

Research on the Design and Conservation of Rural Residences under the Background of Counter-Urbanization: A Case Study of a Residential Building in Jingshan, Hangzhou

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Abstract: As China's comprehensive national strength continues to grow and its urbanization process accelerates, the phenomenon of counter-urbanization has emerged. Many individuals now seek to develop their livelihoods in the countryside, away from the hustle and bustle of the city. The advent of the pandemic has made remote work and home-based office arrangements feasible, further encouraging this trend. This study concentrates on exploring the counter-urbanization trend from the perspective of the rural populace and examines the creation of versatile rural residences capable of meaningfully catering to their diverse needs. The focus is on the lifestyle and living conditions of highly educated individuals who now inhabit more remote and agrarian locales. Specifically, the study examines how these individuals utilize information technology to engage in remote work and learning, interact with local rural residents, surmount obstacles derived from the absence of certain amenities, respond to the basic needs of children and the elderly, and leverage surplus space for homestay businesses. This research, with its emphasis on resource conservation, environmental protection, and the satisfaction of physiological and psychological needs, makes a significant contribution in maintaining social stability, promoting national prosperity, and safeguarding accessible, harmonious human-nature interactions. Such efforts aid in preparing for the impending influx of counter-urbanization trends, thereby allowing for the creation of a tailor-made, modern rural living design and construction strategy in step with the national character of China.

1. Introduction

The process of urbanization is an inevitable consequence of the ongoing evolution and development of human society [1]. This process also reflects a nation's level of development in terms of productivity. By analyzing a country's level of urbanization, it is possible to comprehensively discern its level of socio-economic development.

As the level of urbanization in China continues to rise, some of the urban diseases associated with

it have emerged, such as water and air pollution, shrinking living spaces, and an increased incidence of cancer. As a result, a counter-urbanization trend has slowly emerged. The rapid and continuous development of technology has made people's lives more convenient, and the possibility of working from home has become a reality. While ensuring work efficiency, working from home can also help businesses save costs, and increase the amount of time employees can spend with their families. The outbreak of the COVID-19 has also accelerated the process of working from home, reducing the movement of people and enabling individuals in lockdown areas to keep up with work demands.

At present, a small minority of individuals have already begun working from home, which allows them to stay away from the bustling city and return to the countryside and nature. For this demographic, housing choices are no longer limited to the city; having left the city to reside in the countryside instead. However, those who have spent their entire lives in urban areas may find it difficult to adapt to traditional rural residence forms [2]. Traditional rural residences are an embodiment of a native cultural tradition and masterful craftsmanship, but they may not necessarily cater to the needs of the counter-urbanization population, whose ideas and lifestyles have undergone significant changes. Compared with modern urban housing, traditional rural residences face some drawbacks because of material, structural, and construction technology limitations. These limitations prevent people from enjoying the convenience and comfort brought by innovative technology and cannot satisfy people's diverse demands. A new housing form that can cater to the needs of counter-urbanization populations urgently needs to be developed.

To cater to the needs of the counter-urbanization population, it is important to consider their psychological and physical characteristics, study their requirements during the counter-urbanization process, and create new comfortable housing spaces that cater to modern times. Focus should be given to the lifestyles of highly educated individuals living in rural areas and how they can use information technology to achieve remote work and study. Other considerations include: establishing a healthy interaction with local villagers; facilitating daily activities and social interactions with friends and family in the absence of adequate living facilities; addressing childcare and elderly care issues; and utilizing unused space for homestay activities.

This study conducts a thorough investigation of the counter-urbanization population and comprehensively reviews exemplary cases from both domestic and international contexts to propose a novel design scheme that fully caters to the needs of this demographic. This endeavor aims to proactively prepare for the imminent counter-urbanization movement and contribute to the maintenance of social stability, national prosperity, the provision of a superior living environment, the advancement of harmonious coexistence between man and nature, the conservation of resources and the protection of the environment, and the fulfillment of the psychological and physical demands of the people. The result is a comprehensive and tailored strategy that accommodates the unique Chinese national conditions while promoting a modern lifestyle in rural areas.

