An evaluation approach to spatial identity in historic urban areas from a humanistic perspective

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Abstract Urban spatial identity, as the core content of a distinctive urban image and the representation of urban competitiveness and attraction, is critical to cities in the rapid development process. In view of maintaining and strengthening the spatial identity in a historic urban area, which is the key issue of urban construction in China at present, based on the literature review of Chinese urban spatial identity studies, three research paradigms are summarized: landscape, culture, and economy. Although the traditional evaluation method of spatial identity in historic urban areas has focused on the scarcity of characteristic resources, the relationship between characteristic resources and human beings has been ignored. Therefore, based on the declaration of the fundamental mechanism of urban spatial identity in historic urban areas, a new evaluation method was proposed considering four aspects, including object, subject, content, and indicators. The results indicated that the framework of evaluation and design, which is based on the assessment of the relationship between characteristic resources and human beings, is an effective strategy to improve the scientific evaluation of urban spatial identity. Our study has substantial implications for urban planners and managers in solving the urban identity crisis issue in historic urban areas.

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1. Introduction

Over the last several decades of the Open and Reform Policy beginning in 1978, urbanization in China has taken place at an unprecedented rate. Statistics from the Ministry of Housing and Urban-Rural Development of the People’s Republic of China show that the urbanization level in China increased from 17.9% in 1978 to 63.9% in 2020. Moreover, the number of cities increased from 193 to 687 during the same period. Despite the numerous benefits of urbanization, a rapidly urbanizing world, including China as a developing country on the fast track, is facing intensified resource scarcity, public health challenges, and climate change and its environmental impacts (Thuiller, 2007; Malik et al., 2013; Bai et al., 2014). Along with rapid urbanization and city sprawl in China, the issues of an urban spatial identity crisis are particularly prominent (Yang et al., 2013), such as the destruction of natural and cultural resources, destructive construction, and repetitive urban and architectural forms.

Urban spatial identity, as the core content of a distinctive urban image and the representation of urban competitiveness and attraction, is critical to cities in the rapidly urbanizing process. Recently, many Chinese cities and towns have begun to adjust their policies to emphasize the transformation of urban planning from “incremental” development to “stock” redevelopment, which has resulted in flourishing urban renewal activities. In the era of urban renewal, an increasing concern of the Chinese government is how to maintain and strengthen the spatial identity of historic urban areas in the urban context. For example, it was proposed at the 2015 Central Conference on Urban Work that “we should continuously improve the environmental quality, residents’ wellbeing, and urban competitiveness, and try to build our cities into harmonious, livable, dynamic, and distinctive modern ones.” Similar views were emphasized in 2016 in Several Opinions of the CPC Central Committee and the State Council on Further Strengthening the Management of Urban Planning and Construction: “We should develop the method of urban design to arrange buildings, coordinate the style and appearance of the urban landscape, and embody urban regional features, national characteristics, and contemporary style and appearance.” In 2020, it was once again reiterated in the Notice on Further Strengthening the Management of Urban and Architectural Features issued by the Ministry of Housing and Urban-Rural Development and the National Development and Reform Commissions of The People’s Republic of China that “we should strengthen cultural confidence through continuing the urban context and the city spirit, and in order to express the Chinese characteristics.” Therefore, research on spatial identity in historic urban areas has epochal significance in the atmosphere of urbanization in China.

A historic urban area refers to a region that reflects the process of urban development or historical features in a certain period. Historic urban area, as the gathering place of cultural, social, and economic activities, is defined by UNESCO as the most abundant and diverse form of expression in the common cultural heritage and a key witness to the achievement of human efforts and aspirations (Zhang, 2012). Compared with a new town or other new regions constructed on vacant land, the particularity of a historic urban area is reflected in the formation and development of its spatial identities that are more influenced by its residents. On the one hand, the spatial identity of historic urban areas is constructed by residents with their experiences and demands, directly related to local customs and culture (Zhu, 2016). On the other hand, the spatial identity of historic urban areas also affects residents’ psychology and behavior patterns, resulting in a unique sense of belonging, identity, and lifestyle (Wang, 2019). It is seen that the spatial identity of historic urban areas is a type of urban form with substantial humanistic attributes.

