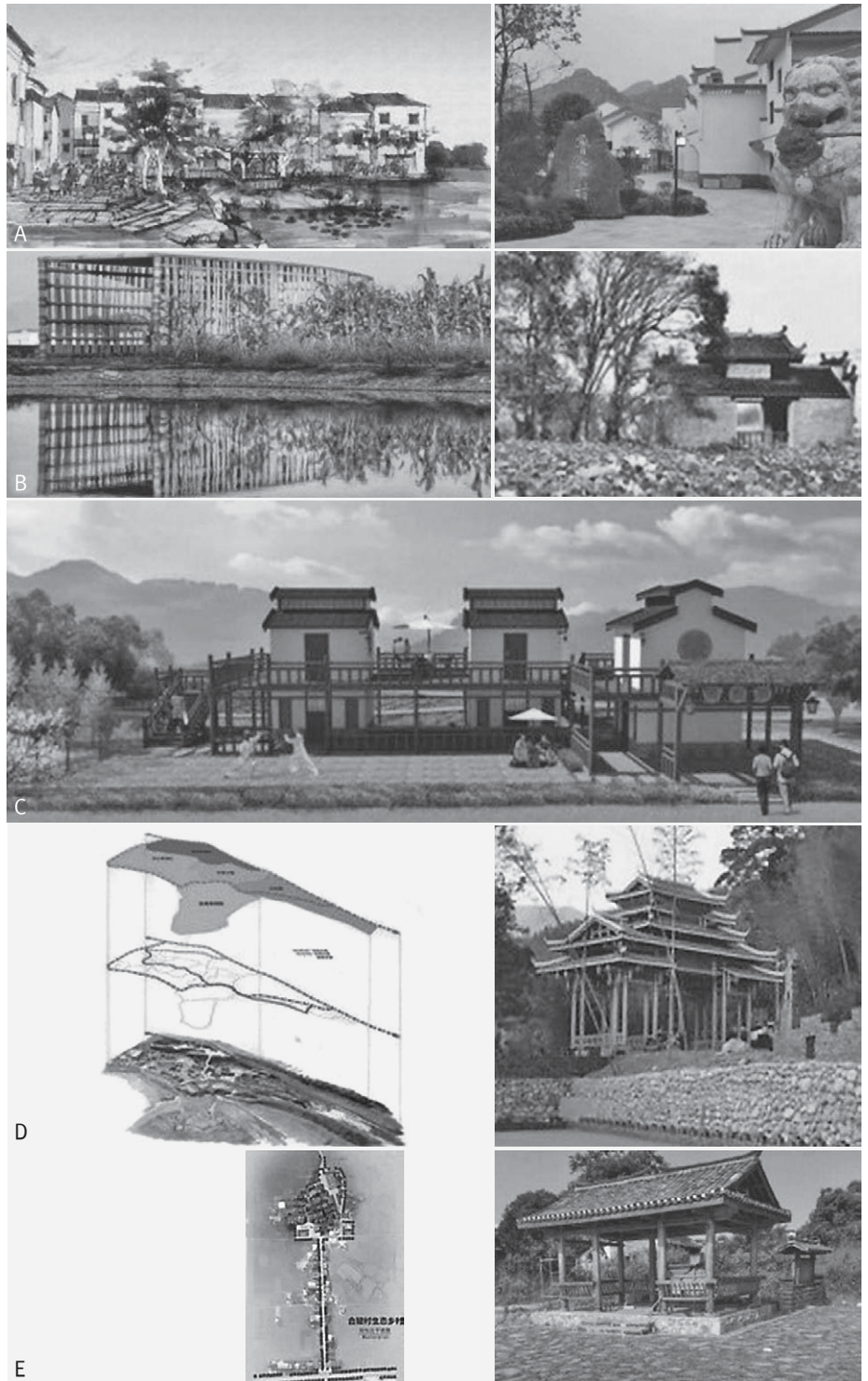Af

Fig. 1 Design solutions for the reconstruction of traditional Chinese settlements:
A – Lu Village and Guilin; B – Fuchuan County North MAO Family Ecological Village;
C – Ecological Village of Oak Tail in Mailing Town of Fuchuan Country; D – Long Tang Jiang;
E – Hebei Ecological Village. The use of modern building materials is accompanied by traditional building forms, decorative details and spatial organization (lion's sculpture, traditional roof ridges and matoujian elements, spatial placement of buildings in relation to water and trees and orientation to the cardinal points in accordance with Feng Shui requirements).

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Semiotic Analysis of Chinese Folk Architecture in Modern Planning

The study aims to explore the semiotics of the genetic symbols of Chinese folk architecture as the basis for representing the symbolic and mythological events of national history in the contemporary reconstruction of traditional settlements. The questionnaire-based survey, which involved 227 city dwellers and 239 residents of traditional villages, was used to assess architectural objects. As a result, the study justified the use of Chinese folk architecture symbols when implementing the Chinese state program for the traditional village revival, as well as when solving the problems of preserving the original historical architectural heritage in Western Chinatowns and in China itself. The mentioned symbols can be used to determine the conceptual approaches in architectural planning of traditional Chinese rural settlements.

INTRODUCTION

The concept of folk architecture is ambiguous, debatable and poses a certain challenge to scientific research (Zwerger, 2019). China is a very ancient culture with a great architectural heritage. The oldest fully preserved architectural monument is the Great Wall of China (the oldest fragments date back to the 3rd century BC); most of the oldest architectural forms are known from written sources and the preservation of elements of these forms in later monuments and surviving buildings. Most of the ancient construction was wooden and has survived to this day only in copies and inheritances, as well as in vernacular wooden architecture, which is confirmed by comparison with data from ancient written sources (Wang, 2017; Zhou et al., 2019).

