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Transformations in Rural Community Order: A Case Study of Puqian Village, Jiangxi Province, from 1978 to 2022

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Abstract: Since the reform and opening-up, village communities in China have undergone significant transformations alongside rapid modernization. The reconstruction of these communities is a key issue in China's rural revitalization efforts and necessitates an analysis of the evolutionary characteristics and drivers of village community order. This study defines the concept of village community order and develops corresponding evaluation indicators and quantitative methods. Taking Puqian Village in Ji'an County, Jiangxi Province, as a case study, the research explores the evolution of village community order across distinct development stages—1978, 1985, 2003, and 2022. Data for the study were collected through participatory rural appraisal, remote sensing image processing, and GIS spatial analysis. The results reveal that since the reform and opening-up, Puqian Village has experienced increasing spatial complexity, disordered spatial structures, unbalanced population dynamics, and a weakening social network. These changes were especially pronounced during the periods of market-oriented development and urban–rural integration. The evolution of village community order is influenced by factors such as livelihood transformations, the decline of local culture, the dissolution of public authority, and weakened governance structures. By analyzing village community order from the dual perspectives of social and spatial order, this study provides a systematic framework for understanding village community changes.

Keywords: village community; spatial order; social order; quantitative measurement; rural governance; reform and opening-up; Puqian Village



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1. Introduction

A village is a multifaceted community characterized by a comprehensive social structure and function, shaped through the sustained interaction of natural geographic and socio-economic factors [1]. In village communities, there exists a structural order that defines individuals' roles, status, and behavioral norms, serving as a foundation for maintaining a balanced and organized village structure. Since China's reform and opening-up, rapid modernization has accelerated urbanization and industrialization, leading to major transformations in rural production and living conditions alongside notable increases in farmers' incomes. However, this progress has also widened the urban–rural divide, resulting in “hollow villages” and a persistent decline in rural areas [2]. On a social level, the traditional rural “acquaintance society” in China has fragmented, with village communities gradually weakening and even facing the risk of disintegration, which has undermined the foundational order essential for rural governance [3]. In response, China introduced the Rural Revitalization Strategy in 2017, aiming to stimulate the endogenous order and vitality of rural areas, a goal that relies heavily on the robust functioning of village communities. The success of this strategy hinges on cultivating internal order and vitality within rural

areas, deeply intertwined with the effective operation of these village communities. A well-functioning village community is crucial for transitioning from external aid (“blood transfusion”) to self-sustained development (“blood creation”) in rural construction [4]. It also represents a key challenge in China’s rural revitalization efforts. Therefore, addressing the order and stability of village communities is a vital consideration in achieving sustainable rural revitalization.

The history of human development is deeply intertwined with the history of community formation [5]. In 1881, The German word *gemeinschaft* (i.e., the community, group, collective, communities, community, etc.) was firstly used in sociology by the German sociologist Feeding Tennis. And then in 1887, the German sociologist Feeding Tennis initiated the community analyzing system in his book *Community and Society* published in 1887, in which he analyzed *gemeinschaft* and *gesellschaft*. A community is considered a fundamental and natural unit, founded on shared essential will and characterized by social cohesion and mutual cooperation [6]. One of its key characteristics is the collective behavior or collective consciousness it represents. Village life is inherently tied to common ownership and property sharing, with strong connections to agriculture and family life. Villagers act collectively in accordance with shared norms and traditions, fostering a strong sense of community [7]. In addition to analyzing its connotations, scholars have also examined the fundamental characteristics of village communities by focusing on their functions. It has been argued that village communities serve as both systems for land organization and frameworks for social organization [8]. Over time, scholars have shifted their focus towards the transformation of village communities, exploring the processes of change, manifestations of decline, and underlying causes [9,10]. For instance, some analysts suggest that, following the enclosure movement, the Industrial Revolution, and urbanization, British village communities gradually disintegrated as part of the broader modernization process [11]. In recent years, it has been recognized that village communities play a crucial role in governance and rural development. Scholars argue that the reconstruction of village communities is central to the broader revitalization of rural areas [12–14]. Furthermore, maintaining social order within village communities has become a focal point in discussions surrounding their role in contemporary rural governance.

Current research on village communities primarily focuses on describing the phenomenon or elaborating on theoretical paths of change. However, it often lacks rigorous measurement of the community’s internal order, which is essential to understanding its structure and dynamics. Order is a fundamental aspect of village communities, and the decline or transformation of these communities is inherently tied to the evolution of this order. Without accurately assessing the state of village community order, efforts to reconstruct village communities risk lacking a solid empirical foundation. Given the current limitations in research on village community order, several key issues warrant further investigation. These include the following: (1) how to theoretically conceptualize village community order, (2) how to quantitatively measure changes in this order, and (3) what factors drive its evolution. This study aims to address these gaps by analyzing the concept of village community order, developing quantitative indicators and methods to assess it, using Puqian Village in Ji’an County, Jiangxi Province, as a case study. The goal is to reveal the characteristics and drivers of the evolution of village community order, providing insights that may contribute to efforts in village community reconstruction.