In the past 40 years, urban planning and design in Chinese historic urban areas, a standardized construction mode has been universally adopted in many cities as the most efficient strategy. It has blindly imitated the stereotyped image of expressway + overpass + high-rise building in Western modern cities, resulting in many historic urban areas tending to blend into a similar city image. Moreover, in the face of the spatial identity crisis, planners and architects generally lack structural thinking. Some projects have demolished the tangible heritage and reconstructed the imitation, which has produced a large number of “Antique Streets” or “European Streets” in historic urban areas (Yang et al., 2013). Some projects have pursued innovation and constructed many odd-shaped buildings, which have broken the harmonious relationship between buildings and the surrounding environment (Chio and Reeve, 2014). These projects not only failed to protect and maintain the spatial identity in historic urban areas, but also made the whole society filled with a sense of losing local culture and discomfort in the rapid development process (Fig.1).

From the perspective of relevant research, most of the previous studies on spatial identity in historic urban areas have focused on the physical space dimension, whose basic paradigm is that planners, with environmental determinism, arrange residents in a virtual future space (Liang, 2014), evaluate and produce various characteristic spaces with their own experiences and preferences as agents. Such studies might be applicable in planning a new town or other new regions because there is less public activity, and the composition of future residents is uncertain. As for historic urban areas, such studies are limited in separating residents’ real feelings and ignoring their actual demands and preferences. However, how can we describe and explain the relationship between the spatial identity of historic urban areas and human beings? Because of the difficulty in quantifying the public activities related to spatial identity, it is generally considered challenging to make a comprehensive and accurate evaluation of the spatial identity in historic urban areas. Moreover, the urban renewal of historic urban areas has lost its direction. Thus, this study aimed to establish a scientific evaluation approach to understand the relationship between spatial identity and residents in historic urban areas.
2. Literature review

2.1. Urban spatial identity and historic urban area

The premise of relevant research is to understand what urban spatial identity is correct. Currently, there are three main research paradigms regarding the object of urban spatial identity: landscape, culture, and economy.

(1) The landscape paradigm

From a landscape perspective, some scholars emphasize that urban spatial identity refers to the concentrated embodiment of urban indigenous geospatial characteristics (Wang and Wang, 2007). Based on the cities’ unique characteristics formed by continuous interaction between urban space, nature, and culture (Duan, 2006), scholars pay more attention to the particularity and universality between various landscape elements. They claim that urban spatial identity is presented through the dialectical relationship between particularity and universality elements (Jiang and Zhang, 2009). With this research paradigm, the optimized method for alleviating urban spatial identity crisis lies in resolving the relationship between the individual and the group, the vanity and the tangible, and the new and the old landscape elements (Yaldiz et al., 2014). For example, Lynch (1960), an American urban planning theorist, summarized city images into five landscape elements: path, edge, district, node, and landmark. Qi (2001), a Chinese architect, proposed a system of axis, node, building group, path, and urban interface, which comprises the spatial structure of urban identity. However, these studies have been questioned because they only focus on urban physical characteristics. Their deduced strategies as building landmarks, controlling environmental colors, and fabricating ancient buildings failed to alleviate the urban spatial identity crisis and caused problems in urban visual environments such as the feeling of style mixture and serious collage (Chen et al., 2017). Numerous scholars, including Koolhaas (2002), a famous Dutch architect, had a fierce debate.

(2) The culture paradigm

In contrast to the above, some scholars claim that urban spatial identity contains two components: culture and physical form. From the viewpoint of culture as the internal support of physical form, scholars hold the opinion that the main reason for the urban spatial identity crisis is the problem of culture. More precisely urban planners place too much emphasis on rapid growth. Accordingly, they neglect the recognition of urban spatial identities’ cultural values and the respect and protection of urban context so that the historic urban areas are eroded and broken by commercial activities in the rapid urbanization process and replaced by stereotyped modern industrial products (Manahasa and Manahasa, 2020). In response, they pay more attention to the excavation and evaluation of indigenous culture, historical context, and architectural style (Zhang et al., 2011), and carried out preservation and re-creation in planning and design projects (Ziyaee, 2018), which is called culture-oriented urban regeneration (Hwang, 2014), to achieve a balance between modernization development and indigenous culture maintenance. However, some scholars also like to say that this culture paradigm is unreliable because it would rely much on designers’ creative ability and professional skill. In particular, it involves considerable risk for developing countries under the influence of Western culture. If there is insufficient understanding of indigenous culture, policy makers or urban planners would probably...
or other historical elements. As argued by Wang (2012), and is related to a specific historical period, group, event, city’s culture is usually formed in its development process of the urban spatial identity. Shan (2007) stated that a worthy as conservation areas and yet form an essential part areas within towns and cities, which are not considered pressing problem in historic urban areas is how to address which also face many doubts. On the one hand, it excludes many cities without excellent resource endowment. On the other hand, it excludes the initiative role of human beings in the formation and development of urban spatial identity.