2. Analysis of Planning and Design of Rural Residence in the Context of Counter-Urbanization

The project is located in Longtan, Pingshan Village, Jingshan Town, Yuhang District, Hangzhou City. Jingshan Town boasts a long history and rich cultural heritage [3], consisting of Buddhist, tea, and tourism cultures. Longtan Village, nestled in a mountainous hollow, is primarily inhabited by local people and several farmhouse homestays. The back of the houses is complemented by a vast expanse of tea plantations, while the river bridge serves as the main gathering place for villagers. Upstream is the renowned Jingshan Temple, with a population of over one hundred villagers and a small stream running through the village. As the economy continues to grow and living standards rise, tourists have increasingly higher expectations for scenic environments. To better protect this valuable natural resource, Jingshan Scenic Area requires renovation and development. Currently, the bamboo

charcoal processing factory has ceased operation, with a site area of approximately 1,500 square meters and an architectural area of around 500 square meters [4].

The residential project is situated at the foot of a bamboo-covered mountain, flanked by a trickling stream, and faces the county road across the river. It is also near the Pingshan Village Celebrity Museum [5]. Visitors can cross to the Museum via stepping stones placed in the stream.

The rural single-story residences in brick and concrete structures consist of three buildings, including one abandoned bamboo charcoal processing factory, and the other two serving as living quarters for the residents.

The residential area is slightly lower in elevation compared to other buildings in the village. There are two bamboo groves on either side of the sloped terrain, with a patch of arable land on the east side of the house dedicated to crop cultivation. The remaining area is covered uniformly with concrete. The backyard connects to the mountain and stream, with an enclosed planting area.

The Client is a female senior executive in her forties, who hails from Beijing and has chosen to retreat to the mountains of Yuhang District, Hangzhou, seeking a rural lifestyle. She lives with her parents, who have recently moved from Xi'an and are still adjusting to the new environment. The family comprises four members, including a two-year-old daughter, and a German Shepherd pet dog. The Client primarily works from home, likes to read books and draw [6]. Her parents take care of the child and happily welcome other children from the village to play at their home. The Client's mother is a high school teacher who enjoys teaching children. The family entertains frequently, with the Client's sister's family of two members often coming to stay. The Client also intends to operate a homestay business to offer an opportunity for others to experience the serene village life in Jingshan away from the city's hustle and bustle, enjoy the beautiful natural surroundings, and breathe fresh air.

The project benefits from a superior geographical location with convenient transportation, a pristine ecological environment, clean air, and clear spring water. The local people have preserved their simple and traditional way of life. The surrounding area is rich in history, providing a glimpse into the past. The project covers a large area, offering a spacious and comfortable living environment for a family of four. Agricultural and livestock husbandry activities thrive in the village, providing a source of clean and healthy food [7]. The research findings will be fully integrated into the project design. The completion of the project may also lay the foundation for Longtan Town's development, attracting investment and tourism. It could have a positive impact on local economic development while promoting the upgrade of infrastructure in Longtan Village.

The project targets a simple and understated design style while still reflecting cultural depth, seamlessly integrating into the local village surroundings. It caters to the daily needs of the family while providing a comfortable and functional workspace for the Client. The design also focuses on creating more shared spaces that can help the Client's parents integrate into the local community, and enjoy a fulfilling and enriching life in their later years [8]. Moreover, adequate teaching space is allocated to the Client's mother, who is a teacher, within the design. The homestay space will be used for operation or guest rooms, allowing more people to experience rural residential design in the context of counter-urbanization while enjoying a unique and different lifestyle from that of the city.