2. Research Framework

2.1. Research Concepts

The village community is not solely a social entity but represents a synthesis of the theoretical concept of community and the spatial and temporal dimensions of the village [15]. From a generative perspective, Tennessee defines the village as evolving from kinship-based communities and describes it as a distinctly bounded entity, reflecting shared experiences of ownership and collective enjoyment within the community [16]. American scholars Inkers and Du Zanqi analyze the nature of village communities by examining

farmer behaviors such as identity formation and social cohesion. They particularly highlight that village communities possess distinct boundaries and identities rooted in territorial relationships [17,18]. Specifically, they emphasize that village communities exhibit clear boundaries and identities, primarily defined by regional relationships. While Chinese scholars hold varying views on the nature of the village community, there is a general consensus that these communities possess both territorial and social attributes [19]. The geographical attribute pertains to the spatial aspect of villages, meaning they have defined boundaries. Social attributes, on the other hand, refer to the functional, organizational, and emotional connections formed through shared community life [20]. Social attributes refer to the functional, organizational, and psycho-emotional ties that exist and are formed in the common life of people.

Order typically refers to the regularity and organization observed in natural and social phenomena, as well as their development and transformation. In jurisprudence, it also signifies the presence of procedural consistency, continuity, and predictability in both natural and social processes [21]. Identity and cohesion are fundamental attributes of the village community. The order of the village community refers to the consistency, rationality, and stability exhibited through the community's identity and cohesion. When a village community is well-ordered, it fulfills essential functions such as establishing production systems, defining behavioral norms, and overseeing public opinion, all of which contribute positively to village governance [22].

2.2. Indicator System

Given the dual attributes of territory and social structure in the village community, the village community order encompasses both the social order of the community and the spatial order of the village's territorial space. In other words, village community order is composed of both spatial and social elements (see Table 1). The spatial order of a village community reflects the organization of its territorial space within defined boundaries. In this study, spatial order is characterized by the village's spatial form and structure. The alteration of village boundaries serves as an indicator of the evolving spatial order within village communities. The fractal dimension (D) of village land plot boundaries reflects the complexity and spatial interaction of village boundaries, serving as a measure of spatial form order [23]. Spatial structural order, on the other hand, considers both the arrangement of spatial elements and the utilization of space. It is quantified by the degree of disorder in building orientation (C) and the residential vacancy rate (L).

Table 1. Evaluation indicator system of village community order.

Dimension (Math.)	Considerations	Norm	Description of Indicators
Spatial order	Spatial morphological order	Village boundary fractal dimension (D)	The fractal dimension of the village boundary reflects the complexity of the boundary's shape, including its zigzag patterns and spatial penetration characteristics.
	Spatial structural order	Building orientation disorder (C), Residential vacancy rate (L)	The degree of disordered building orientation indicates how well-organized or disorganized the spatial structure of buildings is in the village. The residential vacancy rate measures the proportion of unused dwellings, indicating space utilization and the weakening of residential functions.

Table 1. Cont.

Dimension (Math.)	Considerations	Norm	Description of Indicators
Social order	Demographic order	Percentage of resident population (R), Difference in proportion of young and middle-aged population (Y)	The percentage of the resident population is the ratio of the actual residing population to the total household population. The difference in the proportion of young and middle-aged people reflects the labor force disparity between the resident and household populations.
	Social network order	Social network value (S)	The social network value quantifies the degree of connectedness and interaction among villagers, representing the social network order within the village.

The social order of the village community reflects the strength of functional, organizational, and psycho-emotional bonds among villagers, as evidenced by the stability of the village's demographic structure and the characteristics of its social network. In village development and governance, villagers serve as both the primary participants and beneficiaries, making them the core component of the village community. Since the reform and opening-up period, the unidirectional migration of China's rural population has led to the continuous depletion of vital development resources in villages [24]. As the rural population declines, the age structure of the remaining residents has become increasingly imbalanced, with fewer young and middle-aged individuals remaining. A common observation in rural areas is that "the biggest change is the aging population and the increasing number of vacant homes". This demographic shift has left many village communities struggling with a lack of endogenous vitality, primarily driven by population outflow. The evolution of the village demographic order can thus be measured by changes in the percentage of the resident population (R) and shifts in the proportion of young and middle-aged individuals (Y).

