Inheritance and Updating Strategies of B&B Design Concepts in the Context of Artificial Intelligence-A Case Study of B&B Design in Southern Anhui, China

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Abstract: These instructions address the issues of serious homogenization, regional weakening, lack of systematic renovation, and the inheritance and protection of traditional culture in current rural guesthouse designs in southern Anhui Province. It explores optimization strategies for these designs from multidisciplinary perspectives such as architecture, geography, and design. The study integrates the viewpoints of design experts, consumers, and operators, proposing an innovative design strategy. Using a mixed qualitative and quantitative approach and drawing on existing literature as theoretical basis, it emphasizes the regional culture of southern Anhui. Through questionnaires and interviews with designers, consumers, and operators, it investigates innovative design strategies for guesthouses under the background of artificial intelligence. These strategies not only replicate previous consumer response models but also introduce innovative design patterns and insights, providing a comprehensive framework for the design strategy of rural guesthouses in southern Anhui. The research establishes a theoretical basis and practical guidance for guesthouse design based on regional culture, emphasizing the integrity of design and consumer interaction. It contributes to the output of regional culture, the development of the guesthouse industry, and the enhancement of market competitiveness. The study proposes future strategic research directions, further exploring the integration of artificial intelligence and the distinctive regional cultural features of southern Anhui to meet the diverse consumption demands and aesthetic preferences in guesthouse design driven by the booming tourism industry.

Keywords: *Artificial Intelligence; B&B Design; Development Strategy; Regional Culture; South Anhui B&B*

1. Introduction

1.1. Introduction to the background of the study

Tourism has been developing rapidly in recent years, and the B&B industry is also ready to create like a spring bamboo shoot because the B&B industry started relatively late, and there is no complete theoretical system for the concept of B&B, so the definition of the concept of B&B is also different. Jackie Clarke thinks a B&B is a lodging place in a tourist environment (Clarke, 1996). Timothy believes that you can stay in the homes of residents of a tourist area to understand and experience the living culture of residents, so the lodging and catering services in the homes of residents are collectively called B&B. Timothy believes that during tourism, one can stay in the homes of residents in a tourist area to understand and experience the life and culture of the residents, so the accommodation and food services in the homes of residents are collectively called B&B (Tourism and the Lodging Sector, 2009). Japan's minshuku is a family-oriented farmhouse where

tourists can stay. Switzerland's B&Bs are under the management of the state and need to be strictly scrutinized in all aspects of B&Bs before they can qualify as B&Bs. Taiwan's B&B is the earliest and most mature area of development in China. Taiwan's B&B has its scope of definition: a B&B is a place that provides travelers with a place to reside that is operated in the form of a family sideline and combined with local and regional culture. Through the exploration and research of different professional scholars, B&B, in a broad sense, refers to the business model of providing accommodation and special services for tourists experiencing the life of the local culture. It is the reasonable use of their free residence by the residents to offer tourists from all over the world a residence of regional style, which includes the humanities, nature and other factors of the local region.

B&B has always been a buzzword in the tourism industry, and Rojek believes that travel can compensate for the inevitable loss of being close to nature and relaxing in modern life. Therefore, B&B is called "warm accommodation," which is a small-scale accommodation for tourists to experience the local nature, culture, and production way of life (Tourism and the Lodging Sector, 2009). B&Bs provide tourists with a more localized travel experience warmly and intimately and have risen rapidly in the last two years, with more and more people accepting and enjoying this form of accommodation or way of travel.

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As a new way of life, B&B has shown a growth spurt under the joint promotion of many subjects and is attracting the attention, thinking, experimentation, and practice of many parties.

Along with the trend of personalized and customized tourism, the market demand for B&Bs continues to climb. According to the China National Tourism Administration (CNTA), China has 3.6 billion domestic tourist trips per year, of which more than 1.8 billion are in the countryside and ancient neighborhoods. The size of the B&B market is growing. The number of B&Bs and hosts in China grows yearly (as shown in Table 1).

