

ORIGINAL ARTICLE

Exploring tourist perceptions of calligraphic landscapes: Insights from social media text analysis

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Abstract

Calligraphic landscapes, as distinctive cultural symbols and landscapes with Chinese characteristics, are widely used in urban design, placemaking, and tourism promotion. In cultural heritage tourism, tourists' perceptions of the symbolic meanings of landscapes significantly influence their travel experiences. This study primarily utilizes social media text analysis to explore the perceptual characteristics and symbolic meanings of calligraphic landscapes in different touristic contexts. Using Python tools, user-generated content was extracted from the Xiaohongshu app and analyzed with ROST CM6, VOSviewer, and NVivo 20 to conduct systematic quantitative and qualitative analyses, including content analysis, semantic network analysis, and co-occurrence clustering. The findings indicate that cultural exchanges on social media significantly enhance public perception of the symbolic meanings of touristic spaces. As online check-in behavior becomes increasingly popular, calligraphic landscapes have gained new esthetic-symbolic meanings among young tourists, becoming part of fashion culture and reflecting the digitalization of a sense of place. In addition, user-generated content reveals that tourists' perceptions of calligraphic landscapes are intricately linked to place recognition, cultural symbolism, calligraphic appreciation, heritage value, and esthetic experiences. As a significant cultural symbol, calligraphic landscapes are frequently encountered during travel, with their symbolic meanings varying according to the surrounding environment, thereby influencing tourists' preferences in diverse settings. Furthermore, this study proposes several innovative strategies for designing calligraphic landscapes. This research not only validates the feasibility of web text analysis for exploring the symbolic meanings of cultural landscapes but also enhances theoretical perspectives on how symbolic landscapes shape tourists' psychological and behavioral responses.

Keywords: Cultural landscape; Calligraphy; Symbolic landscape; Symbolic meaning; User-generated content

1. Introduction

The relationship between tourism and landscape has been extensively researched. Landscapes play a pivotal role in tourism planning and marketing, serving as visual

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representations of destinations and facilitating the connection between tourists and travel locations. The concept of a tourism landscape has emerged within the framework of tourism development, focusing on how landscapes, activities, and developments are shaped to cater to tourism objectives while emphasizing the processes through which landscapes are created (Terkenli, 2021). In the context of tourism, placemaking encompasses urban design, image construction, and the symbolic representation of values (Mansilla & Milano, 2022). Cultural landscapes are utilized to establish urban cultural spaces that fulfill public demands for culture. Heritage serves as an emblematic symbol of tourist destinations and a significant attraction as a local tourism resource (Lei, 2022).

Chinese calligraphy employs written characters to convey specific content and, as an art form, embodies cultural and historical values. Consequently, calligraphy is regarded as the cornerstone of traditional Chinese culture due to its profound cultural significance, esthetic value, and role in shaping social identity (Zhang *et al.*, 2008). As a shared cultural heritage, Chinese calligraphy is prevalent across China and other East Asian countries, particularly in renowned tourist destinations, historic districts, and urban commercial areas. In recognition of its importance, UNESCO designated Chinese calligraphy as an Intangible Cultural Heritage of Humanity in 2009 (UNESCO, 2009).

In the context of cultural tourism, the cultural elements, landscapes, heritage sites, heritage types, and regional historical lineages associated with calligraphic landscapes constitute key attributes for evaluating tourism appeal (Zhang *et al.*, 2008). As a distinctive emblem of cultural landscapes, calligraphic landscapes play a significant role in representing and conveying specific meanings to tourists. Consequently, they are pivotal in shaping tourists' perceptions of landscapes (Tang *et al.*, 2016). By perceiving and recognizing alterations in calligraphic landscapes, tourists can form diverse impressions and establish unique identities for tourist destinations, resulting in distinct tourist experiences.

Extensive research has been conducted on calligraphic landscapes as distinctive cultural landscapes with Chinese characteristics and as significant tourism resources. These studies encompass various aspects, such as the perceptual characteristics of calligraphic landscapes at tourist attractions (Zhang *et al.*, 2012), tourists' attitudes toward these landscapes, their perceptions of originality, experiences, and constraints (Li *et al.*, 2014; Qi *et al.*, 2013; Zhang *et al.*, 2012), tourists' perceptual images of calligraphic landscapes (Ke *et al.*, 2010; Yin *et al.*, 2011),

and residents' perceptions and identifications with these landscapes (Xiao *et al.*, 2012). Previous investigations have comprehensively examined the functions and values of calligraphic landscapes from diverse perspectives, thereby establishing a robust theoretical foundation for future studies.

With the rise of new media, tourists increasingly share travelogues, reviews, blogs, and more through online platforms, offering insights into their real experiences and needs. Xiaohongshu (literal meaning, "Little Red Book"), a social media platform driven by user-generated content (UGC) platform, is widely used by young travelers in China and is particularly popular among young users (Fan & Zhang, 2022; Qin *et al.*, 2024). As of November 2021, Xiaohongshu has more than 200 million monthly active users, including 43 million information sharers, and 72% of its users were born after the 1990s. These factors make Xiaohongshu a significant consumer decision-making platform for many young users (Fan & Zhang, 2022; Qin *et al.*, 2024). Therefore, the selection of Xiaohongshu as a representative social media platform is well-suited for analyzing a sample of the young population.