Most historical buildings cannot be qualified as architectural environment for most of the population, the "folk". These are palaces, temples, administrative buildings (judiciary courts (yamen), district administrations, post stations, etc.), fortresses, etc. We are, in fact, talking about different types of architectural units that were built and used by broad layers of the population of the lower social strata: simple peasants, townspeople, poor merchants, etc., related to residential buildings, household outbuildings, small shrines, etc. This group of objects is referred to here as "folk architecture" because it was built by relatively "non-professional architects". Build-

ings built professionally are referred to as "traditional architecture".

As a result of the rapid economic and technological growth of the last five decades, China presents numerous results of the rapid urbanization of the 20th century that reflect the idea of domination over nature. This has led to the chaotic construction of skyscrapers observed in many large cities, the neglect of environmental issues, and the deterioration of several aspects of human well-being (Wang, 2017; Zhang et al., 2020). This problem is relevant for modern China since 1970s, as there are still many surviving traditional old houses that represent traditional folk architecture mainly in the first half of the 20th century, but also earlier up to the end of the 18th century, and have influenced the organization of internal and external living space. Traditional Chinese timber-framed architecture has a unique semiotic language that defines Chinese cultural identity (Koh and Lim, 2022). Architectural structures are important elements that not only represent historical and cultural value, but also determine the characteristics of the heritage and evolution of civilization, reflecting the sociocultural semantics and symbolism of significant values in the semiotics of buildings and structures, which determines the priority of the semiotic approach to its study (Aroni, 2023; Eskandani et al., 2022; Zhou and Wei, 2021).

Leach largely described the concept of the city as a Gestalt rather than as an organized spatial structure. This Gestalt reflects the accumulated experience of changes and layered states that reflect an understanding of its symbolic structure (Leach, 2017). Roland Barthes mentions Rome as an example of a contemporary city, where semantic contents associated with history are constantly opposed to the functionalism of urban stagnation. He saw space in the city as consisting of discourses that may even be unknowable in a given situation or context if the historical connection or understanding is lost (Barthes, 1997). The requirements of functionality may require the demolition of the useless Colosseum, but it is the essence of Rome and without it could Rome exist as a semiotic whole? – asks the semiotic theorist. This is a semiotic significance that accompanies almost all Chinese cities, which are often rarely less and mostly more than a thousand years old. These kinds of problems have both applied significances associated with problems of city planning and its development and reflect complex symbolic contexts that determine the behaviour of the population and citizens (Eco, 1997). A similar situation exists in the Chinese countryside, as many of the traditional rural settlements are older than some

cities and their associated cultural and symbolic contexts date back to the early dynasties before the middle of the 1st millennium BC (Yongting, 2022; Zhou et al., 2019). It is possible to apply to them the same semiotic problems that were considered by mentioned European thinkers in relation to the city as a specific phenomenon.

Regrettably, since the mid-20th century, the heritage of Chinese folk architecture has been undervalued by Chinese researchers and has received limited attention in the works of foreign scholars. However, interest in studying this subject has surged recently, primarily due to the Chinese government's initiatives to revive historical cities and rural settlements since the early 2000s (Wang, 2017). The Cultural Landscape Genes of Traditional Settlements (CLGTS) theory, proposed by P.L. Liu, aims to revive and develop traditional settlements. This theory focuses on identifying and studying the cultural landscape genes and folk architecture of traditional settlements, including their geographic context (Mei, 2017).

The environment serves as a vessel for regional culture, encompassing the social, historical, and cultural aspects of human life. Within this framework, the semiotics of architecture functions to preserve collective memory and convey significant cultural and historical information to future generations, based on the spatial narratives created by traditional buildings in their symbiotic relationship with the natural landscape (Dai, 2022; Xue, 2022). In China, the concept of a building's symbiosis with its landscape carries a deeper and more nuanced meaning, consisting of three layers. The first layer involves aesthetic compositional compatibility, allowing the spatial arrangement of a building to harmonize with its surroundings and be perceived as an integral part of the natural environment. The second layer focuses on the optimal technological placement of the building to enhance functionality – ensuring good lighting, protection from prevailing winds and groundwater, proximity to drinking water sources, and stable soil and foundation conditions. The third layer addresses the mystical relationship between the building's characteristics and the natural energy "qi," as well as the correct alignment of the building with the philosophical "Five Elements" of nature (Water, Earth, Fire, Metal, and Wood). These principles are well-established in a substantial body of specialized literature known as Feng Shui (Han, 2023; Kryżanowski, 2021). Feng Shui is the art and science of geomancy, which was widely used in ancient China and is a method of arranging buildings and arranging homes in accordance

with the correct movement of qi energy in space, popularized throughout the world. The goal of Feng Shui is to harmonize the space where a person lives, attract health, happiness, money, and social success, and repel evil spirits, troubles, and diseases. Traditional Chinese astrology and medicine are closely related to Feng Shui. Feng Shui practices included the doctrine of placing buildings in accordance with the relief and orientation to the cardinal points, considering groundwaters, types of minerals in the soil, the placement of other buildings, rocks and trees nearby, etc. (Hassan et al., 2021; Kryżanowski, 2021).