Table 1 Changes in the number of domestic B&B listings and the number of B&B hostsin China, 2016-2020

| Form	Vintages				
	2016	2017	2018	2019	2020
Number of landlords (million)	23.7	30.2	32.5	39.3	45.8
Number of housing units (million)	59.2	81.5	107.2	134.1	162.1

Data source: China Tourism and B&B Development Association, author's collation

From 592,000 households in 2016 to 1,621,000 in 2020, especially in 2018-2020, the number of B&Bs has reached millions. China's local B&B market is expanding (as shown in Table 2, Figure 1), and the size of China's B&B industry is also growing. From 2016 to 2020, the average annual growth rate is over 35%.
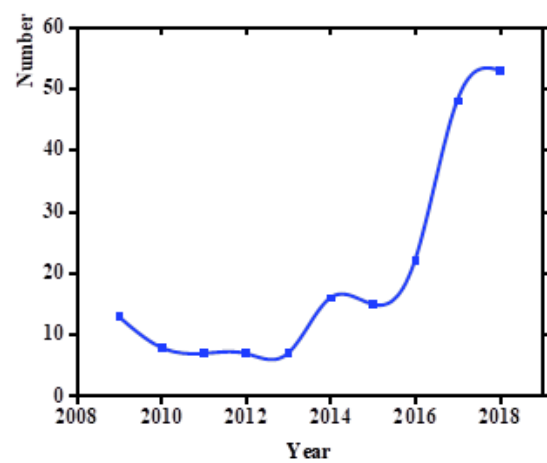
Table 2 China Domestic B&B Market Transaction Size, 2016-2020

Form	Vintages					
	2015	2016	2017	2018	2019	2020
Transaction size (¥ billions)	613	897	1227	1724	2369	3203
Year-on-year growth rate		46.3%	36.7%	40.5%	37.4%	35.2%

Data source: China Tourism and B&B Development Association, author's collation
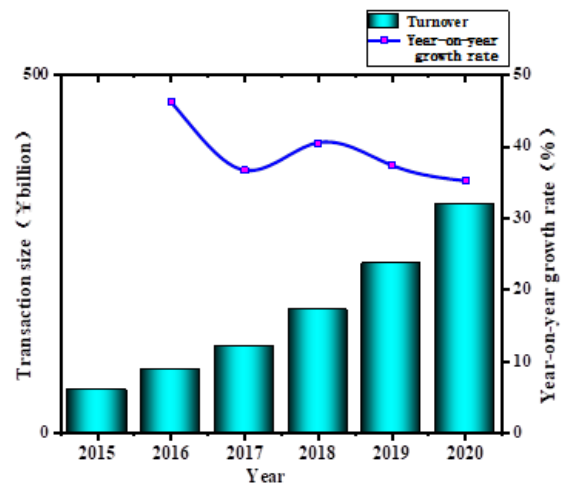
Fig 1 China Domestic B&B Market Size Trend, 2016-2020

Fig. 2 Trend in the number of papers on regional B&B design 2009-2018

Pamela Lanic analyzed the relationship between food and beverage culture and the development of the B&B industry (Lanier et al., 1993). Michele Carboni studied the connection between B&Bs and religion (Carboni et al., 2016). Hsieh analyzed and compared the regional cultures of Taiwan, China, and the United States and found that B&B operators in the United States have a more relaxed working and living atmosphere than those in Taiwan. Nancy et al. conducted a study on the B&B industry in South Africa. They found that the main obstacles to the development of local B&Bs are the need for more local business management and regional security stability. Nancy et al. researched the B&B industry in South Africa. They found that the main obstacles to the development of local B&Bs are the need for more local management and regional security instability (Hsieh et al., 2010; Nuntsu et al., 2004). Sherry conducted an in-depth discussion on the legal operation of B&Bs (Sherry, 1993). Kelley C.L. pointed out that the tax exemption of B&Bs should be reduced or exempted, which can stimulate the development of the B&B industry (Kelley et al., 1996).