Specifically, "city check-in" posts on social media combine graphics and text to convey individual perceptions of things, including emotional evaluations and location tags. These posts offer diverse perspectives on a city's imagery and reflect tourists' views on its culture, economy, history, and other factors (Fan & Zhang, 2022; Liang & Li, 2020). "Check-in" data not only reflects the pure material space but also encapsulates a kind of ideological characterization of spatial and temporal behavior, integrating elements of urban cultural life with non-material attributes. To a certain extent, the use of "check-in" data from social media helps address the shortcomings of traditional cultural landscape research, which often focuses on the perceptual awareness of material forms while neglecting cultural and ideological dimensions. The current study aims to extract tourists' perceptions of the symbolic meanings of calligraphic landscapes using data from online platforms through text analysis. By analyzing the connotations of calligraphic landscapes, this study seeks to summarize their symbolic meanings.

The feasibility of the methodology has been demonstrated by previous research analyzing tourists' perceptions, emotions, and behaviors through user-generated data (Gursoy *et al.*, 2022; Xu *et al.*, 2023; Zhou *et al.*, 2023). In this article, we aim to extract the perceived characteristics of calligraphic landscapes among specific user groups by analyzing the subjective narrative perspective of tourists using data from online platforms.

In addition, the study seeks to summarize the symbolic meanings of calligraphic landscapes by analyzing their connotations.

2. Calligraphic landscape

Zhang (2003) has defined the calligraphic landscape as a portion of geographic space with certain visual characteristics and a particular sense of place, shaped by an assembly of calligraphic works that serve as landscape elements.

2.1. Perception of calligraphic landscapes

Calligraphic landscapes are part of geographical space. The perception of calligraphic landscapes can be divided into six dimensions based on public geographical perception: time perception, geographical environment, calligraphic characteristics, forms of calligraphic carriers, value, and psychology (Zhang *et al.*, 2012). From a functional perspective, calligraphic landscapes can be categorized into economic benefits, environmental esthetics, place identification, landscape authenticity, and behavioral orientation (Xiao *et al.*, 2012). Calligraphic landscapes positively influence tourism by shaping intentions through esthetic experiences, place identity, and behavioral orientation (Yin *et al.*, 2011). As a tourism symbol, calligraphic landscapes exert symbolic effects on tourists at three levels: calligraphy appreciation, cultural symbolism, and esthetic guidance. These symbolic effects correspond to behavioral effects at three levels: external behavior, cultural environment perception, and landscape esthetics (Tang *et al.*, 2016). Under the influence of symbolic effects, tourists develop a sense of place within calligraphic landscapes. The typological diversity, as well as the historical, cultural, and artistic value of calligraphic landscape heritage, are key to addressing the lack of cultural functions of the landscape (Yan & Zhang, 2019).

2.2. Symbolic meaning of cultural landscapes

A landscape is not just a physical space; it also reflects people's ideologies and serves as a meaningful experience for individuals (Li, 2013). In cultural geography, values and their associated symbolic meanings are central to the cultural connotations of landscapes, and interpreting these meanings requires the use of symbols (Jones, 2003; Wu & Dai, 2023). Both tangible cultural landscapes (e.g., memorials, historical residences, historic streets, museums, old factories, historical temples, historic hotels, specialty shops) and intangible cultural elements (e.g., place names, festivals, music, cuisine, folk crafts, calligraphy, literature), are rich in symbolism. These symbolic landscapes significantly contribute to the diverse meanings associated

with urban spaces (Fu *et al.*, 2020; Tong & Tang, 2013). Therefore, cultural landscapes often become material carriers that constructs and perpetuate place meanings and identities, serving not only as landscapes with local symbolic significance but also as bearers of community memories and emotions (Sun & Zhou, 2015).

In the context of tourism, visitors perceive heritage symbols (such as architecture, text, and customs) through their external forms and physical carriers, facilitating interaction with cultural heritage sites (El-Sharif, 2023; Zou *et al.*, 2023). The meaning of tourism landscapes is perceived, represented, and narrated within diverse discursive frameworks. Tourists interpret various tourist attractions by referencing different symbolic spaces, such as artistic, national, and religious contexts (Edensor, 2008; Ku, 2011). Perceiving the symbolic meaning of cultural heritage involves mentally constructing an understanding of structures, entities, and spatial relationships. It is essential to consider tourists' subjective experiences within the objective environment and to integrate cultural significance, historical memory, and current value of cultural landscapes in a comprehensive evaluation. As representatives of cultural landscapes, calligraphic landscapes embody the relationship between tourists' understanding, perception, and appreciation of calligraphy culture and the impact of these activities on the landscape.

2.3. User-generated content and cultural tourism perception

User-generated content refers to media created by the public, primarily distributed through the Internet (Xu *et al.*, 2023). Social media has transformed travelers from passive information recipients to active content creators, fostering communication, interaction, and relationship-building with destinations, tourism managers, and fellow travelers (Choe *et al.*, 2017; Sigala & Gretzel, 2017).