Another critical aspect of social order is the strength of inter-villager ties, assessed through the concept of social network order. According to social capital theory, neighborhood networks founded on trust and mutual assistance enhance villagers' sense of security and belonging, which has a positive and significant impact on the village community [25]. The social network value (S) serves as a useful indicator for measuring social network order.

2.3. Measurement Methods

(1) Village boundary fractal dimension

The fractal dimension value (D) is widely used in fractal theory to quantify the complexity and fragmentation of land plots. The formula used to calculate the fractal dimension of a village boundary is as follows:

$$D = \frac{2 \ln \frac{P}{4}}{\ln A} \quad (1)$$

where D is the fractal dimension (a higher value of D indicates a more complex village boundary shape), A is the area of the village patch, and P is the perimeter of the village patch.

Since the individual building units are separated, the village boundary consists of both the solid boundaries of the building units and the imaginary boundaries between them. These imaginary boundaries were constructed by connecting the corner vertices of

the building units at the village's edge, creating a continuous planar enclosure together with the solid boundaries. These imaginary boundaries can be delineated at varying scales, such as 100 m, 30 m, or 7 m, depending on the spatial context [26].

(2) Building orientation disorder

Buildings are the dominant features in a village, and their layout largely determines the village's overall spatial structure. The orientation of each building was determined by measuring the angle of the smallest enclosing rectangle around each building unit. To assess building orientation order, the following formula was used to calculate the building orientation disorder index:

$$C = \frac{\alpha - (\mu - 3\sigma)}{6\sigma} \quad (2)$$

where C is the degree of disorder, α is the standard deviation of the residence angle, μ is the mean value of the series, and σ is the standard deviation of the series. The smaller C value indicates a more orderly alignment of building orientations within the village. Conversely, a larger C value reflects greater variation in building orientations, signifying a lower level of order.

(3) Residential vacancy rate

Dwellings were categorized into active, unoccupied, and abandoned dwellings. Idle dwellings refer to those that are fully functional but have been inhabited for less than one month per year on average, while abandoned dwellings are those no longer habitable due to neglect or disrepair. Based on these classifications, the residential vacancy rate was calculated as the proportion of idle and abandoned dwellings relative to the total number of dwellings in the village, as the following formula:

$$L = \frac{L_h}{L_s} \times 100\% \quad (3)$$

where L is the residential vacancy rate, L_h is the number of idle and abandoned dwellings, and L_s is the total number of dwellings in the village.

(4) Percentage of resident population

The formula for calculating the percentage of the resident population is as follows:

$$R = \frac{R_p}{R_h} \times 100\% \quad (4)$$

where R is the percentage of the resident population, R_p the resident population of the village, defined as those individuals who reside in the village for more than six months per year, and R_h is the total household population of the village.

(5) Poor proportion of young and middle-aged population

The formula for calculating the difference between the proportions of the young and middle-aged population is as follows:

$$Y = Y_p - Y_h \quad (5)$$

where Y is the difference in the proportion of the young and middle-aged population (aged 15–59), Y_p is the proportion of the population aged 15–59 in the village's resident population, and Y_h is the proportion of the population aged 15–59 in the village's total household population.

(6) Social network value

Given the multi-level, complex, and intangible nature of rural social relationship networks, direct measurement is challenging. Based on the research context, the hierarchical analysis method was chosen to construct the social network order evaluation model. A Likert scale was used for the questionnaire design, focusing on three key aspects: villagers' sense of belonging, neighborhood harmony, and public participation. The weights for each indicator were determined using the expert scoring method, with all consistency ratios (CR)

below 0.1. Details for each indicator are provided in Table 2. The formula for calculating the social network value (S) is as follows:

$$S = \sum W_i Q_j \quad (6)$$

where S is the village social network value, ranging from one to five, with higher values indicating a more orderly social network, W_i is the weight of each indicator, and Q_j is the score of each indicator.

Table 2. Indicators and weights for evaluating the value of social networks in villages.

Considerations	Considerations Weights	Norm	Indicator Scoring Criteria	Norm Weights
Villagers' sense of belonging	0.1396	Villagers' concern for village development	1—not at all concerned; 2—less concerned; 3—moderately concerned; 4—more concerned; 5—very concerned	0.1396
Neighborhood Harmony	0.3325	Movement of people among villagers	1—no walking at all; 2—little walking; 3—average walking; 4—more walking; 5—frequent walking	0.1108
		Mutual trust among village people	1—very distrustful; 2—rather distrustful; 3—generally trusting; 4—rather trusting; 5—very trusting	0.2217
public engagement	0.5278	Participation of villagers in village public affairs	1—not at all involved; 2—less involved; 3—fairly involved; 4—more actively involved; 5—very actively involved	0.5278

3. Points in Time for Research Data

3.1. Study Area and Data Sources

Puqian Village is situated in southern China, 4 km south of Fenghuang Town in Ji'an County, Jiangxi Province. It lies in the hilly region of Ganzhong, in the hinterland of the Jitai Basin, with an altitude ranging from 56 to 70 m. The area experiences a subtropical monsoon climate, with an average annual temperature between 17.5 °C and 18.6 °C. The climate is mild, with abundant sunshine, ample rainfall, and four distinct seasons. The village is a traditional agricultural community, where rice and peanuts are the primary cash crops. The villagers, primarily of the Luo, Xie, and Wu families, have lived in clustered settlements for generations. As of 2022, the village had a total population of 404 people and 107 households, with approximately 220 residents living in the village year-round. The average annual per capita net income was approximately USD 1687.