In the market research of rural B&Bs, Junes D. in 2011 examined Hong Kong tourists' preferences for domestic B&Bs in China and found that middle-income females are the primary source of tourists in mainland China (Jones et al., 2011); Chen et al. in 2013 examined the situation of tourists in Taiwan, and found that B&B tourists showed the characteristics of "middle-income" (Chen et al., 2013); Gunasekaran and Anand Kumar, in their 2012 survey of tourists in the Pondicherry region of India, found that "economic factors, local characteristics" were essential reasons for tourists to choose B&Bs (Gunasekaran et al., 2012); Chen et al. explored "service quality, tourist satisfaction and tourist loyalty" and found that "service quality, tourist satisfaction and tourist loyalty" were the primary sources of tourists from mainland China. Chen et al. explored the relationship between "service quality, tourists' satisfaction, and tourists' loyalty" (Chen et al., 2013). In the supply-side study of B&Bs, Lanier's survey in 2000 found that 31% of lodging facilities in the United States were changed into B&Bs and provided 1-4 and 5-8 rooms, accounting for 31% and 31%, respectively (Lanier et al., 2000); Ingram's survey in 1996 found that B&Bs in the United Kingdom were mostly operated by independent owners, while tourists and owners had different opinions about the quality of B&Bs and the quality of service. Owners while in the study of the relationship between tourists and owners, Stronger in 1981, on the study of British B&B owners and Australian tourists, found that owners and tourists not only have a transactional relationship but also an emotional intersection, the boundaries of which are blurred (Ingram, 1996); In the study of the B&B problem, Lanier and Berman believe that the B&Bs are facing difficulties because of the limitations of the local regulations (Stringer, 1981). In the relationship between B&B and rural tourism, Liza Fleischer investigated Europe, Israel, and North America and found that rural tourism has great global similarities (Lanier et al., 1993). Based on the above research, we found that B&B as a "non-traditional" form of residence (Yuan et al., 2018), which has a significant impact on the travelers' B&B experience, value perception, satisfaction, and the influencing factors include the culture, architecture (Ali, Khairuddin, & Zainal Abidin, 2013), food, health, price, etc. of B&B. B&B design is closely related to aesthetics and emotional connotation design. B&B is a product of the development of human society to a particular stage. It is the inevitable result of developing culture, tourism, and even the world economy in a specific stage.

Just as the B&B industry continues to evolve and move forward, the artificial intelligence craze has swept across the world. Artificial intelligence is an emerging discipline that has brought new problems and solutions to many industries. For example, in the intelligent diagnosis of medical images, in the risk control of finance, in the intelligent transportation of cities, in the classroom in education, in factories in manufacturing, and intelligent logistics. Artificial intelligence has been widely used in people's daily lives (Bagherzadeh et al., 2022). In the B&B design industry, AI can use its efficient and convenient generative ability to provide fertile plans and program visualization for B&B design, which is much more efficient than the current design efficiency of human beings, and the degree of detail completion is also much better. Through deep learning and image recognition, AI can help integrate regional culture, ecological civilization, and B&B design (Abidin, Bjelland, & Øritsland, 2008), creating B&B designs with more uniqueness and local cultural characteristics, which is conducive to boosting rural tourism with new development. The combination of artificial intelligence technology and B&B design will provide unlimited potential for developing B&B in the new era.

2. Regional culture of the southern Anhui province

2.1 Architectural culture

The Huizhou architecture in southern Anhui has high construction skills, strong cultural connotations, and unique local characteristics. The characteristic buildings of south Anhui mainly contain ancient houses, ancient ancestral halls, and ancient pagodas, examples of Huizhou's architectural culture. While the historical and cultural building types are primarily represented by Huizhou houses, with strong Huizhou cultural characteristics (as shown in Figure 4), some of the modern new residences and so on slightly show the style characteristics of its cultural transition zone, which have a specific correlation with the houses in central Anhui and Jiangsu and Zhejiang, and most of the elements of the residential design are mainly Huizhou. Each of the decorative methods used has its characteristics. The landscape is designed with courtyards, pools, leaky windows, bonsai, architectural decorations with carved beams and decorations, and the landscape is characterized by a unique local flavor. The architectural decorations of carved beams and decorated plaques and inscriptions reflect the high artistic value of local residential architecture. The buildings are enclosed by high walls, with horse-heads, walls, and horse-heads of different heights, highlighting the main features of green mountains and water, white walls, and tiles. The overall view is simple, and at the same time, it is full of aesthetic sense. Carving art is one of the significant features of the residen ᵗ ee carving ᵗ the region. ᵗ ᵗ al folk de ᵗ rn Anhui ᵗ ᵗ g,

and Stone carving with Huizhou style (as shown in Fig. 3), which are harmoniously blended with the building and are exquisite and are the products of the long-term cultural accumulation of Huizhou architecture, which shows the unique humanistic connotation and regional cultural characteristics of southern Anhui.
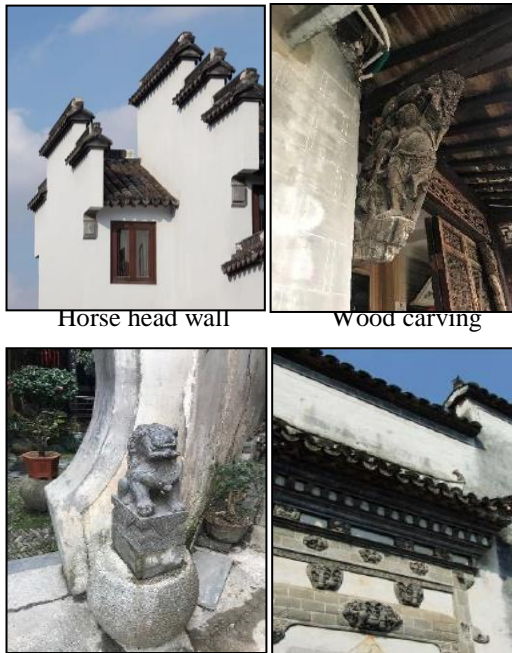
Fig 3 Horse head wall and three carvings of Huizhou architecture

