation, through the establishment of regular feedback mechanisms and volunteer activities, can promote residents to have more say in the use of space and help to improve the quality of community life.

(2) Adaptive design: Adaptive design focuses on the provision of safe and convenient public spaces for the elderly, with the aim of enhancing their quality of life. With the aging of the population, communities should focus on the construction of barrier-free facilities and the adaptation of the environment by optimizing the spatial layout and providing facilities suitable for the elderly in order to effectively meet the living and social needs of this group. It is important to note that adaptive design should not only focus on the basic needs of older persons, but also advocate intergenerational interaction, so that integration between residents of different age groups in the community can be truly realized.

(3) Spatial resilience: Spatial resilience has become increasingly important in the context of

responding to climate change and emergencies. In this process, by analyzing the adaptive and restorative capacity of community public spaces in the face of natural disasters and social change, infrastructure can be optimized, and green space and drainage systems can be enhanced, thereby improving the community's ability to cope with crisis situations. In addition, the establishment of mutual aid networks and neighborhoods can help to strengthen support and cooperation among residents during emergencies, further enhancing the overall resilience of the community.

2.2. Research Focus Hot Spots

In recent years, the inclusive development of public space in older urban neighborhoods has gradually become a core topic of academic research. This trend reflects that in response to complex issues such as differentiated social development and population aging, public space design needs to pay more attention to the diversity of functions and the dynamic adaptation of residents' needs.2023 Lu Wenzheng pointed out in his study Community Renewal from the Perspective of Socio-Spatial Theory that the traditional single governance model cannot effectively deal with the phenomenon of mismatch in the functions of public space, therefore, promoting the synergistic governance of multiple subjects has become a key strategy to solve this problem[4]. Therefore, the promotion of multi-actor collaborative governance has become a key strategy to solve this problem.

(1) The inclusive development of community public space emphasizes the importance of residents' participation: studies have found that through bottom-up participation mechanisms, residents' voices and needs can directly influence the design and management of public space, and enhance the suitability and efficiency of space use. Thus, dynamic feedback from residents not only helps to adjust the function of the space, but also promotes community cohesion and a sense of belonging.

(2) Changes at the policy level have contributed to the process of inclusive development: in its renewal strategy, the government has placed greater emphasis on synergistic cooperation with the market and self-organization, striving to achieve a balance in the allocation of resources and the distribution of benefits. This multi-body governance structure can better adapt to the complexity of the community, so that the management and services of public space can be closer to the actual needs of residents.

(3) The adaptive development of public space is not only reflected in the diversification of functions, but also in responding to the challenges brought about by social change. For example, with the advent of an aging society, the design of public space needs to take into account the needs of different groups of people, especially the accessibility and convenience of the elderly. This requires not only the transformation of spatial structures, but also a comprehensive assessment and reconstruction of social services and support systems.

3. Analysis of the Development Trend of Inclusive Public Space in Urban Communities

3.1. Research on multiple participatory models for the inclusive development of public space in older urban neighborhoods

In recent years, research on the inclusive development of public space in older urban neighborhoods has gradually deepened. For example, 2024, Lai Runxia et al.'s analysis of the evolution of New York's public housing community shows that the community is gradually entering the stock renewal stage after experiencing comprehensive incremental construction, facing problems such as spatial decay and the lack of residents' sense of identity. Meanwhile, by exploring the inclusive design in the construction of barrier-free environment in Guangzhou, Zhang Yongyu and Xiaoxin pointed out that the optimization of infrastructure and accessible paths should be focused on in order to enhance the accessibility and functionality of the old community. In addition, Yan Shuiyu et al. proposed the strategy of "stringing Yuzhong, integrating communities, and touring buildings" in their study of the Baixiang Street neighborhood in Chongqing, and showed that internal and external connections and public participation should be combined to overcome the functional lag and spatial disconnection. It is found that the development trend of inclusive public space in old urban neighborhoods is shifting to a multi-level and multi-subject participation model. Therefore, it is suggested that future research and practice should pay more attention to the actual needs of residents, with a view to realizing the harmonious and sustainable development of community environments.