Important for understanding not only the Chinese, but also the South Asian context as a whole is that contemporary urbanized people of this region adhere to beliefs associated with Feng Shui and use the services of magicians and geomancers specialized in Feng Shui, if possible (Han, 2023; Hassan et al., 2021). The design of the architectural style and form depends on the regional architectural features, among which the 'High Pedestal', 'Deep Cornice' and 'Elegant View' with their regional variations prevail in ancient Chinese architecture (Zou et al., 2023).

The conceptual basis of China's new economic and cultural policy is the preservation of rural heritage, the revival and social development of traditional villages as opposed to rapid urbanization (Zhou et al., 2019). Various approaches to preserving this heritage are under consideration and in application. This is the conservation of numerous surviving buildings and the use of their tourism potential; stimulating the development of local crafts and the preservation of traditional forms of construction in the regions with the assistance of the state and local administrations; support, advertising and government stimulation of the use of traditional elements of architectural design, spatial arrangement, etc. in contemporary construction (Zhou et al., 2019; Zhou and Wei, 2021).

Therefore, it is reasonable to study the semiotics of Chinese folk architecture in the context of representing the events of national history. A study such as this may solve practical problems of creating a contemporary eco-friendly and comfortable living environment, taking into account the ancestral experience of harmonizing the human living space and the surrounding natural landscape. The scientific novelty of the study lies in the theoretical justification of using symbols of Chinese folk architecture in contemporary residential construction, based on the semiotic approach. The practical significance of the study results is the possibility of using them

during architectural planning of traditional Chinese rural settlements and objects of contemporary architecture.

LITERATURE REVIEW

Although the process of Western-style modernization began later in China than in Western countries, it has had a profound impact on urban space development (Denison, 2018). An illustration of this modernization can be found in the contemporary architectural ensemble and its spatial and functional solutions present in Tiananmen Square (Chang, 2019). The current era is witnessing a revival of traditional Chinese culture as a symbol of national identity Chinese identity (Chang, 2019; Denison, 2018). Furthermore, this revival is built upon the interconnectedness of the past, present, and future (González Martínez, 2021). Among the notable elements of folk architecture in China are the original 'corridor bridges' known as langqiao. These corridor bridges can be found in six regions of China characterized by the presence of ancient cultures and states: Northern Fujian and Southern Zhejiang; Southern Anhui and the Jiangnan region; Southern Fujian, Southern Jiangxi, and Northern Guangdong; the Guangxi, Guizhou, and Southern Hunan border area; Hubei, Hunan, and Eastern Chongqing; and Yunnan and Sichuan. Collectively, these areas can be grouped into three regions in the northern, central, and southern coastal parts of China. Technically and architecturally similar, these bridges also exhibit regional ornamental and stylistic features. The historical and tourist significance of these bridges has only recently been recognized, despite their long-standing existence – some dating back approximately 2000 years – constructed with the same materials and techniques used for residential buildings and places of worship (Knapp et al., 2020).

Some scholars (Zhang et al., 2021) emphasize that while focusing on China's rural rejuvenation policy, it is essential to remember that the uniqueness of traditional folk architecture arises from various factors. These factors, which have shaped the interactions of communities with their surrounding landscape over long periods, sometimes millennia, include regional climatic conditions, ethno-cultural characteristics, historical events, and religious influences. Consequently, buildings founded on the principles of traditional folk architecture often exhibit advantageous characteristics, providing optimal land usage and comfortable living spaces. Such structures result from the accumulated practical experience that reflects the interactions of diverse communities with their environ-

ments. For example, entrances and main windows oriented towards the south ensure optimal sunlight, while maintaining distance from large trees prevents roots from compromising foundations, etc. (Han, 2023; Kryżanowski, 2021). Additionally, these architectural forms are adapted to the regional landscape and align with the lifestyle of the local population (Zhang et al., 2021).

Creating a residential architectural environment involves both environmental and social responsibility, reflecting the value and mental meanings, images, and historical traditions of the population (Fachun and Leontovich, 2020). The uniqueness of traditional Chinese settlement semiotics is based on the ordinariness and practicality of architectural planning. Architectural planning always considers regional landscape features as well as cultural, historical, religious, and ethno-specific traditions (Lee and Lou, 2019). Present-day Chinese urbanism combines the ambivalent nature of the latest digital technologies and ancient traditions. This creates a unique image of a contemporary high-tech and environmentally friendly metropolis as a historical continuation of ancient cities and folk architectural creativity (Liu et al., 2019; Wang and Feng, 2023). Such an approach to the development of contemporary Chinese cities ensures their environmental friendliness and economic profitability, makes them attractive for tourists and international commercial projects (He, 2021; Li and Kovacs, 2022). The studies of semiotics, such as this one, provide an opportunity to recognize the use of traditional motives in architectural objects and to reveal their socio-historical significance. These motives are typical both for the folk architecture of Chinese settlements and for the Chinatowns in other countries that retain their original national authenticity (Chu, 2020; Wang, 2020; Wu et al., 2020).

The semiotic significance of the traditional cultural heritage of China certainly consists in passing along the cultural and spiritual values, traditions, rituals and mythology that have developed over many centuries to future generations. However, it also includes the formation of respect for the historical past and the environment. These are two important components of the ethnocultural identity and a source of innovative development of national culture in the multicultural environment of the global society (Ding, 2020; Johnson, 2021; Wei et al., 2022; Zeng and Wang, 2021). The tasks of rural construction aimed at the revival of traditional settlements are to protect and renew the natural rural landscape and folk architecture along with its unique planning solutions and regional features (Yongting, 2022).