The study incorporates both geospatial data, such as buildings and roads in Puqian Village at various time points, and socio-economic data, including village population, household livelihoods, economic conditions, and social networks. To obtain geospatial data for Puqian Village in 2022, ArcGIS 10.5 and AutoCAD 2022 software were used to vectorize key elements, such as buildings and roads, from Google Earth HD remote sensing images.

The participatory rural appraisal (PRA) method was employed to gather information on building construction, alterations, and demolitions in the village, allowing for the reconstruction of geospatial information from previous time points. This process produced

building distribution maps for Puqian Village at different time points (Figure 1). The socio-economic data for the study were collected through field interviews with village officials and representatives in Puqian Village.

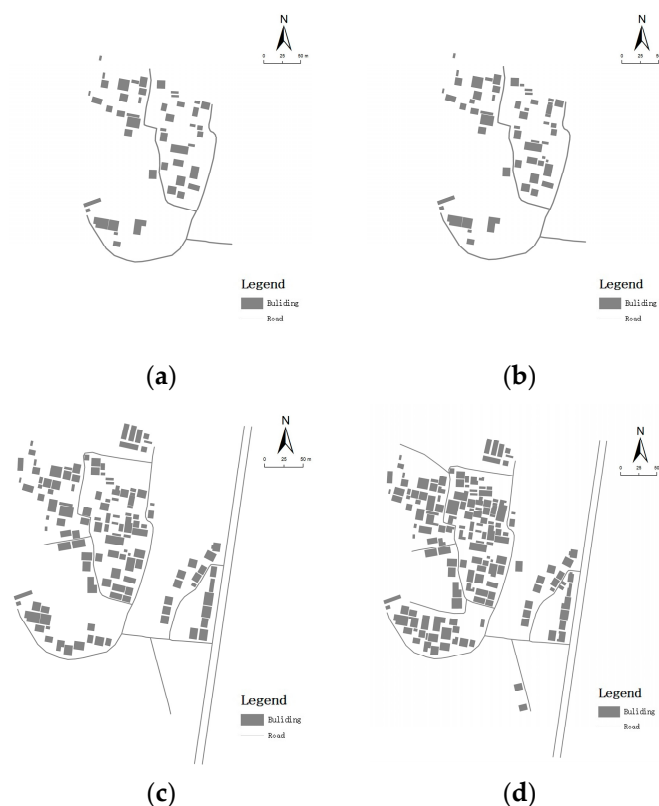


Figure 1. Distribution of buildings in Puqian Village across different years: (a) 1978; (b) 1985; (c) 2003; (d) 2022.

3.2. Time Point of the Study

China's reform and opening-up policy was first implemented in rural areas between 1978 and 1984, leading to significant improvements, including a rapid increase in farmers' incomes. During this period, rural communities remained relatively closed, with low mobility and limited interaction with urban areas. From 1985 onwards, the focus of China's reform shifted towards urban centers, emphasizing industrial development in large city districts. This transition prompted substantial rural-to-urban migration and fostered the further development of urban–rural relations, gradually blurring the boundaries between the two. Since 2003, with the continued deepening of reform policies and urbanization, China entered a new phase of urban–rural integration. The Third Plenary Session of the Sixteenth Central Committee of the Communist Party of China (CPC) formally introduced the concept of “five integrations”, marking the beginning of this stage. Scholars suggest that China's rural economic development can be divided into three phases: collective development (1949–1978), market-oriented development (1979–2002), and urban–rural integrated development (2003–2024) [27].

Based on this analysis, the years 1978, 1985, 2003, and 2022 were selected as key time points in this study. These years correspond to the early reform period (1978–1985), the market-oriented development phase (1985–2003), and the urban–rural integration phase (2003–2022). These time points allowed for a comparative analysis of the evolving characteristics of village community order across different stages of China's rural development.