2.1.2 Huizhou Culture

It emerged in the late Northern Song Dynasty and flourished in the Ming and Qing Dynasties more than 800 years ago. In the field of art, such as Huizhou seal carving, Huizhou printmaking, Huizhou engraved books, and so on, have far-reaching influence. Especially the building craft of Huizhou style houses, the architectural development all over the south of Anhui Province is influenced by it, which essentially has a lineage of landscape style.

2.2 Influence of regional culture on B&B design

Regional culture is one of the essential creative sources of B&B design. For the design of B&B, regional culture points not only to the object itself but also to the hidden things behind it, such as history, nature, symbols, and space, which float outside the architectural carrier, hidden behind the traditional forms, reflecting specific values, ways of thinking and aesthetic consciousness through the architectural hardware. Therefore, only through a deep understanding of the connotation of regional culture in B&B design can we better apply regional culture to B&B design and create B&Bs with regional characteristics. Designers need to deeply understand the concept and development process of regional culture and understand the interaction between human beings and nature in the process of historical development in order to integrate regional culture into B&B design and give B&B a new color and vitality.

Therefore, there is interaction and mutual influence between regional culture and B&B design. B&B design can fully reflect the interrelationship between culture and regional environment, architectural space, local customs, and human history. B&B design concepts and regional cultures are mutually inclusive (Chumiran, Abidin, & Sirat, 2015).

3. Artificial Intelligence and B&B Design

3.1 Overview of Artificial Intelligence Applications in Architectural Design

Architectural design has entered the stage of artificial intelligence after experiencing the stages of modularization, computational design, parameterization, etc. The proposal of Generative Adversarial Neural Networks (GAN) in 2014 opens a new chapter of architectural generative design and further integrates architectural design with artificial intelligence. Various neural networks based on convolutional neural networks (CNN) in computer image processing have begun to be applied to architectural design; the most typical are generative adversarial networks (GAN) to generate architectural plans, architectural style diagrams, renderings, and so on. The maturity and commercialization of generative AI based on large models further reduce designers' difficulty in using AI technology. It makes human-computer interaction more straightforward and more natural. Table 3 demonstrates the various tasks for which generative AI is used for architectural design. AI-assisted design has become another essential design paradigm since the rise of computer-aided design.

Type of mission	Descriptive
Plane generation	Reconstructing functional partitions and generating building plans from building plans using GANs
	Designing spatial layouts based on learning existing cases via GAN
	Transforming a planar graph into graph-structured data to accomplish deep learning training
Rendering	Implementation of sketch generation rendering using Cycle-GAN
	GAN models are trained using multimodal data to generate images of the appropriate style
	Using StyleGAN to generate a series of architectural renderings with locally distinct attributes

3.2 Influence and application of artificial intelligence on B&B design

3.2.1 Impact of Artificial Intelligence on B&B Design

Artificial intelligence technology can accelerate the process of B&B design, enable designers to realize diversified B&B design solutions in a short period, improve design efficiency and innovation, provide design practitioners with more design concepts, and utilize deep learning, image recognition, and other technologies to integrate regional cultures into B&B buildings and form B&B buildings with regional characteristics. Using artificial intelligence technology to analyze the behavior and preferences of tourists, and based on the user's preferences and historical choices, recommend to tourists the characteristic B&Bs suitable for them, and improve the B&B experience of tourists; at the same time, it can also propose personalized B&B design opinions for different B&B owners in terms of B&B styles, indoor arrangements, and indoor decoration.