PROBLEM STATEMENT

Researchers consider studying traditional folk architecture semiotics to be one of the most effective ways of determining the criteria for the positive arrangement of living space in harmonious unity with the environment (Saidi, 2019; Zhang et al., 2020). The traditional village is of great historical and cultural value. The semiotic approach promotes its exploration with a view to preserving and reviving it in order to ensure the prosperity and well-being of the Chinese people (Bian et al., 2022; Huang et al., 2022).

The purpose of the study is to determine the significance and practical value of the semiotic factors of traditional Chinese folk architecture for rural and urban residents for the further use of research findings in the contemporary reconstruction of traditional settlements programs. In rapidly modernizing and technologically developing societies, as exemplified by China, there is a strong tendency towards the adoption of more contemporary forms and methods of construction, the Westernization of the urban landscape and the loss of traditional landscapes and architecture. However, folk elements in architecture over the centuries have performed important functions that may retain their significance for contemporaries. This determines the relevance and necessity of the research being carried out.

The objectives of the study are as follows:

1. To collect the most important elements of the semiotics of Chinese architecture, identified in the existing scientific literature;

2. To identify the most distinctive semiotic features of traditional Chinese folk architecture through a comparative analysis of representative contemporary architectural objects in China;

3. To determine the prospects for the practical use of the semiotic symbols in Chinese folk architecture for representing the events of the national history in contemporary residential construction.

METHODS AND MATERIALS

Study design – The study was conducted in several organizational stages: (1) an analytical review of scientific literature sources on the problem of traditional Chinese architecture semiotics; (2) setting the objectives of the study; (3) determining the materials and methodological approaches of the study; (4) conducting research in the form of a survey based on a semi-structured questionnaire; (5) statistical processing and analysis of the results; (6) drawing conclusions and desig-

nating promising areas for further research. The paradigm of the semiotic analysis of folk architecture involves the use of qualitative and descriptive methods (Asadpour, 2020).

The methodology of the study revolves around the ideas embodied in the CLGTS theory developed by P.L. Liu (Hu et al., 2019). The theory was designed to solve the problems of reconstruction and revival of the architectural principles of traditional settlements in accordance with historical events and periods. It is based on ancient Chinese ecological thinking and philosophical understanding of the relationship between the human and the environment and combines qualitative, quantitative and bioinformatic research methods (Hu et al., 2019).

The methodological description of the CLGTS contains dialectical, morphometric, and structural aspects that include the concept of a socio-cultural gene as a meme, the regional features of which are viewed from the humanism standpoint (Hu et al., 2021). Furthermore, this theory covers architectural, cultural, spatial, and environmental features. The four CLGTS identification rules consider internal, external, local uniqueness and overall excellence of the architecture. These parameters are evaluated through fourteen factors and are determined using such identification methods as element, pattern, structure, and connotation (Hu et al., 2021). The CLGTS Tupu method how to further develop the CLGTS theory was created as an additional new tool for to assess the regional cultural characteristics of traditional settlements from a geographical point of view (Hu et al., 2021). The CLGTS method of semiotic genetic analysis of traditional settlements was used throughout the study. In this method, the identification of significant cultural features of folk Chinese architecture was based on attention to detail and such factors as form, ornament, layout, functional purpose, spatial arrangement, design features and structural elements (Hu et al., 2021).

The study analyzed materials from the conceptual reconstruction design of the following traditional Chinese settlements: Wutong Town, Lingui District, Guilin; Sitang Town; Wuliqiao (new immigrant village in Lingui District, Guilin); Shuanghe Shanty towns in Xiangxi; Lu Village and Guilin; Fuchuan County North MAO Family Ecological Village; Long Tang Jiang; Ecological Village of Oak Tail in Mailing Town of Fuchuan Country and Hebei Ecological Village.

Employing the method of semiotic genetic analysis has allowed for a comparison of the static and dynamic spaces of the traditional settlement architecture of different historical
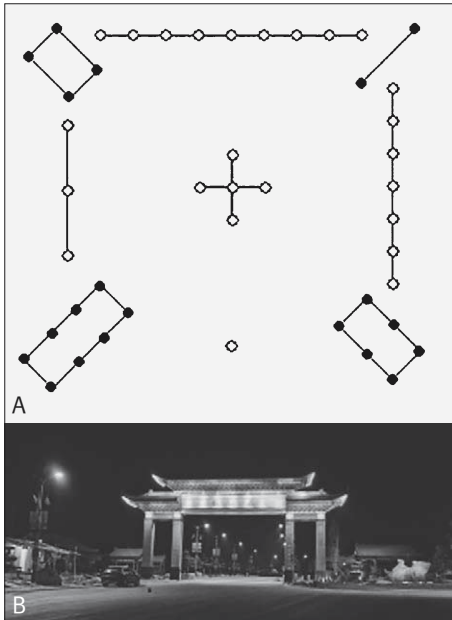
FIG. 2 A – MAGIC SQUARE ON THE SHELL OF A MYTHOLOGICAL TURTLE FROM THE LO RIVER; B – THE CONCEPT OF RECONSTRUCTIVE LANDSCAPE DESIGN OF WUTONG TOWN, LINGUI DISTRICT, GUILIN (CHINA'S TRADITIONAL VILLAGE PROTECTION AND DEVELOPMENT RESEARCH CENTRE, 1982; PROJECT FRAGMENT)