The functional zones will be divided into the following areas: a public reception area, a reading and study area, the Client's personal working area, a bedroom area, a guest living area that may be used as a homestay, a children's activity area, an outdoor playground, and a courtyard with a waterfront-forest landscape. The indoor and outdoor spaces will blend with the natural environment and create an atmosphere conducive to interacting with the local villagers.

3. Design Content of Rural Residence in the Context of Counter-Urbanization

The major focus of designing rural residence lies in both the internal functional layout and external

courtyard design.

Special attention must be paid to requirements such as lighting and ventilation. The organization of the internal space should prioritize the distinction between living and working areas while clearly defining the separation between public and private spaces. It is also crucial to ensure seamless transitions between different functional zones [9]. Moreover, optimizing the layout of traffic flow can help minimize traffic areas and offer a comfortable and convenient atmosphere for work and relaxation. Efforts should also be made to explore and utilize all types of architectural gray spaces (e.g., indoor and outdoor transitional spaces) that not only enhance landscape effects, but also expand the effective floor area of the building.

The design and layout of the courtyard should be both reasonable and scientifically sound.

It is important to take into account the differing living conditions of rural residents and tailor the layout of the housing according to local conditions. The traditional courtyard pattern should be preserved as much as possible, while considering the intensification of land resources. The construction density should be reduced and the plot ratio increased. Multistory buildings should be considered where safety requirements can be met. The functional zoning within the courtyard should be arranged in a compact manner, so as to fulfill its intended purpose while avoiding unnecessary waste of land and other resources. For those engaged in agriculture or pursuing courtyard economic development, reducing the construction density for each household while increasing the production area in the courtyard can lead to increased benefits.

At the initial stages of residential design, particular attention must be paid to a thorough investigation and analysis of the building's location, orientation, prevailing wind direction, and other factors. This will ensure that natural ventilation and lighting are fully utilized for the purpose of energy efficiency. Moreover, the local climate characteristics must be taken into account when considering the relationship between human behavior and the surrounding environment. The layout of roads and greenery must be designed with the overall harmony, scientific precision, and artistic quality of the residence in mind.

4. Conclusions

Counter-urbanization is a reaction to urbanization, wherein a section of city dwellers seeks to escape to rural life. This trend has brought forth a new set of demands in terms of rural residential design, which is markedly distinct from traditional agrarian living patterns. By scientifically analyzing counter-urbanization and understanding the essence, properties, and underlying principles which govern this phenomenon in contemporary China, we can enrich and refine both urbanization and counter-urbanization theories. This, in turn, will help us to reveal the objective laws that govern the urbanization process. Such insights would aid us in devising viable and effective strategies for urban development to overcome urban-rural dichotomies and promote the integration of rural and urban life. By nurturing effective urbanization strategies, it is possible to achieve sustainable urban development and promote public health while fostering the unity of urban and rural communities.

This design is based on the physical and psychological characteristics of individuals, aiming to meet the residential needs of counter-urbanization and ensure the comfort of the new era's living spaces. The focus is on the living conditions of highly educated urbanites who have moved to the countryside, addressing how they can work and study remotely through technology, how they can interact with local villagers in a beneficial manner, and how they can cope with daily life and visits from family and friends in areas with fewer facilities. Concerns regarding child development and elderly care are also taken into consideration, alongside questions of how to leverage idle space for homestay businesses. Based on these considerations, we have created a residential design plan that is both responsive to counter-urbanization needs and designed to enhance the quality of life for its

inhabitants.

With favorable geographical and environmental conditions, designers have moved away from the traditional courtyard-style design of suburban homestays towards an outward-oriented design that utilizes large openings and extensive transparency. Guests are now immersed in a beautiful landscape that is showcased through the structure's observational container. The design is tailored to the local conditions, integrating interior design seamlessly into the village and meeting the personal preferences of the homeowner. This approach also helps to establish a strong rapport with local residents, facilitating the homeowner's integration into the village. Importantly, it also provides ample space for running the homestay business.

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