Researchers recognize UGC platforms as crucial for defining and exploring tourism experiences and heritage perceptions (Gursoy *et al.*, 2022). Analyzing tourists' social media posts is key to understanding and exploring these experiences. Previous studies have used UGC to investigate heritage tourism experiences, heritage spatial perceptions, destination images (Lee & Park, 2023; Xu *et al.*, 2023), and symbolic representations of tourism imagery (Cai & Song, 2019).

Text analysis methods for UGC usually include multi-word frequency analysis, sentiment analysis, topic modeling, social network analysis, and semantic network analysis. Text clustering and network visualization enhance the intuitive interpretation of the data.

3. Data sources and method

3.1. User-generated content

The data for this study were collected from social media texts published on public social platforms. A Python data extraction tool was utilized to gather UGC specifically related to keywords such as “calligraphy attractions,” “calligraphy tourism,” and “calligraphic landscapes” from the Xiaohongshu app. The text filtering process involved: (i) Removing posts not relevant to calligraphy; (ii) filtering out duplicate and non-textual content; (iii) excluding posts that discussed calligraphic landscapes in non-touristic contexts (e.g., interior decoration, calligraphy teaching, and design cases); and (iv) eliminating promotional and advertising content. After applying these selection criteria, a total of 805 posts comprising 171,243 words were obtained for further analysis.

3.2. Research method

In this study, ROST CM6 was used for field analysis of text content, including word frequency, classification, and social semantics. A co-occurrence matrix was calculated and generated, and co-occurrence cluster visualization was performed using VOSviewer. In addition, based on the co-occurrence cluster analysis results, NVivo 20 was used to conduct an in-depth analysis of the social media text data to interpret the characteristics and differences in tourists’ perceptions of the function and meaning of calligraphic landscapes.

3.2.1. Content analysis method

Content analysis is a research method that transforms unstructured, qualitative symbolic content into structured, quantitative data (Wang & Sun, 2015). Given its significant advantages in analyzing tourists’ spatial perceptions of destinations, this method has been widely applied in recent studies on destination perception (Dai & Xue, 2022).

3.2.2. Semantic network analysis

Semantic network analysis is a technique used to identify relationships between words in UGC texts (Park *et al.*, 2019). In this network, each word is treated as a node, and the co-occurrence relationships between words are represented as links. The strength of the connection between two words is determined by their co-occurrence frequency (Figueiredo *et al.*, 2011). Each pair of linked words has a co-occurrence distribution, which serves as input for generating matrix data.

4. Result

4.1. Analysis of high-frequency words

Through network text analysis, the top 50 high-frequency feature words were extracted to understand tourists’

perceptions of calligraphic landscapes (Table 1). Words related to cities were also categorized and counted, and the top 10 tourist cities related to calligraphy were compiled (Figure 1).

Notably, Shaoxing in Zhejiang province and Xi’an in Shaanxi province, both in China, show the strongest relevance to calligraphic landscapes, displaying significant thematic distinctions that underscore their established tourism images centered around calligraphy culture.

The analysis of the top 50 high-frequency words reveals that nouns predominate, with fewer adjectives and verbs. Many of these high-frequency nouns relate directly to the scenic spots of tourist destinations, reflecting tourists’ keen attention to and awareness of these places. For example, terms, such as “Shuyuanmen,” “Beilin Museum,” “Wang Xizhi’s hometown,” and “Lu Xun’s hometown” appear frequently, indicating that these scenic spots and attractions hold significant positions in the minds of tourists. These locations are not only pivotal carriers of calligraphic landscapes but also form the essence of tourists’ cultural experiences.

The high frequency of terms such as “checking in” ($n = 160$) and “taking pictures” ($n = 149$) partly reflects the motivations of tourists to visit calligraphic landscapes, which many tourists regard as an important social behavior. This behavior is closely related to social media and internet-famous culture, in which tourists mark their visit to significant or popular places by “checking in.” As a type of cultural consumer product, internet-famous culture represents a specific symbolic value, reflecting consumers’ emphasis on cultural connotations while transcending mere utilitarian values (Yan *et al.*, 2022).

Calligraphic landscapes are not only objects of artistic appreciation but also important content for visitors to display their personal cultural tastes and lifestyles on digital platforms. This phenomenon reflects a transformation in the meaning of calligraphy: as an art form, it is gradually losing its status as a representative of elite culture and is increasingly taking on a more popular and entertaining character (Li, 2004). At the same time, due to media publicity and growing recognition of calligraphy culture, it has gained acceptance among younger generations. Text analysis reveals that calligraphy is considered a kind of trendy culture or a representative of Chinese esthetics. The fusion of calligraphy and elements of popular culture has fostered a unique, popular style.

