Extraction and Design Transformation of Visual Symbols for Urban Cultural Heritage Branding: A Case Study of Jinan

[1]Yichen Qi, and [2]Yodkwan Sawatdee

Faculty of Decorative Arts, Silpakorn University, Thailand
E-mail: [1]qiyichen0313@gmail.com, [2]kru_ton@hotmail.com

Abstract

This article explores the strategic use of visual symbols in the context of Jinan's urban cultural heritage branding. This article aimed to study (1) the critical causal factors in developing Jinan's urban cultural heritage, including historical relics, traditional arts, and urban landmarks. (2) Analyze how to extract Jinan's urban historical and regional cultural symbols into effective brand visual elements and subsequent design transformation. (3) Constructed a model of Chinese urban cultural heritage branding.

This study uses mixed research methods, including questionnaire surveys, focus groups, cultural intention cognitive experiments, and Saussure's two-axis analysis. Through these methods, we measure public perception and evaluate how these symbols contribute to Jinan's brand image and convey its cultural heritage. The study selected seven experts and eight focus group members as participants and invited 150 audiences to participate in the artistic intention cognitive experiment. The findings highlight the importance of visual symbols in urban cultural heritage branding.

The research results are as follows:

1. The research data strongly shows that the sample selected by the audience group is consistent with the goals of the Jinan Urban Cultural Tourism Development Outline.

2. Reflects on the effectiveness of visual symbols in promoting the Jinan city brand.

3. Design transformation and modern relevance, revealing the ability of cultural values.

Keywords: cultural heritage; visual symbols; brand; cultural value

Introduction

The study delves into the complex process of creating visual symbols for a city's cultural heritage brand, revealing the subtle ways in which pictorial symbols encapsulate and communicate cultural identity in urban environments. The research explores the historical and cultural contexts of urban spaces, examining how visual characters interact with the city's existing fabric. Explores the intersection between cultural preservation and graphic design, emphasizing the need for a multidisciplinary approach in urban cultural heritage branding.

Data from the UNESCO Cultural Heritage Protection Report emphasizes the increasing importance of effectively utilizing visual symbols in urban spaces for cultural preservation. The gaps in existing research become apparent when considering the dynamic nature of urban areas and the evolving cultural narratives that demand a more nuanced and detailed exploration of the visual elements within the context of cultural heritage branding. Meanwhile, in 2020, data from China's State Administration of Cultural Heritage (SACH) showed that the importance of preserving cultural heritage in rapid urbanization is emphasized. (Badian, 1993) addresses crucial research questions regarding the extraction and design transformation of these symbols. However, the detailed procedures for shaping visual elements have yet to be scrutinized. Recent theoretical contributions (Amen & Nia, 2021) offer insights into the semiotics of urban spaces, providing a valuable framework for understanding the symbolic language of cities. In China, existing research, such as the work of (Xiaogang, 2022), has extensively explored cultural heritage preservation and its role in urban development. However, there needs to be more literature concerning the extraction and design transformation of visual symbols in the context of Chinese urban cultural branding. The research aims to fill this gap by offering insights into how visual symbols contribute to China's unique urban identity, recognizing the need for a more nuanced understanding in the face of rapid urban development.

For these reasons, there is a need for a more nuanced and detailed exploration of visual elements in the context of cultural heritage branding. Therefore, the question contributes to bridging these gaps by offering a focused examination of the extraction and design transformation processes, aiming to advance knowledge in urban cultural heritage branding and informing policy and practice in China's urban cultural heritage branding.

Research Objectives

Objective 1: Explore the history and regional culture of the urban environment and the origin, evolution, and meaning of these symbols.

Objective 2: Investigate how to creatively adapt and modernize these extracted visual characters for contemporary city branding.

Objective 3: Explore balancing modern design aesthetics with preserving these symbols' integrity and cultural relevance.

Literature Review

This study collected important information from relevant research on "The Development Status of Brand Promotion of Visual Symbols Extracted from Urban Cultural Heritage", which is summarized as follows:

Visual symbols

Visual symbols have long been recognized as an effective strategy for communicating identity, values, and narratives and a powerful tool for cities to bridge the gap between tradition and modernity(Amin, 2008). From the previous studies, the research field mainly focuses on visual generalization, summarizing the archetypes' shape and colour to complete the extraction work. Dongnan (2019) collated the Mongolian regional patterns and ornaments in origin, allegory, and symbolism. Then, they determined the weight of each type of pattern in representing the Mongolian ethnic group by scoring method, through which the representative elements of the Mongolian ethnic group were determined. By finding out the pictures related to Dunhuang Mogao Grottoes, Bu Jun asked the respondents to rate each photo perceptually through intuition and experience and then statistically came up with the highest-rated pictures. In addition, some new techniques and instruments are also gradually applied to the extraction of design art elements. Jap P McCormack proposed a method for the extraction and evolution of design elements based on the principle of cultural algorithms(Xilong et al., 2022). Chenguang (2018) took the culture of the Big Buddha Grotto in Binxian County as the research object. They analyzed the experimental subjects' eye movement trajectories, hotspot areas, and areas of interest to determine the focus of feature extraction.