3.2. Research on Public Space Renewal Strategies for Older Communities Facing Intergenerational Interaction and Spatial Justice

In 2024, Li Xiaoyun et al. proposed that intergenerational interaction and social integration should be promoted through the integration of plazas, parks, streets and inter-house spaces in order to promote intergenerational interaction and social integration by analyzing the all-age renewal strategy of Liyuan West Community in Nanchang City by analyzing the all-age renewal strategy of the Liyuan West Community in Nanchang City in their study All-Age Friendly Community Perspective--Taking Liyuan West Community in Nanchang City as an Example[5]. This study suggests that multiple shared spaces can fulfill the needs of intergenerational interaction and social integration. This study shows that multiple shared spaces can meet the needs of different age groups. In addition, Zhu Ying et al. analyzed the performance of public space in Guangzhou's old urban areas from the perspective of spatial justice in the article "Evaluation of Public Space Performance and Design Response in Older Communities under the Perspective of Spatial Justice--Taking Guangzhou's Old Urban Areas as an Example ", and pointed out that there are duplications and imbalances in the spatial layout, and suggested that precise assessments should be made to address the needs of disadvantaged groups, such as the elderly and the young children[6]. It is suggested that the needs of vulnerable groups such as the elderly and young children need to be accurately assessed.

3.3. Analysis of the Combination of Resident Autonomy and Inclusive Design in Public Spaces in Older Communities

In 2022, Cheng Chao et al. analyzed the construction of public space system in old communities based on the perspective of residents' autonomy in Residents' Autonomy Perspective under Public Space System Construction in Old Communities, pointing out that the enhancement of community vitality relies on the active participation of residents and the interaction of social forces[7]. This mode of governance not only enhances the residents' sense of belonging to the public space, but also promotes the inheritance and innovation of community culture. In addition, Chen Ting analyzes the current situation of public green space design in her study "An Analysis of the Application of Inclusive Design for Public Green Space in Older Neighborhoods" and proposes that environmental sustainability and fairness can be achieved by enhancing the use experience of disadvantaged groups through inclusive design. Thus, the inclusive development of public space in old neighborhoods should emphasize the combination of residents' autonomy and inclusive design in order to form a multifaceted and inclusive spatial system, which can effectively improve the quality of community life and social connectivity.

3.4. Inclusive Design Analysis of Aging and Resilience Enhancement in Public Spaces of Older Communities

In 2021, Cui Likun, in her study "Study on Ageing Retrofit in Older Communities ", analyzed the public environment, service facilities and residential units in older communities, pointing out that attention should be paid to the needs of the elderly, and based on this, put forward targeted retrofit strategies aiming to enhance the utilization rate and comfort of public space. In addition, Sun Li and Tian Li explored the spatial resilience of older communities in Spatial Resilience Enhancement Strategies for Older Urban Communities Based on Resilience Characteristics, indicating that adaptability should be enhanced in infrastructure construction and spatial structure optimization to cope with the risks posed by climate change[8]. Together, these two papers point out that inclusive design should not only focus on adaptability for older people, but also enhance community resilience in the face of external challenges. Taken together, the inclusive development of public space in older urban communities needs to start from the dimensions of ageing adaptation and resilience enhancement, in order to build a safe, convenient and adaptable community environment, and to further promote the interaction and integration of different age groups effectively.

4. Conclusions and expectations

The inclusive development of public space in older urban neighborhoods has become an important issue in the field of urban planning and social research. Existing studies have shown that the construction of inclusive public spaces is not only about the physical transformation of the space, but also pays special attention to social inclusion and functional diversity in the design process. In terms of paying attention to the needs of different age groups, studies have found that the needs of the elderly and children are

becoming more prominent, while the participation of young and middle-aged people is often overlooked, a phenomenon that requires urgent attention. The public spaces in older communities are often narrow and single-functional, failing to meet the diverse social needs of diverse groups. Against this background, the focus of the study should shift to how to promote the harmonious interaction of various groups through inclusive design, so as to realize the comprehensive upgrading of the public space and enhance the adaptability and sustainability of the overall community.

The following strategies are recommended for community transformation to enhance spatial and social inclusion:

(1) Starting from the early planning stage, the needs of different groups such as the elderly, children, middle-aged and young people should be collected through participatory design such as focus groups and questionnaires to ensure the relevance of the design and to enhance the sense of participation and community cohesion of the residents.

(2) Focusing on spatial flexibility and multi-functionality, providing variable spatial layouts and facilities to accommodate the usage habits and types of activities of different groups, and to promote diversified interactions and social interactions among community members.

(3) Focus on environmental qualities, such as accessibility, tidiness and noise control, in the renovation of old communities to enhance residents' experience and satisfaction in using the facilities and to promote social integration.

(4) Utilizing big data and intelligent technology, optimize the design and management of public space through real-time data analysis and virtual reality technology to improve the efficiency and comfort of use.

In summary, through the synthesis of multidisciplinary perspectives, it is hoped that the development path of inclusive public space can be explored in depth in the future, so as to realize the effective upgrading and sustainable development of old urban communities. In this process, through the in-depth combination of theory and practice, it is expected to promote the harmonious interaction of all kinds of social groups, thus realizing the comprehensive upgrading and sustainable development of public space.

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