3.2.2 Application of Artificial Intelligence in B&B Design

(1) Extraction of regional cultural elements

A large number of B&B sample images and B&B architectural models are collected through big data technology and field research, including photos and models of windows, doorways, carvings, colors, textures, and other features of various B&B buildings, as well as data related to regional cultural elements including images, construction details, materials, colors, and proportionality relationships, to be used for subsequent machine learning and computational analysis. Since the emergence of deep learning technology, many tasks that require repetitive operations and experience, such as the recognition and classification of architectural elements, can be realized by training a convolutional neural network model, which usually uses a pre-trained model as a basis and fine-tuning it to adapt to the feature extraction task of specific regional cultural elements and B&B architectural elements and to extract the regional cultural elements from a vast amount of regional characteristics of B&B designs. Then, based on the digital model, computer vision technology and image processing algorithms are used to extract the features of regional cultural elements, such as shape, texture, proportion, etc. The extraction framework is shown in Figure 4.
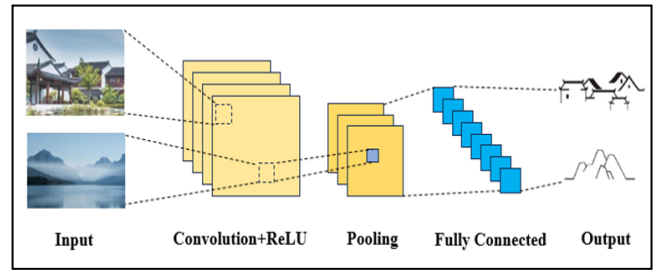

Fig. 4 Feature extraction and recognition framework of regional cultural elements

Finally, the extracted regional cultural elements, labeled with the corresponding labels, are transformed into editable and manipulable digital data to obtain a dataset of regional cultural elements that meet the expectations to be used for the innovation of regional culture and the application of B&B design.

(2) Generation of regional cultural elements

With the further rise of generative artificial intelligence, GAN generative model-based techniques can realize various intelligent generative tasks, such as image generation, image rendering, design style migration, etc. The quality of image generation and even 3D generation tasks has been further improved in the last two years with the rapid maturation of graphically aligned large-scale language models. Through learning, the neural network can grasp the intrinsic connection between the input and output images. In the refinement of regional cultural elements, neural networks can decompose and reorganize regional cultural elements to generate new regional cultural elements. It is equivalent to encoding different regional cultural elements as implied vectors and then re-calculating and re-designing different implied vectors (e.g., simple addition) to arrive at a new implied vector, according to which new regional cultural elements are generated to generate new cultural symbol designs (the generation framework is shown in Figure 5). The new cultural symbol design has the characteristics of the original object at the same time, thus providing a new interpretation of the regional culture. In this way, the various characteristics of the regional cultural elements that are difficult to manipulate are combined with the B&B design, e.g. digital adaptation of traditional bamboo weaving process (Li, Abidin & Mokhtar, 2013). Then, a new B&B design with regional cultural characteristics is generated.
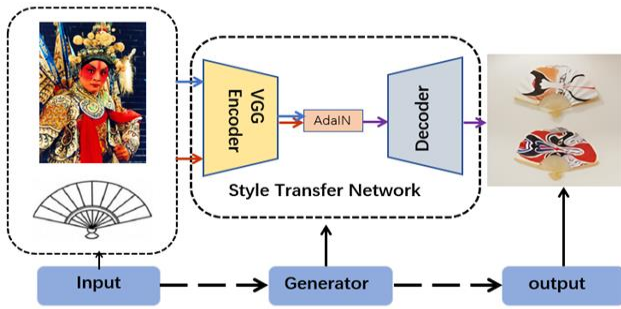
Fig 5 New cultural symbol designs generation framework

Through the integration of Huizhou cultural resources through artificial intelligence technology, it will be transformed into images, text, video, voice and other content to form a data model of typical information of history and culture and a demonstration of the symbolic expression system, which can not only play specific protection and inheritance of historical relics and regional culture; on the other hand, it also promotes the development of the new round of Huizhou cultural resources, and at the same time. In contrast, the concept of regional cultural design of the bed and breakfast has been inherited. On the other hand, it also promotes the development of a new round of Huizhou cultural resources. At the same time, the concept of B&B regional culture design has been inherited, and it provides more regional cultural resources, B&B design concepts, and methods for B&B innovative design. In this case, inquiry research activities are need in order to explore the needs (Toyong, Abidin, & Mokhtar, 2021).