FIG. 3 'MATOUQIANG', ANHUI COUNTY IN JIANGXI, CHINA. 1840s.

periods (Liu et al., 2019). The evolution of folk architecture was studied by collating information from scientific literature sources, geographical maps and plans, historical archives, as well as the results of the survey conducted in this study. The semi-structured questionnaire used for the survey consisted of 20 statements; the answers were assessed on a 5-point Likert scale (5 – strongly agree, 4 – agree, 3 – I find it difficult to answer, 2 – rather disagree, 1 – strongly disagree). It also included 5 open-ended questions regarding the arrangement of internal and external settlement spaces, architectural planning solutions, the preferred shape of residential and public buildings along with the design of their facade and interior, the choice of building materials, the provision of household amenities, comfort, cost-effectiveness and environmental protection. The questionnaire was valid since it included both regular and open-ended questions relevant to the purpose and objectives of the study, which allowed obtaining more accurate information.

Sampling – In total, 227 city dwellers from 17 large and medium-sized cities and 239 residents of 17 traditional villages located in different regions of China throughout its territory were invited to participate in the survey. The invitation and survey were conducted via email and interviews via electronic communication channels and telephone. Participants were randomly selected without differentiation by age, gender or any other social category. All of them agreed to participate in the survey. At the same time, no personal data other than confirmation of place of residence was used, collected, and could not be used in the future.

Statistical processing – Statistical processing and analysis of study results were performed using Student's t-test to determine the statistical reliability and significance of the results, as well as the correlation of the data obtained. Accumulation, sorting and visualization of information were conducted in the Microsoft Excel program; calculations were made using the Social Science Statistics online calculator.

Limitations of the study – The study's limitations stem from the specific nature of the subject being examined. As the definition of folk architecture and its components remains a topic of debate within the academic community, distinguishing traditional semiotic symbols of Chinese settlements can be ambiguous. Nevertheless, the use of a random sample of urban residents and traditional village inhabitants allows for the interpretation of the results as relatively significant. Furthermore, the study did not consider differences in nationality, gender, or age among respondents, though future research is planned to address these aspects.

Ethical issues – Ethical protocols were upheld during the study by obtaining written consent from all participants prior to the survey. Additionally, approval was granted by the ethical commission for the study's execution, and all necessary bioethical standards for scientific research were adhered to.

RESULTS

The semiotic analysis of the traditional symbols preserved in the reconstructed settlements was primarily aimed at identifying cultural landscape genes that are important for understanding the historical past of the traditional Chinese village and its further development. Assessments given by townspeople and rural residents make it possible to assess the predominant value of elements of traditional architecture in order to make decisions about introducing these elements in the future in the construction of educational, housing, administrative or other facilities. The results obtained will allow us to determine functional and spatial solutions for the corresponding buildings. The need for such an assessment is due to trends towards modernization and extreme functionalization and westernization of architecture in areas of traditional development.

There are two main landscape-forming factors that can be distinguished in the studied settlements: mountainous terrain and water bodies. For instance, the urban area of Guilin is located in the southwestern part of the Nanling mountains on the banks of the Lijiang River. This type of location creates favorable climatic conditions for the settlements that have existed here since the third century BC. In the planning solution of the Lingui region settlements, which was formed in the era of the Qing Dynasty, the traditional folk architecture of China has preserved the famous image of the dragon, the most worshiped totem figure associated with the symbol of water and the fertility cults. In this case, the spatial solution was suggested not only by topographical conditions, but also by the symbolism chosen by the builders.

Along with the image of the dragon, the Chinese folk architecture often uses the turtle symbol related to it, which is also associated with water and flood prevention. For that reason, this symbol is reflected in the planning of traditional settlements, with water being one of the main landscape elements. According to beliefs of Chinese people, the turtle

and the dragon are soulmates, and they created the terrain together. The turtle shell is viewed as a square-shaped model of the universe. According to the CLGTS theory, the square itself is the gene that determined the most ancient forms of the spatial arrangement of Chinese settlements (Fig. 2).

Underestimating the importance of rural settlements has led to their decay. In contrast, the cities experienced a rapid population growth, which did not allow to create an ecological and well-organized cultural and economic environment in time. The result of these events was the appearance of shantytowns. This is the process of urban sprawl and the inclusion of rural settlements in their surroundings, which often retain their color and architecture. On the other hand, in China, many rural settlements grow into medium-sized cities within a short time, which creates a characteristic ensemble and features of the "urban village". They became an integral part of the residential infrastructure and social environment: provide better infrastructure typical for a city (electricity, high-quality roads, sewerage, heating, etc.), but preserve the way of life and the nature of the organization of the local community, more typical for a relatively independent rural community (Bian et al., 2022; Fachun and Leontovich, 2020). Eventually, they significantly impacted the image of contemporary cities and towns. The socio-economic role of an 'urban village' determines its historical and commercial value, as it attracts tourists who want to immerse themselves in the authentic atmosphere of ordinary historical Chinese life. However, many 'urban villages' are themselves cramped and narrow, lacking public spaces.

Reconstruction based on the principles of folk architecture appears to be a viable solution to these challenges. The Xiangxi region of China exemplifies the implementation of semiotic principles in architecture. It successfully integrates traditional symbols and signs into the design of a contemporary tourist city within its architectural landscape. The Xiangxi region is renowned for its distinctive vernacular architecture, characterized by intricate brick and wood carvings, alongside ornamental decorations of windows, doors, and screen walls displaying both geometric patterns and figurative representations of people, animals, and plants. These features may be referred to as "image symbols" or "composite symbols," conveying multiple levels of meaning and value.