In terms of research on spatial identity in historic urban areas, Tweed and Sutherland (2007) claimed that the most pressing problem in historic urban areas is how to address areas within towns and cities, which are not considered worthy as conservation areas and yet form an essential part of the urban spatial identity. Shan (2007) stated that a city’s culture is usually formed in its development process and is related to a specific historical period, group, event, or other historical elements. As argued by Wang (2012), historic urban areas are the memory of a city, and the protection of historic urban areas should pay more attention to the culture and cultural diversity. Wang (2019) pointed out that the lack of public space and lifestyle diversity are essential reasons for the current urban identity crisis. In contrast to the significance of physical forms, scales, and details in the West, Xie et al. (2020) found that the conservation of historic urban areas in China focuses more on immaterial elements. Scott et al. (2020) proposed that a bottom-up approach may have provided opportunities for place-making or community building in historic urban areas by developing new networks, building on local identity, and reaching across generations to explore heritage values.

Thus, urban spatial identity has always been a topic of heated debate in urban and architectural studies. Furthermore, compared with the traditional research paradigms of landscape, culture, or economy, in recent years, scholars have paid more attention to the influence of non-spatial elements such as public activities, vitality, or events on the spatial identity of historic urban areas. However, how do these humanistic elements affect the spatial identity in historic urban areas? The fundamental mechanisms and general laws still need to be further summarized.

2.2. The evaluation of urban spatial identity

In general, a resource-competitive comparison method is widely used for the evaluation of urban spatial identity. Based on the utilization value of characteristic resources, some scholars first put the evaluated city in a specific group with other cities, such as a basin, a geospatial region, or an administrative region. Next, the evaluation of the cities’ characteristic resources is conducted to complete the extraction and classification of characteristic resources and provide a basis for subsequent planning and design (Yu, 2003). Qualitative evaluation is commonly used for evaluation methods. The collected information is usually sorted out and analyzed through different means, such as field investigation, literature review, and data sorting, to draw evaluation conclusions. To improve the scientific evaluation of the results, some scholars introduced mathematical modeling methods. These were the Delphi method and analytic hierarchy process to obtain the level and weight of evaluation factors of urban spatial identity to complete the multi-factor comprehensive evaluation (Yang and Hu, 2013). However, these factors mainly focus on several attributes of uniqueness, radiation ability, growth property, and others, all of which belong to the evaluation content of characteristic resources while less involving human factors. Some scholars have attempted to scale public perceptions and activities regarding urban spatial identity using sociological survey methods (Adewale et al., 2020). However, because of the limitations of the questionnaire in sample size, efficiency, and accuracy, the evaluation of urban spatial identity can only partly reflect public attitudes rather than real environmental behaviors. Furthermore, these public attitudes are difficult to be explained by specific morphological factors that play an unequivocal guiding role in planning and design projects.

An increasing number of scholars have focused on the limitations of focalizing physical elements. Numerous attempts have been made to study the spatial identity of historic urban areas from an environmental behavior interactionism perspective (Belanche et al., 2017). However, it still needs to be further combed and systematized in the content, form, differences, and mechanism of environmental behavior interaction. This theoretical update brings about the adjustment of evaluation methods, represented as the traditional resource competitive comparison method replaced by sociological survey methods. It is a type of optimizing patch of thinking rather than a structural adjustment of the technical method. However, there is still a research gap regarding the objective appearance of environmental behavior: the causal chain between environmental behavioral factors and urban spatial identity, and its unequivocal guidance for planning or designing projects need to be further studied.
Nowadays, the challenge of urban spatial identity evaluation in historic urban areas lies in the acquisition and translation of massive public activity information. With the development of network and intelligent communication technology, the extension, breadth, and volume of open data are constantly expanding, promoting the transformation of relevant research paradigms from small data to big data (Long et al., 2014). Big data has been widely used in large-scale urban morphology studies. Based on this, taking humanistic thinking as the breakthrough point, a new technological path for an evaluation approach of spatial identity in historic urban areas is proposed to describe the public preference and behavior and to explain the reciprocal feedback relationship between characteristic resources and human beings.