4. Practical research on the design of folk lodgings in southern Anhui Province

### 4.1 Development Status and Challenges of B&B in South Anhui Province

4.1.1 Development Status of B&B in Southern Anhui Province

Most of the lodgings in South Anhui are built based on the natural landscape, human resources, and ecological environment of South Anhui, with the characteristics of regional culture and traditional residential architecture. After planning and designing, the lodgings in South Anhui have perfect supporting facilities and services so that people can experience a comfortable environment and, at the same time, feel the regional culture and cuisine of South Anhui. The space scale of such characteristic lodging is usually small, with family as the main business, which can meet the diversified needs of tourists. In recent years, the enthusiasm for developing lodging across southern Anhui has also increased, with the emergence of lodging based on scenic spots, leisure and recreation lodging, ecological scenery lodging, outdoor sports lodging, and so on. According to incomplete statistics, by the first half of 2022, Anhui province will have more than

14,000 beds and breakfasts, most concentrated in the southern Anhui region. Based on the relevant data from the platforms of GoWhere.com, Touniu.com, and Tujia.com as a reference, the author has compiled the number and percentage of B&Bs in each region of southern Anhui, as shown in Table 4 and Figure 6.

Table 4 Statistics on the number of B&Bs in cities in South Anhui Province

Search Keywords: bed and breakfast		
municipalities	Number of B&Bs	percentage
Huangshan prefecture-level city centered around the Huangshan Mountains in south Anhui	14871	46%
Xuancheng prefecture-level city in Anhui	6874	21%
Chizhou prefecture-level city in Anhui	5153	16%
Wuhu	3365	10%
Ma'anshan, a prefecture-level city in Anhui	1368	4%
Tongling prefecture-level city and county in Anhui	1039	3%
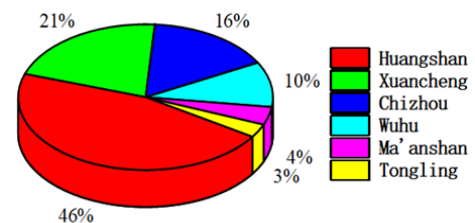
Fig 6 Percentage of the number of B&Bs in each region of southern Anhui Province

There is a significant gap in the distribution of B & Bs in the southern Anhui region. The number of B&Bs in the cities of Huangshan, Xuancheng, and Chizhou occupies more than 95% of the total area of southern Anhui, especially Huangshan City. However, the area only accounts for about 1/4 of the total area of southern Anhui; the number of B&Bs in Huangshan City is far ahead of the other areas and even more than double the number of B&Bs in Xuancheng City, which is in the second place, and accounts for more than half of the B&Bs in all of the south of the Anhui region. Xuancheng and Chizhou also

have a lot of B&Bs, and the total number of B&Bs in the two areas is close to 40% of the southern Anhui region. The number of B&Bs in Wuhu, Maanshan, and Tongling is minimal. The reason why Huangshan City is the most concentrated area with the most significant number of B&Bs in the southern Anhui region is that, on the one hand, Huangshan City has rich natural and cultural resources, has the world-famous national 5A-level tourist scenic area (Huangshan Scenic Area), and is the birthplace of traditional Hui culture, which contains a rich regional culture of the southern Anhui region, including the unique natural environment of the south of the Anhui Province, regional architecture, humanistic features, and so on.

### 4.1.2 Challenges faced by B&Bs in southern Anhui province

Serious commercialization of B&Bs and lack of cultural connotation: Through investigation and analysis, it is found that many B&Bs in southern Anhui Province of China have been highly commercialized, and traditional B&Bs have a calm facade resembling local residential houses, but the interior has been transformed into an economic hotel, lacking local, regional culture.

Serious homogenization of B&Bs: Many B&Bs in Southern Anhui have serious homogenization of style. With the increasing standardization and normalization of the B&B industry, designers are faced with the challenge of how to get rid of homogenized designs.