In addition to these image symbols, Xiangxi architecture incorporates various "orienting symbols" that clarify spatial relationships and functional areas within structures and complexes. For instance, the placement of a 'swallow's nest' (tunkou) or a 'hearth' (huotang) within a courtyard or dwelling signifies the central location for social activities, industry, and rituals. The term "tunkou" in Chinese refers broadly to traditional decorative design elements that enhance the aesthetic value of spaces. The 'huotang' serves as a central hearth or fireplace, symbolizing family unity and fulfilling multiple roles in the home, including cooking, heating, and social interaction. Traditionally, this feature is positioned at the heart of the courtyard, fostering connections among family members and welcoming guests. Moreover, architectural elements such as the 'horse-headed wall' (matouqiang) or the 'head-facing gate' (chaomen) act as boundary markers that define the spatial limits of a complex while providing protection against fire and theft. The 'matouqiang' is distinctive in its design, preventing the spread of fire to neighboring homes by virtue of its height. Additionally, this architectural feature symbolizes a homeowner's status and signifies the attraction of prosperity, as its form resembles a herd of galloping horses (Fig. 3).

The term 'chaomen' encompasses various gate decorations, which may include imagery of deities, classic slogans and sayings, huabiao stone columns, and other decorative elements. For affluent households, a 'shigan-
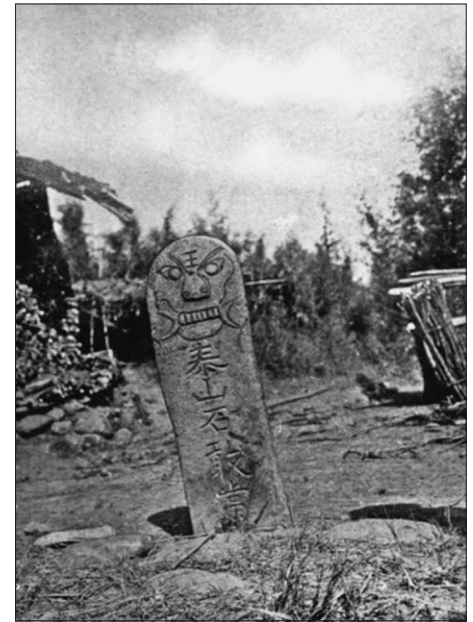

Fig. 4 Shigandang, known as A Tai Shan stone, photographed by William Edgar Geil in November 1909, near Yangshuo (Stone Face Village), Guangxi province. The five ideographs have been freely translated: "I am Tai shan: you dare not run over me". It is approximately dated to the middle of the 18th century. In contemporary construction, similar or stylized stones or images are used as a decorative element at the entrance to the territory of a house or residential complex.

Fig. 5 The revitalization of Shuanghe shantytowns in Xiangxi using the genetic symbols of a dragon and a turtle. The plan of the settlement tends to reproduce the outlines of the dragon's body; at the same time, individual buildings (the right side of the Fig. 5) and the placement of buildings within the settlement tend to reproduce the square section of the shell of the mythical turtle (compare Fig. 2 A).

Fig. 6 Planning solution of the Sitang Town reconstruction. Traditional arched gates installed outside buildings organize the space in a specific way, separating the residential and commercial space from the area for the movement of ships and carts and the placement of trade caravans. The gates have administrative significance (they designate the administrative boundaries of the village) and mystical, protecting the place of residence from external harmful spirits.

dan' – a special stone placed at a distance from the entrance (Fig. 4) – was a common feature, aimed at preventing the entry of evil spirits.

Applying these symbols and signs to the design of a contemporary tourist town in the Xiangxi area offers a fascinating example of how traditional elements can be adapted and reimagined to meet contemporary needs and expectations. Thus, the project of reconstructing Shuanghe shantytowns in the city of Xiangxi uses the same dragon and turtle symbols that are typical for folk Chinese architecture and are also present in similar projects (Fig. 5).

This specific approach to the landscape design for revitalized settlements arises from a philosophical understanding of architectural semiotics, as well as an acknowledgment of the historical and sacred significance imbued in traditional symbols. These symbols exemplify intergenerational continuity and are intended to foster the economic, social, and environmental development of modern China.

Analyzing the semiotic approach to landscape design emphasizes the genetic relationships between settlement layouts, the arrangement of internal and external human living environments, and the natural landscape. A particularly noteworthy example is Sitang Town, often referred to as the 'Chinese Venice' due to its location on nine rivers that divide the village into eight parts, interconnected by 104 unique bridges. These picturesque arch bridges, often adorned with covered art galleries, embody valuable cultural heritage and necessitate preservation and careful reconstruction (Fig. 6).

Thus, by generalizing reconstruction approaches based on the semiotic analysis, we can identify a number of common genetic features that are to some extent present in the historical folk architecture of China and have been successfully used by contemporary architects (Fig. 1). The semiotic analysis has allowed us to identify such key constructive genetic features of architectural planning solutions for the reconstruction of traditional settlements:

– The placement of architectural objects in accordance with terrain features.

– Ensuring harmonious unity between internal and external spaces, as well as elements of earth, water, and sky.

– Utilizing mythological totemic symbols that represent well-being, prosperity, and strength.

– Employing natural building materials.

– Repeating traditional architectural forms.

– Incorporating traditional decorative elements into the design of architectural features and smaller structures.