3. Interpret spatial identity in historic urban areas from a humanistic perspective

3.1. Humanism: people-oriented urban design

The concept of humanism generally refers to a development concept that considers people’s requirements and values as the criterion. This is in line with the Confucianism of ancient China. For example, Mencius proposed that people play the most crucial role in a country, emphasizing the importance of public demand and values in the political decision-making process. Putting people first is the basic criterion for the dominant to govern their country. In the West, Aristotle’s view on the law and justice of human beings could be regarded as the embryonic form of humanism as well. He stated that although a group might not be as good as the most talented person, the group could make better judgments than any individual person. The real origin of the humanism concept is traced back to the European Renaissance, in which the concept of human rights against theocracy was the central idea of the emerging bourgeoisie (Shi, 2005).

The concept of humanism has recently become a universal value worldwide. Based on this background, urban development and construction also need to shift from the pursuit of the growth efficiency transformation to public satisfaction. More precisely, it should satisfy the material needs of social life and arrange the use and distribution of human living space to solve urban issues such as environment, housing, education, and transportation and meet the demands of humanities to implement people-oriented purposes in urban planning and design projects. The coexistence of individuals and groups is balanced. Humanism is the core value of urban development and construction in new areas (Duan, 2006).

Urban design is a basic method for humanism-oriented urban and rural planning or design projects. Its core content is to create a livable human settlement and well-designed public space for people to satisfy the development requirements of material and spirit, production, and life. To achieve this goal, urban designers need to focus on human beings at the micro-scale, rather than being intoxicated with modern technology, which is usually at the macro-scale, protect and develop the traditional culture, and satisfy different requirements of different occupations, races, and ages (Duan, 2006).

3.2. Humanistic thinking on spatial identity in historic urban areas

From a humanistic perspective, the spatial identity of historic urban areas can be interpreted as a public environmental image, as a result of the public developing it in the process of full environmental behavior interaction through various visual perceptions and physical activities based on the uniqueness, aesthetics, culture, and other characteristics of urban space (Fig. 2).

First, the uniqueness, aesthetics, culture, and other characteristics of urban space are the premise of cognizing spatial identity in historic urban areas. On this point, Lynch (1960), Rossi (1984), Norberg Schulz (1979), and other scholars have conducted extensive research and sufficient affirmation. Furthermore, the species or forms of public activities in historic urban areas determine the depth of spatial identity cognition. People can only perceive urban spatial identity when they move into an urban space linked to their daily lives or perception demands. Finally, it is the result of spatial identity cognition that urban space is endowed with a generally acknowledged meaning, while everyone has a different understanding of it. As a consequence, the spatial identity in historic urban areas we discussed today is a type of generalized psychological urban image. It is the reaction of social values in urban space, which is a process of transformation from objective space to subjective image, rather than the ordinary physical relationship between the environment and behaviors (Li, 2008).

From this viewpoint, we propose that the evaluation ideas and methods of spatial identity in historic urban areas should be shifted completely. First, spatial identity is no longer a definite landscape element, such as a mountain, river, or building in the usual sense. It is a special understanding and cognition of landscape elements developed by these physical forms after people’s visual perception and experience. More precisely, it is a complex process from the spatial place to environmental image. Second, the study of spatial identity in historic urban areas is required to pay attention to the physical attributes of various characteristic spaces, and accurately obtain the activities of the residents in historic urban areas. It is no longer limited to professionals, but a multi-subject, covering urban managers, experts, local citizens, tourists, developers, planners, and other stakeholders. Finally, both qualitative and quantitative research should be used in the study of spatial identity in historic urban areas. The correlation between physical space attributes and public activities should be analyzed to provide an accurate basis for subsequent urban planning and design projects.