The development of mass media has accelerated the dissemination of calligraphic landscape symbolism, strengthening public perceptions of tourist spaces and their meaning (Tong & Tang, 2013). The act of “checking in” at

Table 1. Frequently used words in web texts about calligraphic landscape perception

High-frequency words	Time	TF-IDF
Calligraphy	506	0.002025134
Scenic area	332	0.004595631
History	206	0.002921228
Check-in	194	0.00288783
Culture	190	0.002828287
Shaoxing	175	0.004679413
Museum	171	0.003161618
China	164	0.003032195
Xi'an	163	0.004460368
Hometown	160	0.004483359
Architecture	144	0.002882468
Art	129	0.002536326
Take photos	125	0.002291242
Park	106	0.002597746
Place	104	0.001811155
Former residence	99	0.002559754
Atmosphere	98	0.001876285
Wang xizhi	94	0.002327978
Feel	93	0.001895619
Lu Xun	93	0.003153161
Sage of calligraphy	86	0.002353323
Experience	80	0.002023944
Orchid pavilion	79	0.002914802
Jiangnan	75	0.002028604
Forest of steles	71	0.002407252
Historic District	65	0.002137205
Bookstore	61	0.001976207
Garden	59	0.001715366
Ancient town	54	0.00195693
Academy	51	0.001605575
Characteristic	49	0.001295472
Ancient city	49	0.001587445
Writing	47	0.001593533
National trend	46	0.001428198
Worth	46	0.001258754
Bell tower	46	0.001697226
Stone carving	45	0.001502202
Travel	44	0.001247948
Master	44	0.001425461
City	44	0.001247948
Ruins	42	0.001380963
Tradition	42	0.001286373

(Cont'd...)

Table 1. (Continued)

High-frequency words	Time	TF-IDF
Location	41	0.001255745
Theme	41	0.00132827
Famous	39	0.001148361
Period	39	0.001148361
Space	38	0.001586702
Square	38	0.001249443
Old street	36	0.001379534
City wall	35	0.001341213

such locations serves to construct personal memories, reproduce local collective memory, reinforce self-identity, and build collective identity (Shao & Wang, 2023). The ultra-popularity of heritage tourism destinations reflects the re-explosion of the long-term accumulation and inheritance of urban historical memory and traditional culture. The act of “punching cards” digitally embodies a sense of place.

4.2. Calligraphic landscape perception semantic network

High-frequency feature words related to calligraphic landscapes help analyze the attention hotspots and distribution patterns in tourists’ online texts. However, they do not present meaningful associations between high-frequency feature words and the deeper structural relationships in the texts (Dai & Xue, 2022). To address this, we constructed a co-occurrence matrix to reveal the co-occurrence relationship between different words. This matrix records how frequently words appear together in the text, allowing us to identify the elements most closely associated with tourists’ perceptions.

Using the text co-occurrence matrix, we applied the VOSviewer clustering algorithm to analyze highly relevant words in clusters, constructing the calligraphic landscape perception network. Each cluster represents a specific semantic field or theme that tourists invoke when describing calligraphic landscapes (Figure 2).

The analysis of the calligraphic landscape perception network reveals three clusters. The red cluster represents overall perceptions of the calligraphic landscape, focusing on symbolic meanings and summarized as place recognition and the cultural symbolism of the calligraphic landscape. Conversely, the green and blue clusters exhibit distinct perceptual characteristics. The green cluster reflects experiences of places and landscapes, summarized as perceptions of calligraphic landscapes based on heritage values. Meanwhile, the blue cluster reflects connections between historical figures and regional culture, summarized

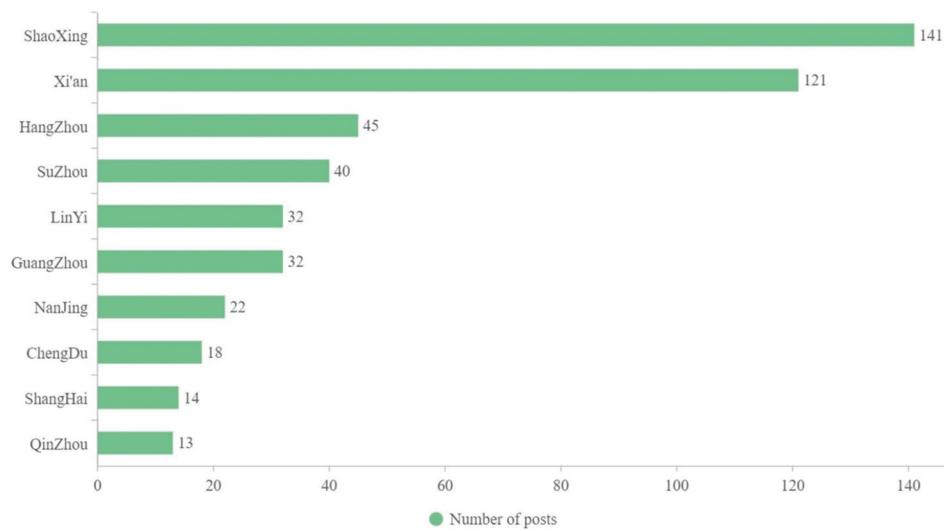


Figure 1. Top 10 tourist cities related to calligraphy. Source: Graph by the authors (created with WPS)