## 4.2 Characteristics of folk lodging design in southern Anhui Province

4.2.1 Architectural Characteristics of Folk Lodging in Southern Anhui Province

South Anhui folk lodging is organically combined with the surrounding environment, reflecting the sense of spatial hierarchy. The spatial layout of folk houses in southern Anhui mostly evolved from single-story triads and quadrangles. The number of stories and high enclosure walls has been increased vertically to expand the original functional space. The basic unit form of folk lodgings in southern Anhui is the triad and quadrangle, and the spatial plane is mainly in the form of a square. The general height of the building is mostly in the form of a double-story structure, and its planar spatial layout pattern can be categorized into four types:"凹" type, "回" type, "H" type, and "日" type (as shown in Figure 7).
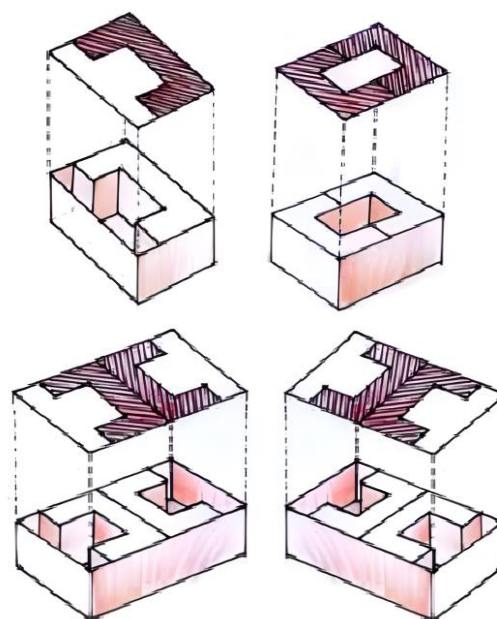
Fig 7 Spatial plan type of lodging space of southern Anhui

In addition, the patio is a very representative design element in the design of southern Anhui lodging, which carries various functions such as drainage, lighting, ventilation, etc. The patio is an essential design element in the southern Anhui region, where land resources are relatively tight. The patio and the hall are connected and open, without walls, partitions, and other coverings, which strengthens the airflow, creates good heat and pressure ventilation conditions, and circulates fresh air. The patio space skillfully combines nature and architecture, fully echoing the natural concept of "unity of man and nature," and plays a role in regulating indoor temperature, energy saving, emission reduction, and the living environment (as shown in Figure 8).
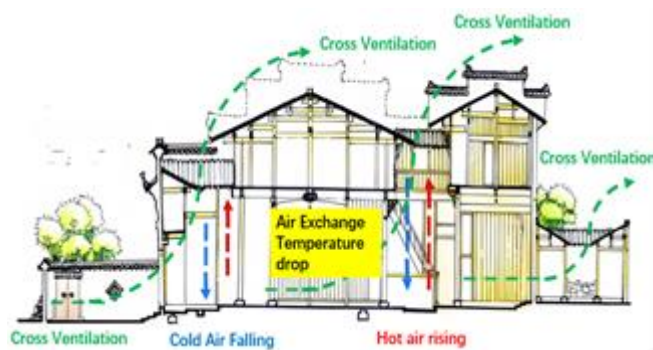
Fig 8 Natural concept of unity of man and nature

4.3 Case study of regional culture design concepts of Southern Anhui lodgings

To quantitatively study and analyze the regional culture concept of southern Anhui B&B design. The author used the method of a questionnaire survey the questionnaire survey data to explore what aspects the tourists focus on in the B&B experience. The scope of the

questionnaire survey was selected from the tourists near Huangshan Mountain. Although Huangshan City only accounts for about 1/4 of the total area of Southern Anhui, the number of B&Bs is far ahead of other regions. Hence, the tourists near Huangshan are more representative. These tourists have experienced B&Bs near Huangshan and have a sure foundation of B&B experience. The author mainly launched a questionnaire survey on the five aspects of cleanliness and hygiene, equipment and facilities, regional culture, natural environment, and service quality of the B&B, issued 50 questionnaires, and recovered 50 valid questionnaires. The data results of the questionnaire survey are shown in Table 5 and Figure 9.

Table 5 Score results for each aspect of B&B (scale range: 0-10)

Category	Average score
Cleanliness	6.8
Facilities	3.9
Regional culture	8.5
Service quality	7.1
Natural environment	7.3

According to Table 5, it can be seen that the regional culture of the B&B scores the highest, 8.5 points, indicating that tourists are very concerned about the regional cultural connotation of the B&B. The lowest score is 3.9 for the equipment and facilities of the B&B, suggesting that tourists would instead not particularly value the modern facilities of the B&B but are more concerned about the cultural experience of the B&B.
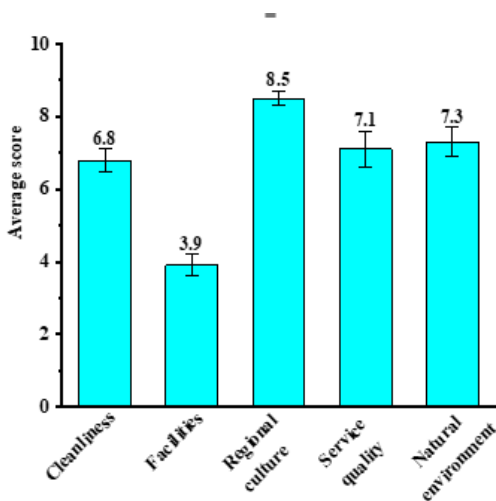
Fig 9 Score results for each aspect of the B&B (scale range: 0-10)

According to the B&B mentioned above investigation cases, it can be concluded that the B&B design in South Anhui should adhere to the B&B design concept of regional culture, organically integrate the regional culture and traditional elements into the overall design of the B&B, and create a unique regional cultural lodging experience with local characteristics, to enhance the attractiveness of the B&B, improve the satisfaction of the tourists, and satisfy the cultural needs and expectations of the modern tourists.