4. Evaluation of spatial identity in historic urban areas

The objective evaluation of the relationship between the characteristic space (in which the residents could cognize
the urban spatial identity) and the residents from a humanistic perspective was necessary for historic urban areas’ renewal planning or design projects. Thus, a new approach of spatial identity evaluation (containing an evaluation object, subject, content, and indicators) suitable for historic urban areas is proposed, aiming to provide ideas and methods for solving the urban identity crisis of historic urban areas in China (Table 1).

4.1. Evaluation object

As for the traditional evaluation object of urban spatial identity, scholars usually divide it into two types: tangible buildings and intangible public spaces. With this classification, it is difficult to compare them, which leads to various restrictions in the evaluation work. Although the difference between intangible (public space) and tangible (architecture) in physical space attributes exists objectively, the impact of such differences could be ignored in the process of people’s perceptions. For example, some people think that Tian’anmen Rostrum is the characteristic space in the historic urban area of Beijing, while others consider Tian’anmen Square to be. In essence, both of them are a whole composed of buildings and public spaces. Therefore, the evaluation object of spatial identity in historic urban areas should be paid more attention on the place attribute of both building and public space, rather than their type differences.

4.2. Evaluation subject

In the evaluation of urban spatial identities, the conventional evaluation subjects are mainly urban managers and experts, and the evaluation results represent the values of the elite group. From a humanistic perspective, the evaluation of the historic urban areas’ spatial identity switched from the elite model to the public model. The evaluation subjects include all stakeholders such as urban managers, planners, experts, tourists, and citizens, to ensure that everyone could speak freely about spatial identity in historic urban areas. Furthermore, different groups have different responsibilities. For example, the urban managers, as decision-makers, mainly play an organizing and coordinating role, while planners are implementers, and experts, tourists, and citizens are dominating evaluation participants.

4.3. Evaluation content

To objectively present the public perception and experience of spatial identity in historic urban areas, visual and activity dimensions are added to the evaluation content. Thus, the proposed evaluation method includes multiple evaluation contents of resource value, public perception and experience. The evaluation method of feedback between evaluation and design strategies could integrate the description, explanation, evaluation, and design of urban spatial identities. The evaluation method includes three

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<td><strong>Evaluation subject</strong></td>
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<td><strong>Evaluation content</strong></td>
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<td><strong>Evaluation indicator</strong></td>
<td>Uniqueness, radiation ability, growth property</td>
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steps with two aspects. First, characteristic resources are evaluated from the value aspect, including the competitiveness analysis and characteristic space designated as natural landscape, history and culture, urban development, and others. Second, each characteristic space is evaluated from the public perception aspect, including visual perception and activities. Finally, the comprehensive spatial identity in historic urban areas is evaluated from the perspective of public perceptions, including integrative consideration of various characteristic spaces and issue analysis.

4.4. Evaluation indicators

According to the sequence from visual perception to activity, from form to in-depth perception, five first-level evaluation indicators and their corresponding second-level indicators of visual sensitivity, scenic beauty, legibility, vitality, and activity support are proposed to develop a hierarchical evaluation indicator system of spatial identity in historic urban areas (Fig. 3).

(1) Visual sensitivity

In the urban design field, visual sensitivity mainly refers to the ability of landscape elements to attract viewers’ attention in visual form. It closely relates to the identifiability of the spatial identity in historic urban areas, which is the concentrated reflection of the characteristic elements of urban space in shape, height, color, style, position, and others. In terms of quantization for visual sensitivity, the landscape resource management system developed by the US Soil Conservation Service evaluates and analyzes the landscape’s visual sensitivity considering four aspects, namely visual conditions, attention degree, important degree, and social attention (Soil Conservation Service, 1978). Yu (1991), a Chinese scholar, proposed an evaluation method that considers the relative slope, visual probability, relative visual distance, and landscape striking degree as impact factors. Zhang (2009) selected three indicators of relative distance, visual probability, and striking degree.

(2) Scenic beauty

The purpose of evaluating scenic beauty is to estimate the quality of a landscape related to urban spatial identity. It emphasizes the objectivity of the landscape and strengthens the cognitive degree, which reflects landscape subjectivity. To quantify scenic beauty, Buhyoff et al. (1978, 1980) proposed a comparative critical method, which mainly used the comparison between landscapes to obtain the scenic beauty degree, including pin-to-pair comparison or rank landscapes by rating. The scenic beauty evaluation (SBE) method proposed by Daniel and Boster (1976) is a classic case of combining subjective and objective evaluation methods through public evaluation based on slides or photos, which supports the relevant research on the scenic beauty evaluation of spatial identity in historic urban areas.