– Balancing the utility and functionality of architectural objects with the aesthetics and philosophy of their cultural and historical meanings.

Through surveying both urban and rural residents, we gained insight into the significance of the primary semiotic factors that inform the conceptual approach to reconstructing folk architecture (Table I).

As can be seen from this table, there are some statistically reliable and significant differences in respondents' assessments. City dwellers pay more attention to the preserva-

Table I Comparative analysis of the survey results

Semiotic factors	GPA		Student's t-test	p
	City dwellers (A)	Villagers (B)		
Terrain-compiled planning solutions	3.8±0.5	4.2±0.6	−0.89	>0.05
Preservation of the historical settlement layout	4.4±0.2	3.9±0.3	2.4	<0.05
The use of natural building materials	3.6±0.8	4.0±0.5	−0.82	>0.05
Tourist attractiveness	4.5±0.2	3.9±0.2	3.41	<0.05
The provision of household amenities and comfort	4.1±0.3	4.8±0.2	−3.36	<0.05
Emphasis on the historical past of the settlement	4.5±0.2	4.6±0.1	−3.36	<0.05
Utility and functionality of planning solutions	3.8±0.4	4.4±0.2	−2.32	<0.05
The solution of social issues	4.0±0.2	4.6±0.4	−2.32	<0.05
The solution of environmental issues	4.3±0.6	4.5±0.5	−0.49	>0.05
Philosophical concept of the project	4.0±0.4	3.8±0.2	0.77	>0.05
The use of traditional mythological symbols	4.2±0.5	4.3±0.4	−0.27	>0.05
Security	3.9±0.3	4.4±0.1	−2.74	<0.05
Cognitive and educational value	4.6±0.2	4.8±0.2	−1.22	>0.05
Historical continuity of generations	4.6±0.4	4.7±0.3	−0.35	>0.05

tion of the historical layout of traditional settlements (4.4±0.2 vs. 3.9±0.3 points, p<0.05) and the attractiveness of traditional Chinese architecture for tourists (4.5±0.2 vs. 3.9±0.2 points, p<0.05). On the other hand, respondents living in these settlements (villagers) are more concerned about the provision of household amenities (4.8±0.2 vs. 4.1±0.3 points, p<0.05), security (4.4±0.1 vs. 3.9±0.3 points, p<0.05), the utility and functionality of planning solutions (4.4±0.2 vs. 3.8±0.4 points, p<0.05), as well as solving the social issues of the settlement (4.6±0.4 vs. 4.0±0.2 points, p<0.05). Both groups of respondents equally noted the importance of the historical past of traditional settlements (4.5±0.2 and 4.6±0.1 points, p>0.05), terrain-compiled planning solutions (3.8±0.5 and 4.2±0.6 points, p>0.05), the use of natural building materials (3.6±0.8 and 4.0±0.5 points, p>0.05) and the solution of environmental issues in rural settlements (4.3±0.6 and 4.5±0.5 points, p>0.05).

Moreover, they both emphasized the importance of the cognitive and educational value of traditional folk architecture objects (4.6±0.2 and 4.8±0.2 points, p>0.05) as well as the continuity of generations (4.6±0.4 and 4.7±0.3 points, p>0.05). This of course means that the two groups also consider the use of mythological symbols in the reconstruction process necessary (4.2±0.5 and 4.3±0.4 points, p>0.05), since such symbols are the archetypal basis of psychological confidence in well-being and prosperity. The correlation coefficient between the indicators of the studied groups is 0.29, which suggests that there is a direct, but not very strong correlation between them.

The typology of traditional rural architecture in China is difficult to define in general terms, since it combines the experience of many eras and many regions with significant natural landscape, climate, and cultural differences, as well as more than 50 national minorities in addition to the main culture of the Han Chinese. Therefore, the basis of such a typology of traditional rural architecture is most easily considered to be the semantic elements of traditional culture representing mythological ideas and adaptations to the environment. These elements give meaning to the building and fit it into the general discourse of culture. The distinctive typology of contemporary architecture lies precisely in the absence of these semantic elements of tradition, which were eradicated during the Chinese revolution and early Chinese Communist party governance since 1949 and the influence of the contemporary westernized architectural approach.

The mutual influences consist of two streams of change. Traditional rural architecture accepts elements of functionalism and technological improvements: the use of concrete and frame construction, engineering infrastructure inside buildings (cables, sewerage, water supply, etc.), typical Western formats of windows, doors, doorways, etc. Contemporary architecture, as shown in the examples, adopts elements of Feng Shui, orientation to the cardinal points, specific division of internal spaces according to their functionality, the use of round entrances and shigandan, the use of traditional magical and mythological symbols as important attributes of the building.

DISCUSSION

The pronounced appreciation for traditional symbolism in architectural elements, shared among both rural and urban respondents, corroborates the perspective of researchers who describe traditional architectural forms as reflections of archetypal foundations of confidence and well-being (Zhang et al., 2021; Zhou et al., 2019). In a Chinese context, this connection is particularly pertinent given the historical evolution of geomantic practices, commonly recognized now as Feng Shui (Fengshui, n.a.; Liu et al., 2019; Shao and Zhang, 2018). These beliefs are deeply intertwined with traditional calendars, annual festivals, and the folklore of various regional groups within China. Accordingly, the preservation and incorporation of such elements in housing construction are likely to garner psychosocial approval from communities and enhance individual psychological comfort and a sense of well-being (Chang, 2019; Denison, 2018). Similar phenomena have been documented or suggested in various studies across other nations where traditional architectural elements and spatial configurations have informed residential, administrative, and urban design (Aroni, 2023; Asadpour, 2020).