4. Analysis of Results

4.1. Characteristics of the Evolution of the Village Community Order

4.1.1. Complexity of Village Spatial Patterns

Using scales of 100 m, 30 m, and 7 m, an imaginary boundary was drawn to form a planar closed graphic of the village perimeter, combined with the solid boundary of the buildings (Figure 2). Based on Equation (1), the fractal dimension of the village boundary at three scales was calculated, weighted according to 0.25, 0.5, 0.25, and the fractal dimension (D) of the boundary of Puqian Village in 1978, 1985, 2003, and 2022 was 1.138, 1.139, 1.146, and 1.151, respectively. The calculated results indicate a gradual increase in the fractal dimension value of Puqian Village over time, reflecting overall growth. The theoretical fractal dimension (D) ranges from one to two, where one represents the simplest geometric forms and two the most complex. Values below 1.3794 were categorized as low fractal dimension areas, while those above 1.5046 represented high fractal dimension areas. The fractal dimension values from 1978 to 2022 showed minimal variation, suggesting that the spatial structure of Puqian Village has remained relatively stable. During this period, individual buildings in the village formed a cohesive spatial structure, supporting continuity and order in the village's overall spatial form as it developed. During the early years of reform and opening-up, development in Puqian Village was slow, with few new buildings, resulting in minimal changes to its spatial form. However, during the rapid expansion of the market economy, 47 new buildings were constructed, leading to significant village expansion and increased spatial complexity. In the phase of urban–rural integration and development, while the village continued to expand, new buildings primarily filled the gaps between existing areas, resulting in localized agglomeration. Despite this, the overall spatial morphology retained a degree of regularity.



Figure 2. Boundaries of Puqian Village across different years: (a) 1978; (b) 1985; (c) 2003; (d) 2022.

Since the reform and opening-up, rising household incomes and population growth have fueled strong demand for new housing in rural China, leading to the continuous expansion of villages and increasing spatial complexity, as observed in Puqian Village [28,29]. In southern China, rural communities continue the tradition of clustered living. Although

most villages in the plains have become more spatially complex, they generally maintained a stable overall structure during development [30].

4.1.2. Disorganized Spatial Structure of Villages

(1) Increase in building orientation disorder over the years

The disorganization of building orientation in Puqian Village was calculated at different study time points using Formula (2) (Table 3). During the early reform and opening-up period, the housing conditions in Puqian Village remained stable, and the disorder in building orientation was minimal, with structures distributed in an orderly fashion [31].

Table 3. Changes in building orientation disorder in Paiqian village.

Year	Average Value	Standard Deviation	Disorder
1978	19.275	40.380	0.335
1985	19.833	41.327	0.381
2003	23.880	46.024	0.614
2022	23.506	47.159	0.670

Research on village development in regions such as Henan, Jiangsu, and Beijing shows that disorderly, sprawling residential growth is common amid the ongoing expansion of production, living, and other functional spaces, resulting in a mix of diverse spatial forms [32,33]. This trend is also evident in Puqian Village, where building orientation disorder increased by 61% between 1985 and 2003. During the period of urban–rural integration and development, the pace of new house construction has slowed, with greater emphasis on guided village planning. Although building orientation disorder in Puqian Village continues to rise, the growth rate has significantly decreased compared to the previous period.

(2) Residential vacancy rate continues to rise

Using data from field research and Formula (3), the residential vacancy rate in Puqian Village was calculated for the years 1978, 1985, 2003, and 2022 (Table 4). The results indicate that in 1978 and 1985, there were no vacant residences in Puqian Village. During the early stages of reform and opening-up, most farmers continued to live in rural areas, with their incomes primarily dependent on farmland management, supplemented by livestock breeding and garden cultivation. Limited economic resources constrained improvements to housing conditions.

Table 4. Changes in vacancy rate of residential buildings in Puqian Village.

Particular Year	Total Number of Dwellings	Number of Unoccupied Dwellings	Residential Vacancy Rate (%)
1978	28	0	0.00
1985	34	0	0.00
2003	81	13	16.05
2022	106	31	29.25

As market reforms progressed, the rural economy underwent significant changes, and better access to services, employment, education, and healthcare in towns and cities attracted many rural residents [34]. During this period, the rate of rural residential idleness in China generally increased [35]. Residential construction expanded along the settlement periphery, while urbanization prompted many original village residents to move out, leaving a growing number of unused dwellings within the village. This led to phenomena such as multi-family houses, building new homes without demolishing the old, and contributed to a pattern of hollowed-out rural interiors and dispersed settlement edges. The *China Rural Development Report* indicates that from 2001 to 2011, the rural population declined

by 133 million, while rural construction land—primarily residential land—increased by 2.03 million hectares, resulting in many rural areas effectively becoming “hollow villages”.