(3) Legibility

Legibility is the core concept proposed by Lynch (1960), which emphasizes the characteristics and meanings of the urban environment, such as visible, recognizable, easy to see, and easy to understand. Legibility reflects public reception and understanding of spatial identity in historic urban areas. It is the main measure of the transformation from the environment (objective) to the city image (subjective), which usually needs to be carried out by questionnaire. At the same time, given the distortion issue of the questionnaire results caused by too many selected options and lack of patience, results could be verified by combining big data from search engines recently (Huang et al., 2021).

(4) Vitality

The vitality of spatial identity in historical urban areas mainly refers to social vitality. It focuses on people engaged in various activities in the place. Relevant data can be collected through direct observation and behavior measurement. In recent years, with the development and popularization of network and intelligent communication technology, open data based on network information platforms have had high coverage and usage (Sheng et al., 2018). This provides a new technical path for urban vitality analysis. Nowadays, big data commonly used as an indicator of urban vitality in urban studies include point of interest (POI) (Lu et al., 2019), Global Position System (GPS) (Pan et al., 2021), mobile phone data (Baidu or Wechat) (Wu and Niu, 2019), and Wi-Fi hotspots (Kim, 2018).

(5) Activity support

Activity support refers to various physical and environmental attributes of a place that can support public
activities. It mainly studies the potential of spatial identity in historic urban areas to attract public activities from the perspective of places’ material components. In terms of specific indicators, Oldenburg proposed the main qualities that public space should have, including accessibility, highly inclusive, long open time, lots of fun, and so on. Whyte pointed out that the most socially and friendly spaces have the following features: a good location (physical and visually accessible), level or nearly level with sidewalks, a place to sit, and movable seating (Jiang, 2007). Based on summarizing relevant research and field investigation, evaluation indicators of activity support include six main aspects: location, accessibility, connectivity, publicness, functional mixture, and facilities density.

5. Discussion and conclusion

Many scholars have accumulated considerable research achievements in urban spatial identity with different research paradigms in the past three decades. However, there are still some misunderstandings regarding the aspects of the urban spatial identity and the relationship between characteristic space and the public. Although some scholars have noticed the influence of human beings on spatial identity, especially in historic urban areas, there are still problems of reliability and systematization in related research. It may also cause increasingly unsuccessful urban renewal, such as imitated ancient streets or European streets, in various Chinese cities.

In summary, first, this article holds that the spatial identity of historic urban areas is a kind of humanistic urban form. As a public environmental image, residents develop it in the intricate process of environmental-behavior interaction through various visual perceptions and physical activities. On the one hand, some objective attributes of urban space, such as uniqueness, aesthetics, culture, and placeness, provide possibilities for public perception. In contrast, various public activities, such as visual, auditory, tactile, and olfactory activities, respond positively to these objective attributes. Spatial identity is generated from the continuous interaction between urban spaces and the public.

Second, considering that the traditional evaluation approach focuses on characteristic resources rather than public visual perceptions and physical activities, a new evaluation framework is proposed to accommodate the fundamental mechanism of spatial identity in historic urban areas. Two aspects, urban space and the public, are considered most in the evaluation process. The indicators from several dimensions (visual sensitivity, scenic beauty, legibility, vitality, and activity support) are established to comprehensively consider physical forms and the public in the evaluation process of spatial identity in historic urban areas.

Third, our evaluation approach differs from the conventional method because it pays more attention to both the public’s perceptions and spatial characteristics in evaluation content, rather than just regarding spatial identity as the characteristic resource. Thus, the evaluation subjects are no longer limited to professionals, but a multi-subject covering urban managers, experts, local citizens, tourists, developers, planners, and other stakeholders. Furthermore, it highlights the interactive verification of perceptual and non-perceptual indicators in environmental supply and behavior response to reduce the bias caused by the evaluation of individual dimensions. This evaluation approach ensures the integrity of the evaluation - design framework to prevent the evaluation from becoming an optional reference content merely and guide the renewal of historic urban areas in China effectively and efficiently.

Declaration of competing interest

The authors declare no conflicts of interest.

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