5. Inheritance and Innovative Development Strategy of B&B Design Concepts in the Context of Artificial Intelligence

(1) Utilizing Artificial Intelligence to Enrich and Inherit Regional Culture

Transform these elements into regional cultural symbols, extract the visual relationship of "form, structure, and color," and create new regional cultural forms through "simplification, abstraction, and reorganization" by using artificial intelligence technology to continue the regional culture and at the same time allow it to be optimized with the times. On this basis, the designer also needs to consider the style elements, pattern elements, color elements, and form elements of the regional culture and adopt a hierarchical analysis approach by using artificial intelligence technology to integrate the old and new regional culture into the B&B design, to give the B&B new regional cultural connotations, and to make the B&B have distinctive regional markings to differentiate it from B&Bs in other regions.

(2) Expanding B&B styles using artificial intelligence

Relying on machine learning and deep learning, AI tools can learn a large amount of B&B data with regional cultural characteristics and accurately simulate the B&B's architectural data, including structure, material, color, proportion, texture, and other details. Designers use artificial intelligence technologies such as Generative Adversarial Network (GAN) to integrate regional characteristic culture and characteristic architectural style through combination, deformation, color change, etc., to design B&Bs with more uniqueness and regional cultural characteristics, thus expanding B&B designs of various styles and types.

(3) Utilizing Artificial Intelligence to Create a Low-Carbon B&B

Artificial intelligence technology can optimize intelligent building parameters in combination with the use requirements and environmental conditions of the B&B. By analyzing a large amount of B&B data and environmental data, AI algorithms can predict the performance of B&Bs under different conditions and make corresponding optimization suggestions. For example, the building parameters can be adjusted under different climatic conditions to improve energy utilization efficiency,

energy saving, and emission reduction. At the same time, with the help of energy-saving sensor technology, it can monitor the occupancy rate, temperature, and lighting level of the B&B and adjust the environmental control according to the real-time occupancy situation, optimizing the energy utilization efficiency without affecting the B&B living experience of the tourists.

(4) Enriching the B&B experience with artificial intelligence.

Visitors perceive the B&B experience in the following ways: visual, auditory, olfactory and tactile, and visitors perceive the B&B through all the experiences around them. For example, Wannan B&B has set up a handicraft carving experience area in the B&B design to provide visitors with folklore experience so that visitors can personally feel the process of woodcarving and increase the lodging experience of the tourists. Artificial intelligence can bring more B&B experiences. Based on artificial intelligence design, an intelligent lodging check-in system can realize the self-service check-in of tourists through face recognition, ID card reading, voice recognition and other technologies so that tourists can complete the check-in more quickly and freely; based on artificial intelligence, it can also integrate the virtual reality (VR) and augmented reality (AR) technology to provide tourists with interactive lodging experience, so that the user can feel local culture, humanistic history, wind and wind, and so on, intuitively, without leaving home: regional culture, human history, customs and beautiful scenery. The regional culture can be better inherited and updated while designing the B&B.

6. Conclusion

This study analyzes the development overview and development trend of B&B through the literature research method and data analysis method, takes the characteristic B&B design of southern Anhui as a research case, studies the geographic environment and regional culture of the B&B in southern Anhui, clarifies the research direction of the design of the B&B in southern Anhui, further explores the architectural features and decorative characteristics of the B&B in southern Anhui, and analyzes the impact and application of artificial intelligence on B&B design in combination with artificial intelligence advantages, and finally put forward the inheritance and innovative development strategy of B&B design concept under artificial background. The main conclusions are: the integration of regional culture into B&B design can give B&B a new color and vitality and add cultural connotation to B&B design; AI can extract, excavate, and enrich the regional culture more efficiently to make the B&B design and the regional culture better integrated; the application of AI will further promote the personalization and intelligence of the B&B design, increase the efficiency of

the B&B design and enrich the user experience, and at the same time, it also provides new possibilities for energy saving, environmental protection and intelligent management.

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