By 2003, the residential vacancy rate in Puqian Village had risen to 16.05%. During the urban–rural integration phase, the growth of non-agricultural income among farmers led to an increase in “multiple dwellings”, where some households owned multiple residences. Additionally, many farmers had fully relocated to urban areas, further contributing to the rise in unused dwellings. By 2022, the residential vacancy rate in Puqian Village reached 29.25%.

4.1.3. Imbalances in the Population Structure

Statistical information on the population structure of Puqian Village in 1978, 1985, 2003, and 2022 was gathered through field research and data from the village committee (Table 5). In the early reform and opening-up period, nearly all farmers lived and worked in the village, with the resident population comprising almost 100% of the total, and the age structure closely aligned with that of the household population. However, as modernization progressed, driven by urbanization and industrialization, a portion of the rural labor force began seeking employment in urban areas, leading to a gradual decline in the resident population of villages [36–38]. Many rural families, particularly those headed by younger individuals, started moving away from agriculture.

Table 5. Changes in the population structure in Puqian Village.

Particular Year	Household Population	Percentage of Young People in the Household Population	Number of Resident Population	Percentage of Young People in the Resident Population	Poor Proportion of Young and Middle-Aged Population	Percentage of Resident Population
1978	169	51%	169	51%	0	100%
1985	215	52%	208	50%	2%	97%
2003	314	64%	263	47%	17%	84%
2022	403	65%	219	54%	11%	54%

As more young and middle-aged residents migrated to cities, rural demographic structures became increasingly imbalanced. In 2003, the proportion of young and middle-aged residents in Puqian Village had decreased by 17%, highlighting the growing phenomenon of “left-behind” elderly and children in rural areas. Between 1978 and 2022, the proportion of the resident population in Puqian Village fell sharply from 100% to 54%. The demographic changes in the village of Puqian epitomize the vast rural areas of China. Since 1978, China has witnessed rural population mobility in three senses, ranging from industrial transfers to household transfers to quasi-migratory forms. According to data from the relevant authorities, by 2003, at least 128.2 million of China’s rural labor force had entered the cities and towns for development, and this was accompanied by a flow of population characterized by the fact that most of the outgoing population was young and strong, with a high level of education, and predominantly engaged in informal employment.

In recent years, as industrial activities have shifted from eastern to central and western China, some of Puqian Village’s labor force has found employment in a nearby industrial park. This trend, known as “leaving the farmland but not the countryside”, indicates that while fewer residents are engaged in agriculture, they continue to reside in the village. As a result, the gap in the proportion of young and middle-aged residents decreased from 17% in 2003 to 11% in 2022, reflecting a stabilization of rural demographic structures during the period of urban–rural integration and development.

4.1.4. Significant Weakening of Social Networks

The social network questionnaire was designed based on the evaluation index for village social network values. To retrieve historical information, residents over the age

of 60 were selected as the primary survey respondents. Field interviews explored their perceptions of villagers' sense of belonging, neighborhood harmony, and public participation across different time periods. Currently, Puqian Village has 45 permanent residents aged over 60. In this survey, 42 questionnaires were distributed, and 36 valid responses were collected after accounting for outliers and missing data, resulting in an 86% validity rate. Among the 36 interviewees, there was an equal proportion of men and women, with ages ranging from 60 to 84 years. Most had literacy levels at or below junior high school, and all had lived and worked in the village for an extended period. The calculated social network values for Puqian Village were 4.18 in 1978, 3.97 in 1985, 3.23 in 2003, and 2.59 in 2022 (Table 6).

Table 6. Changes in the social network value in Puqian Village.

Year	Villagers' Sense of Belonging	Neighborhood Harmony	Public Participation	Social Network Value
1978	3.98	3.88	4.42	4.18
1985	3.94	3.88	4.04	3.97
2003	3.51	3.22	3.16	3.23
2022	2.79	2.71	2.46	2.59

In the early years of reform and opening-up, the weakening of the social network was primarily observed in the decline of villagers' participation in public affairs following the implementation of the rural joint-contract responsibility system. As modernization progressed, population mobility, shifts in farmers' livelihoods, and economic growth, coupled with the impact of changing traditional values, contributed to the gradual erosion of village identity and social cohesion. The sense of belonging, neighborly harmony, and public participation among Puqian villagers all displayed a weakening trend.

During the periods of market-oriented development and urban–rural integration, the social network value of Puqian Village declined by 18.6% and 19.8%, respectively, indicating a clear weakening of social relationships. Similar changes are observed in rural areas across China. Rural social networks are gradually shifting from a single, homogeneous “acquaintance society” based on blood and geographical ties to more diverse and complex semi-acquaintance or even stranger-based networks [39,40].