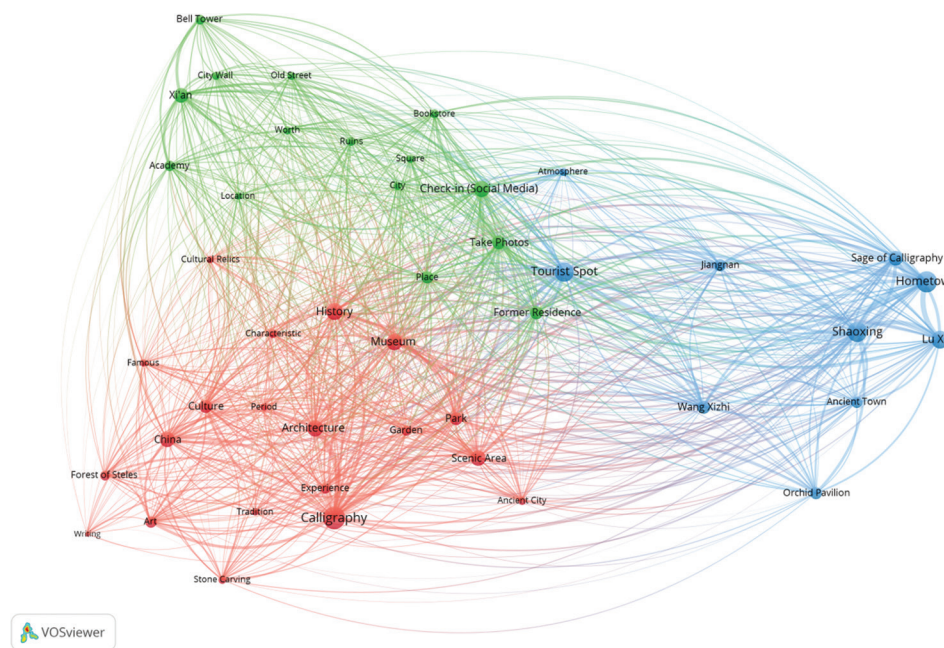


Figure 2. Calligraphic landscape perception network. Source: Diagram by the authors (created with VOSviewer)

as perceptions of calligraphic landscapes based on local culture.

4.2.1. Identification and cultural symbolism of the calligraphic landscape

The red cluster category encompasses two prominent dimensions: place identification and cultural symbolization. The calligraphic landscape perceptual network comprises core nodes such as calligraphy, museums, architecture, and

parks, with sub-nodes including China, history, culture, art, and tradition.

The co-occurrence frequency results proved that “Calligraphy-Architecture” ($n=942$) and “Calligraphy-Space” ($n=738$) had significantly higher co-occurrence than other pairings (Figure 3). This finding suggests that visitors pay considerable attention to architectural features and spatial locations. As an integral element of space and a tool for spatial retrieval, the calligraphic

landscape helps define and identify places. It serves as an important medium through which tourists perceive and define spaces. In tourist descriptions, the perception of the calligraphic landscape focuses on specific, representative places, indicating that the degree of place perception of the landscape environment by tourists may be influenced by the subjective attributes of the landscape. Compared to everyday scenes, tourists tend to perceive higher heritage, esthetic, and cultural values in these attractions. As a result, attractions are often considered synonymous with calligraphic landscapes (Zhang *et al.*, 2012) (Figure 4).

The sub-nodes of China, history, culture, art, and tradition represent the perceived characteristics of the calligraphic landscape, with cultural symbols forming the main content. Co-occurrence frequency results for “Calligraphy-culture” ($n = 379$), “Calligraphy-art”

($n = 326$), and “Calligraphy-history” ($n = 182$) align with the high-frequency terms “history” ($n = 206$), “culture” ($n = 190$), and “art” ($n = 129$). When engaging with the calligraphic landscape, tourists tend to closely associate its meaning with aspects of history, culture, and art. The overall perception of the calligraphic landscape is reflected in the symbolism and cultural connotations represented by the symbolic landscape.

Calligraphic landscapes act as symbols of regional and local cultures. Landscapes with calligraphic elements are easily recognized as visible representations of a particular culture. The content and events recorded in calligraphic works are often seen as reflections of local culture. Most Chinese tourists identify culturally with calligraphy, considering it one of the most important factors in traditional Chinese culture. For example, most overseas Chinatowns use Chinese calligraphy to decorate their streetscapes, highlighting the community’s distinctive features and helping identify specific Chinatown areas. Research by Van Ostade *et al.* (2023) demonstrates that the symbolic function of calligraphy plays a key role in expressing Chinese identity in overseas Chinatowns.

The red cluster class is the densest and most populated cluster class in the overall network graph. Based on the textual information represented by the nodes in this cluster class, we summarize two primary dimensions: place identification and cultural symbolism. This analysis indicates that, in the overall perception of the calligraphic landscape, calligraphy plays a general role in shaping the definition of place and the understanding of culture. Culture is the outer factor of the five major influences on human perception and experience of landscape (Craik, 1986). As a cultural sign, the calligraphic landscape is an important factor in how local landscapes are perceived (Zhang, 2003). The various cultural functions of calligraphy are expressions of cultural values through the calligraphic landscape. Calligraphic landscapes are combinations of symbols that require deeper interpretation within specific contexts. Context, being the environment in which symbols are used, is the most important factor in determining their meaning and limits the uncertainty of symbols to a certain extent.