Analyzing Chinese architectural objects through the lens of CLGTS theory highlights how spatial planning solutions derived from traditional settlements are informed by geographical features, underscored by cultural factors. This observation aligns with statements made by researchers (Hu et al., 2021) emphasizing the need to preserve traditional customs and their manifestations in Chinese architecture, known for their richness and cultural significance. The diversity of spatial forms within the CLGTS framework (Hu et al., 2021) stems from the geomantic approach to spatial planning and the necessity to address the functional requirements of architectural structures. For centuries, the spatial geometry of traditional settlements has been based on the concept of a spherical sky and a square earth, exemplified by the construction of houses and settlements in square layouts across northern China (Zhou and Wei, 2021). Furthermore, population migrations to southern regions with differing geomantic traditions led to the transition from square to round and elliptical layouts. Over time, more complex configurations emerged as a response to the nonlinear characteristics of natural environments (Huang et al., 2022). Researchers have validated the influence of migration and local heritage on architectural transformations as populations moved from rural to urban settings (Huang et al., 2022;

Koh and Lim, 2022). This analysis underscores the enduring significance of traditional symbolic meanings within architecture for housing construction and their impact on residents' perceptions.

Within this geometrically complex environment, CLGTS theory sees orderliness and the desire to find ideal forms of architectural planning. This relevance is particularly acute in the context of contemporary urbanization trends, where modernism has often resulted in chaotic developments of skyscrapers, creating a disharmony within the arrangement of residential areas.

Moreover, the CLGTS framework emphasizes the genetic quality of self-repetition (iteration) within spatial structures and symbols. Architecture thus can be compared to social and humanitarian systems, as well as self-evolving natural systems, which also tend to utilize iterative elements. The genetics of cultural meaning is manifested in living space layouts, house shapes, and the use of decorative elements (Zhang et al., 2021; Zhou et al., 2019). The study indicates that the iterative design approach in contemporary architecture can enhance the organization of living spaces for urban residents while preserving a traditional landscape for rural inhabitants as rural buildings undergo modernization (Bian et al., 2022; Chang, 2019).

The findings of this study generally support the tenets of the CLGTS theory, and the survey results reveal various aspects regarding the significance of traditional vernacular architectural symbolism for the well-being of residents. Presumably, the validity of the CLGTS theory in understanding the semiotics of traditional Chinese architecture is rooted in the principles of its semantic interpretation. Architectural elements – including the orientation of buildings to account for cardinal directions, adherence to widely recognized Feng Shui principles, and the presence of specific features that reflect traditional beliefs – are interpreted by cultural representatives within their respective semantic frameworks. A "correct house", which meets these criteria and incorporates essential "protective elements" like shigandan, is perceived as a reliable home that brings health, prosperity, and good fortune to its occupants. Consequently, this framework supports a sense of anticipated well-being and social status (Han, 2023; Kryžanowski, 2021; Shao and Zhang, 2018).

The framework used in this study reflects principles similar to those applied in Chinese hieroglyphic writing, which relies on specific figurative representations that correspond to

the structure of the language and the objects within the surrounding world. The semiotic visualization model of CLGTS symbols is organized to construct architectural objects while adhering closely to their historical, cultural, socio-ethical, and environmental components in graphic, textual, and spatial contexts (Hu et al., 2021).

CONCLUSION

The rapid modernization of construction methods and materials, coupled with the urbanization of rural areas, has led to the loss of traditional settlements, rural landscapes, and unique architectural heritages. Folk architecture carries symbolism that continues to profoundly impact the well-being and sense of security among residents of both cities and villages. The primary objective of this study was to explore how traditional architectural folk symbolism can be applied in the contemporary reconstruction of traditional settlements. The semiotic analysis identified two key landscape-forming elements in the studied settlements: mountainous terrain and flowing water.

This research has argued that the semiotics of Chinese folk architecture is closely tied to traditional symbols such as the dragon and the turtle, both associated with water, flood prevention, and prosperity. The findings indicate that the turtle's shell represents a square model of the universe in folk architectural contexts, further supporting the CLGTS theory's assertion that this square is a core 'gene' influencing ancient spatial arrangements. A survey conducted with 227 urban dwellers and 239 residents of traditional villages revealed that both groups recognize the importance of semiotic factors, such as the cognitive and educational significance of folk architecture and the continuity of cultural heritage across generations.

The primary distinction between the two groups lies in their priorities: urban residents are more focused on the tourism appeal of traditional settlements, while villagers prioritize security and domestic comfort. The enduring influence of traditional architectural symbols on urban and rural populations, along with their assessments, underscores the necessity of integrating traditional architectural forms in space organization, interior design, and decorative elements for modern housing construction. It is posited that this approach can positively influence residents' personal well-being and sense of security, fostering a deeper connection to their cultural roots.

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Sources of illustrations and table

Figs. 1, 5, 6   Photos by the authors
Fig. 2   A – Fengshui, n.a.;
       B – developed by the authors
Fig. 3   Cultural Keys, 2023
Fig. 4   Tian, 2021
Table I   Authors' materials

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Both authors contributed to the study conception and design. Conceptualization: M.L. Material preparation, data collection and analysis were performed by M.L. and X.H. The first draft of the manuscript was written by X.H. and both authors commented on previous versions of the manuscript. Both authors read and approved the final manuscript.