4.2. Motivations for the Evolution of the Village Community Order

4.2.1. Changes in Villagers' Livelihoods

In the process of rural socio-economic development, villagers' livelihoods are influenced by economic, political, and cultural changes, which, in turn, affect village community dynamics [41]. During field research in Puqian Village, it was observed that in the early reform and opening-up period, low population density, high homogeneity, limited mobility, and restricted agricultural technology reinforced farmers' strong dependence on the land. The connection between villagers through shared agricultural production was robust, and they maintained a stable community life encompassing production, social bonds, and shared values. With the shift toward market-oriented development, waves of “migrant workers” have emerged in China, impacting most rural areas through marketization. Compared to the early years of the reform and opening-up period, newly established private enterprises have absorbed many farmers transitioning out of agriculture. This trend has similarly accelerated livelihood changes in Puqian Village, where non-agricultural employment and part-time work have become more common, reflecting shifts seen across much of the country.

The outflow of young labor and the rise in economic rationality among villagers have significantly weakened connections between residents, rural land, and village life, impacting the foundational structure of the village community and leading to an emerging decline in community order. During the stage of urban–rural integrated development, the economic gap between eastern, central, and western China has widened, prompting rural

populations to migrate to economically stronger regions. In Puqian Village, an ordinary village in the central region, economic individualism has continued to grow, resulting in a marked decline in collective consciousness and shared sentiment. This shift has led to reduced attention and enthusiasm among villagers for participating in public affairs.

4.2.2. Decline of Village Vernacular Culture

Vernacular culture, as an endogenous cultural pattern within rural society, with a strong sense of collective ritual, plays a key role in shaping the social order of village communities. Cultural activities not only rely on the ongoing organization by local authorities but also serve as a “performance” of rural authority. Vernacular culture thus becomes a dynamic element in constructing local order, subtly influencing peasant behavior and imparting normative values [42]. Since the reform and opening-up, especially during market-oriented development and urban–rural integration, a trend of individualization has emerged among farmers. The shift away from agriculture and migration from hometowns has steadily eroded the natural cohesion of rural communities, with the “dispersion” of farmers becoming a widespread phenomenon.

In Puqian Village, the decline of vernacular culture has eroded its collective order, reflected in both the “spiritual” aspects—such as moral concepts and value systems—and the “material” aspects, including rituals and festivals. The fading of traditional practices like ancestral worship and community festivals, along with the simplification or alienation of collective activities like weddings and funerals, has diminished shared emotional experiences among villagers. This has led to a weakening of village cohesion and a loss of the “spirit of community”.

4.2.3. Dissolution of Public Authority in Villages

Village public authority develops over time through interactions between groups and implies both rules and order [43]. In traditional rural society in southern China, endogenous public authorities, such as patriarchs and township sages, held significant influence and played a crucial role in maintaining social order. These figures acted as bridges between villagers and the larger community, facilitating the smooth operation of rural society. However, during the planned economy period, rural society underwent profound changes under the state’s administrative control and ideological influence. As a result, the power of clans and township sages diminished, and public authority weakened, reducing its effectiveness in mobilizing and integrating rural communities.

Following the 1978 reform and opening-up, China’s rural areas entered an unprecedented period of rapid transformation. With the establishment and gradual development of a market economy, economic capital increasingly permeated rural life, leading to shifts in village power structures and the emergence of a new social ecology. As an autonomous organization, the village committee initially served as an embedded public authority representing external interests within the village. During the early stages of reform and market-oriented development, it played a crucial role in rural development and governance. However, in the later phase of urban–rural integration, the abolition of agricultural taxes significantly reduced the capacity of grassroots organizations to coordinate activities. This, in turn, weakened their ability to mobilize resources and diminished villagers’ motivation to participate in public affairs.

As a result, traditional moral and customary norms, which once governed land use and social interactions, have lost much of their binding force. Both endogenous authorities, such as village elders, and exogenous authorities, such as state institutions, have encountered difficulties in maintaining effective governance in rural areas.

4.2.4. Nullification of the Main Body of Village Governance

One of the primary goals of village governance is to stimulate the vitality of village society, which requires the concerted participation of multiple actors [44]. Effective participation in village governance is contingent upon the active “presence” of these actors.

However, the current norm in many rural areas is the “absence” and “non-participation” of farmers. The challenges posed by rural depopulation, the empty nesting of elderly farmers, and the prioritization of economic rationality—where farmers are preoccupied with their individual livelihoods—have weakened the ability of village governance structures to effectively organize villagers, resulting in the dissolution of public engagement.

Field research in Puqian Village reveals that while clans continue to connect villagers through blood and kinship ties, significant changes have occurred since the early stages of reform. The once cohesive and collaborative village structure has shifted towards increased individualization, or “atomization”, weakening social bonds and diminishing villagers’ awareness and participation in governance. This issue is particularly exacerbated by the mass migration of rural elites—those with higher education and innovative capacities. As a result, the remaining “present” villagers are often marginalized, and village governance struggles to function effectively due to the absence of a strong capacity base, leaving governance efforts without substantial support.