4.2.2. Calligraphy perception based on heritage value

The green cluster class reflects the experience of landscape and heritage, with core vocabulary related to the physical environment and place type of the calligraphic landscape. Sites such as the forest of steles, the former residence, the city wall, the bell tower, and the academy gate left a deep impression on visitors. Further analysis of the text content associated with these core words shows that this cluster of Xi’an heritage tourism spaces exhibits strong correlations.

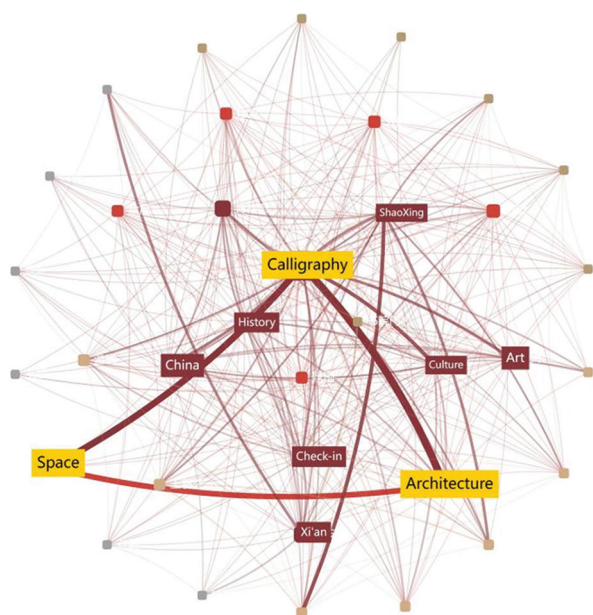


Figure 3. Co-occurrence network relationship diagram. Source: Diagram by the authors (created with Gephi)



Figure 4. Calligraphy tourist attractions. (A) Calligraphic landscapes in historic districts. Source: Photo by the authors (2021). (B) Calligraphic landscapes in natural environments. Source: Photo by Fujianzhoubianyou (available at https://mp.weixin.qq.com/s/LLswzi5_0_5KjksMSUQ6tw) (2024)

Xi'an is a world-renowned historical and cultural city, where 13 dynasties were founded. With a history spanning over 3,100 years, Xi'an boasts a rich cultural and historical heritage, along with numerous historical buildings. Among the notable places, Xi'an Stele Forest Museum and Shuyuan Gate Historical Block show a high correlation with calligraphic landscape. The Xi'an Stele Forest Museum is a specialized calligraphy museum focused on the collection, research, and display of stone steles, epitaphs, and stone carvings. The Xi'an Forest of Steles displays more than 1,000 steles and epitaphs from the Han dynasty (206 BCE – 220 CE) to the Qing dynasty (1644 – 1912).

A review of the associated texts reveals that tourists' perceptions of calligraphic landscapes manifest in three main perceptual dimensions, namely heritage perception, calligraphic appreciation, and cultural symbolism.

Heritage perception pertains to the description of the material-functional value of calligraphic landscapes. Tourists delineate carrier forms, heritage quantity, spatial ambiance, and environmental locations, forming their perceptions of the material attributes of calligraphic works and the environmental context of calligraphic landscapes. In this process, the content, form, quantity, and material carriers of calligraphic landscapes become the most direct standards of perception for tourists. Furthermore, tourists place significant emphasis on the authenticity of calligraphic landscapes. The essence of tourism activities is inherently symbolic, with authenticity being a crucial criterion for assessing the quality of tourists' experiences (Yang & Xi, 2015). Textual analysis reveals that historical physical artifacts and traditional carrier styles leave a more profound impression on tourists. The preservation of the calligraphic landscape's environment and the presentation of its original context are vital to maintaining its authenticity. Landscapes with well-preserved authenticity can enhance the genuineness of a city's cultural landscape to a certain extent.

Calligraphy appreciation focuses on the calligraphic features found within the landscape, encompassing font characteristics, skills, and content. This focus highlights the crucial role that calligraphic features play in shaping the perception of a calligraphic landscape (Zhang *et al.*, 2012). China's writing system has a history of nearly 3,500 years, with the evolution of characters from oracle script to seal script, official script, cursive script, running script, and regular script, often aligning with specific historical periods or dynasties. Each calligraphic font corresponds to unique esthetic characteristics, with calligraphy works encapsulating the skills, emotions, thoughts, and values of their creators.

The calligraphic landscape encountered during travel is a significant tourist attraction for calligraphy enthusiasts,

demanding on-site appreciation and evaluation. It serves as both an object of admiration and a source of learning, representing the pinnacle of calligraphic artistry. Tourist descriptions of their appreciation and sentiment toward the historical relics at Xi'an Stele Forest tend to be polarized. For calligraphy aficionados, Xi'an's calligraphic landscape holds special significance due to its rich diversity in preserved forms, encompassing classic works throughout history. Immersing oneself in this unique historical atmosphere and cultural background allows for a subjective, intricate, and profound tourism activity where one can carefully read and appreciate both the content and artistic characteristics within each piece.