5. Discussion

Given the ambiguity surrounding the concept of village community order, this study defined it as the consistency, organization, and stability of the village’s identity and social cohesion. To address the challenge of portraying village community order, the study conceptualized it through two dimensions: spatial order and social order, corresponding to the village’s territorial and social attributes. The spatial order of the village community refers to the structured organization of the village’s territorial space, which is characterized by clearly defined boundaries and the orderly arrangement of spatial forms and structures. The social order reflects the degree of functional, organizational, and emotional-psychological ties among villagers, expressed through the stability of the village’s demographic composition and the characteristics of its social network [45].

To quantitatively assess the evolution of village community order, this study developed a measurement index system that encompasses two dimensions: spatial order and social order. These dimensions are further divided into four key factors: spatial morphological order, spatial structural order, demographic structural order, and social network order. Six specific indicators were used to measure these factors, including the fractal dimension of the village boundary, the degree of disorganization in building orientation, the rate of unused dwellings, the percentage of the permanent population, the ratio of middle-aged to young populations, and the social network value. These indices were applied to an empirical analysis of Puqian Village in Jiangxi Province, highlighting the disordered evolution of community order since the reform and opening-up. Both spatial and social orders have shown a weakening trend. Although spatial and social order are measured independently, they inevitably influence each other due to the interactive relationship between social behavior and space. The spatial structure of the village uniquely shapes villagers’ behaviors and interactions, which in turn affects social connections and emotional bonds within the community. Changes in population and interpersonal dynamics alter existing spatial arrangements, creating new spaces that reflect individual desires. For example, as social networks weaken, villagers become more individualized, prioritizing personal interests in spatial development over coordinated residential planning, ultimately contributing to spatial disorder.

The profound transformation of China’s rural society is evident not only in its spatial and social forms but also in the comprehensive reshaping of its internal structure and power dynamics [46]. This study, based on a combination of field research and literature review, analyzes socio-economic factors across three key periods: the early reform and opening-up period, the market-oriented development phase, and the urban—rural integration era. Findings indicate that the main drivers of village community order evolution in Puqian Village include the transformation of villagers’ livelihoods, the weakening of vernacular culture, the dissolution of public authority, and the erosion of governance structures. Since the reform and opening-up, rural China has transitioned from a largely closed, immobile

society to one increasingly integrated with the broader world. As a result, the social and economic structures of rural areas, along with farmer behavior, have undergone significant changes [47]. The transformation of livelihoods has led to income growth and the expansion of village construction land. However, the weakening of village public authority and the diminishing role of governance have contributed to unregulated geographic expansion in rural areas [31]. This shift in livelihoods has also reinforced farmers' economic rationality, while the decline in vernacular culture and public authority has weakened collective consciousness and social networks. The evolution of village community order is shaped by a combination of these factors [48]. Thus, to sustain village community order, it must be grounded in villagers' livelihoods, driven by local culture, and maintained through effective public authority and active participation.

This study extended theoretical research on village community order to empirical analysis, employing multidisciplinary methods such as fractal geometry, architecture, and sociology to quantitatively examine the evolutionary characteristics of village community order in the study area. However, several areas warrant further exploration. First, village communities exhibit significant regional variation, and the scalability of the village community order measurement method developed in this study requires additional validation. Second, the evolutionary dynamics of village communities are complex. The study focused on a single village for exploratory analysis; to more accurately and systematically understand the mechanisms and dynamics of village community evolution, a larger sample of villages, analyzed as panel data, may be necessary.

6. Conclusions

With modernization, the traditional and relatively stable structure of rural China has been disrupted. Rural housing construction has surged, village spatial patterns have changed, and peasants are no longer "born in the countryside, grow up in the countryside, and die in the countryside". Rural society has shifted from a "society of acquaintances" to a "society of semi-acquaintances" or even a "society of strangers". The transformation of Puqian Village exemplifies changes experienced by most Chinese villages. In terms of community order, Puqian Village's evolution since the reform and opening-up has been marked by increasingly complex spatial patterns, disorganization in spatial structure, demographic imbalance, and a pronounced weakening of social networks.

In the context of modernization and rural social transformation, changes in village communities are inevitable. Order is the core essence of any community, and examining the evolution of village community order offers a valuable perspective for understanding these changes. The village community embodies both the theoretical concept of community and its spatial-temporal reality. Its dual attributes of territory and society form the foundation for measuring village community order. By constructing an evaluation index system based on the two dimensions of social and spatial order, we can systematically and comprehensively assess village community order. This approach resolves the issue of quantitatively measuring village community order and provides a new research framework for the micro-analysis of its evolution.

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