For ordinary tourists, appreciating calligraphic landscapes mainly involves identifying the content of the calligraphy. During this process, calligraphic landscapes are viewed as decorative elements within the environment and as architectural symbols. Although ordinary tourists may rely on guided explanations to meet their expectations and deepen their understanding of the cultural background and historical value of calligraphy, their appreciation often remains at a basic and superficial level. Therefore, the significance of calligraphy appreciation is not universal. Tang *et al.* (2016) discovered that the appreciation of calligraphy in tourist attractions is influenced by tourists' cultural literacy and interest in calligraphy, indicating that a specific group of visitors appreciates calligraphic landscapes as an art form.

Cultural symbols embody the perception of the non-material functional value of calligraphic landscapes. It is usually believed that calligraphic landscapes hold non-material functional values such as cultural, educational, esthetic, and heritage tourism values. Tourists' descriptions often focus on calligraphic activities, historical background, status and popularity of the history of calligraphy, and its status as a World Heritage Site or Chinese Heritage Site. Tourists depicted the strong cultural atmosphere of historic districts, the deep historical heritage of the city, admiration for famous calligraphic works, reflection on the value of art education, and the recognition and pride in the heritage of calligraphic landscapes. Visitors' judgments of the value of calligraphic landscape heritage often trigger reflections on broader social and cultural symbols, which in turn influence their local experience and sense of local identity.

In general, the perception of calligraphic landscape based on heritage value mainly centers on three dimensions: heritage attributes, calligraphic appreciation, and cultural symbols. For calligraphic landscape heritage, tourists' intuitive feelings about the spatial environment and attributes of heritage sites form the basis of

tourists' perceptions of calligraphic landscapes. Given their expectations for the value of the heritage, tourists tend to focus on the originality of both the heritage itself and its spatial environment. Second, specific connoisseur groups place more emphasis on the value of the calligraphic works themselves. For ordinary tourists, however, the calligraphic landscape heritage functions as landscape elements or architectural decorations, contributing to their perception of the cultural atmosphere and heritage of the historical site. Finally, cultural symbols embody the perception of the cultural atmosphere, historical heritage, artistic activities, and other non-material functions, shaping visitors' judgment of the value of the calligraphic landscape in a tourist setting.

4.2.3. Perception of calligraphic landscape based on local culture

The blue cluster category mainly focuses on words related to historical figures and regional culture, such as “Lu Xun,” “Wang Xizhi,” “Shaoxing,” and “hometown.” These words indicate that tourists' perception of the calligraphic landscape is often associated with specific historical figures and regional cultures. Further research reveals that the core vocabulary in the blue cluster category is centered around the Shaoxing calligraphic landscape. Shaoxing, located in north-central Zhejiang province, China, is a renowned Chinese historical and cultural city, famous for its water town, bridge town, calligraphy town, and famous scholars. Key attractions include Lanting Scenic Spot, the hometown of Wang Xizhi, and the hometown of Lu Xun, which are important literary tourist destinations. In the related texts, tourist perceptions of calligraphic landscapes can be categorized into three main dimensions: landmark and place identification, cultural symbols, and esthetic experience.

Calligraphic landscapes, as feature markers, help define the boundaries of specific areas (Qi *et al.*, 2013). These characteristic calligraphic landscapes are commonly used as signifiers and markers to attract tourists' attention and enhance their experience. Typically positioned at important spatial nodes or significant geographical locations, they serve as focal visual points with a high degree of prominence and iconicity. In this context, tourists tend to focus less on the artistic features of calligraphy and more on its easy recognition and environmental coordination. These are the main perceptual characteristics of calligraphic landscapes, reflecting a preference for legible and consistent scenery (Liu *et al.*, 2019). As tourist attractions, calligraphic landscapes play an essential role in creating scenic places and establishing a sense of place. In addition, they serve as referent symbols that signify being present; thus, tourists' behavior shifts from merely taking photos or noting the

time, to collecting symbolic representations during their visits (Wu & Dai, 2023).

Cultural symbolism reflects the way calligraphic landscapes contribute to the cultural atmosphere. Visitors experience the landscape in a holistic way, combining their immediate perceptions with their knowledge and memories (Antrop, 2005). First, the combination of calligraphic works and the green tiles and white walls in the historic district creates a scene reminiscent of poetry, fulfilling tourists' expectations and imaginations of the scenery of Jiangnan landscape as depicted in the literature. In this context, calligraphy becomes a tool to enhance the cultural atmosphere of the place. An analysis of tourist posts reveals that tourists often photograph calligraphic landscapes, captioning them with references to the Lanting Preface. Second, calligraphic landscapes are strategically placed near major entrances and bridge passages, correlating geographic locations with stories, legends, or historical events. This design deepens tourists' memories of the sites and enriches their experiences (Figure 5). Finally, calligraphy serves as a reminder in various forms, such as street signboards and store plaques, which invariably strengthens visitors' perceptions of local characteristics.

Esthetic experience includes environmental esthetics and mood association. On the one hand, the calligraphic landscape has a guiding role in shaping the landscape esthetic. When the content and artistic styles of the calligraphic works are harmonized with the landscape features of the scenic area, they can prompt and guide the overall scenic landscape's esthetics. In scenic spots related to literary works, tourists are more inclined to follow the order depicted in the poems.

On the other hand, in the traditional Chinese view, any successful work of art elicits an emotional response that matches the “soul” that informs or animates it (Antrop, 2005; Baihua & De Meyer, 2017). As an environmental element, the role of calligraphic landscapes is usually



Figure 5. Calligraphic landscape in Shaoxing city. (A) Lanting scenic area. Source: Photo by Shaoxing Culture and Tourism (available at <https://mp.weixin.qq.com/s/Wm-tL6q4lR5H-CDfYNINPA>) (2024). (B) Tishan bridge. Source: Photo by Huang Ke (2024)

similar to that of painting and music, as it manifests artistic symbols used to accentuate the atmosphere of a scenic spot, regulate the mood of tourists, and create an esthetic conception. The emergence of artistic conception implies that the objective scenery has become a symbol or token of one's subjective affections. Visitor descriptions note that through the guidance of the calligraphic landscape, visitors are more easily engaged in the mood depicted by literary works, allowing for an immersive experience. At this time, real-life landscapes are transformed into imaginary scenery (Baihua & De Meyer, 2017). Whether tourists can devote themselves to the mood of the calligraphic landscape is an important indicator of their esthetic experiences (Jiang *et al.*, 2015).

In summary, the perceived dimensions of calligraphic landscapes presented on social media mainly include place recognition, geographic indications, heritage perception, calligraphic appreciation, cultural symbols, and esthetic guidance. Place recognition and geographic indications are similar in function and are thus combined into the same dimension of place recognition. The preferences for perception in different contexts vary greatly, though cultural symbols remain common across different contexts.

5. Discussion

This study utilizes social media texts as data sources, employing text analysis methods, such as high-frequency lexical analysis, semantic network analysis, and co-occurrence clustering visualization. It examines tourists' perceptions of calligraphic landscapes and their symbolic dimensions across different touristic contexts, providing insights into the interplay between cultural symbolism and spatial perception in tourism.

Overall, calligraphic landscapes, centered around calligraphy, are vital tourism resources and key perceptual elements for tourists. The rapid dissemination of their symbolic meanings through mass media has enhanced public perception of tourism spaces and their symbolic significance. Furthermore, with the rise of online check-in behavior, calligraphic landscapes have developed new esthetic-symbolic meanings among young tourists, representing a digital embodiment of the sense of place.

Further research reveals that tourists' perceptions of calligraphy primarily manifest in five aspects: place identification, cultural symbolism, appreciation of calligraphy, heritage value, and esthetic guidance. These elements demonstrate the diversity and complexity of the symbolic meanings of calligraphic landscapes in the era of popular culture. Calligraphic landscapes serve as crucial tools for defining space and identifying places, playing a

significant role in constructing symbolic urban spaces and mediating tourists' spatial perceptions.

Calligraphy, as a traditional cultural landscape with distinctive Chinese characteristics, has been widely integrated into daily life, work, and leisure, shaping significant cultural places in China. It also plays a crucial role in cultivating a unique sense of place. However, the symbolic meanings of calligraphy must be contextualized, as tourists' perceptual preferences for calligraphic landscapes vary across different settings.

This study offers three strategic recommendations for designing calligraphic landscapes based on tourists' perceptions of their symbolic meanings. First, it is essential to fully understand the perceived characteristics of tourists when designing calligraphic landscapes and creating a cultural atmosphere for scenic areas. The integration of calligraphic landscape symbols, fingerprint symbols, architectural symbols, street symbols, and commercial symbols should be done organically, considering the overall environment and atmosphere to avoid rigid copying. Second, effectively highlighting local culture through calligraphic landscapes has proven to resonate with tourists' perceptual experiences, enriching the symbolic meanings of these landscapes. Third, in an era dominated by popular culture, calligraphic landscape design should embrace innovation in form and content to attract younger audiences, moving beyond traditional elitist esthetics to foster creativity, exploration, and innovation in artistic concepts and practices.

The research validates the feasibility of web text analysis in studying the symbolic meanings of cultural landscapes, enriching the theoretical outcomes of calligraphic landscape perception studies. By understanding the characteristics of symbolic perception, further research can explore tourists' psychological reactions and behavioral intentions during interactions with calligraphic landscapes, enhancing our understanding of the symbolic effects of these landscapes. The variability in the representation of Chinese calligraphic landscapes across different discursive contexts highlights how unique cultural elements impact tourists' perceptions, emotional responses, and the overall cultural and historical characteristics of a place. Theoretically, these findings support the design of calligraphic landscapes and the cultivation of cultural atmospheres in tourist areas.

6. Conclusion

Overall, the findings indicate that calligraphic landscapes are more than esthetic elements; they are potent symbols of culture and history, with social significance, influencing individual perceptions and collective memories. Integrating these symbolic landscapes into urban design

can enhance cultural identity and tourism appeal, making them vital components of cultural and heritage tourism strategies.

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Conflict of interest

The authors declare they have no competing interests.

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Availability of data

The raw/processed data required to generate the findings in this study cannot be shared at this time, as this data also forms part of an ongoing study.

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