Protection of urban cultural heritage

It has become indisputable that today's cities' "emphasis on material and light on culture" has caused problems such as continuously weakening the social foundation of a country's

traditional cultural resources, and its spatial carrier is lost. These conditions make protecting and inheriting cultural heritage difficult (Guohua, 2016). The preservation of cultural heritage is intrinsic to the development of urban heritage. Place branding involves shaping and enhancing the image and identity of a location, while urban cultural heritage includes the city's history, architecture, and cultural assets.

Brand promotion of cultural heritage

Many cities worldwide have successfully extracted visual symbols from their cultural heritage for branding purposes. Barcelona uses Antoni Gaudi's unique architectural works, such as the Sagrada Familia and Park Guell, as iconic symbols representing the city's unique cultural heritage(Richards, 2011); and Kyoto, Japan, which has effectively utilized traditional Japanese symbols, including cherry blossoms and the tea ceremony, to brand itself as a city deeply rooted in cultural heritage (Jixiang, 2007). Visual symbols play a crucial role in cultural heritage branding. These symbols are powerful communicators of the city's heritage identity. In conclusion, this study examines the theoretical and practical implications of extracting and translating visual symbols in urban heritage branding.

Conceptual Framework

This article takes Jinan, a city rich in historical and cultural significance, as the research object to explore visual symbols' strategic extraction and transformation. A novel research model rooted in the theoretical framework of branding is proposed, shown in Figure 1.
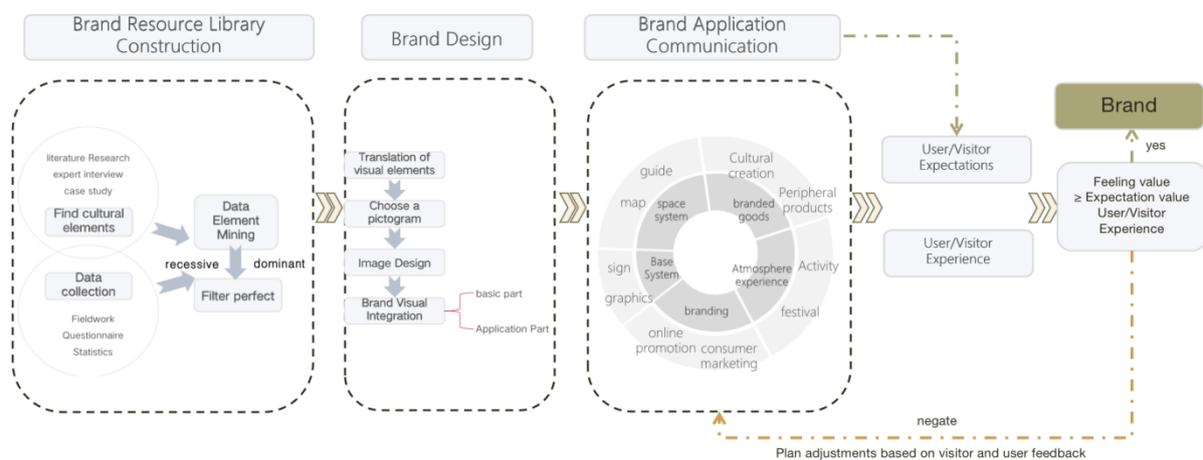

Fig.1 Research Model

Research Methodology

Selection of Study Area

In this study, the Baihuazhou Historical and Cultural Neighborhood of Jinan City was chosen as a sample for research for one reason: the neighbourhood represents the epitome of Jinan's modern to contemporary urban development. It is the only relatively well-preserved urban historical heritage in the city at present. It represents a traditional Chinese urban historical site. Reason 2: The neighbourhood contains many tangible and intangible cultural heritage elements.

Population and Sample

First, eight experts and workers must be invited to form a focus discussion group to initially screen out the less impressive elements that are difficult to transform into symbols. Secondly, 150 subjects were invited to conduct a cultural intention cognitive experiment test, and pictures with more obvious intentions were selected. Finally, the design of graphic symbols was transformed using Saussure's two-axis analysis, and seven experts in the industry were invited to review the results.

Creation of Research Instrument

This study will primarily use mixed research methods. The qualitative analysis includes a literature review, focus groups, and expert feedback. Quantitative analysis involves data analysis to assess the effectiveness of different visual elements in communicating cultural aspects to the target audience, with the above methods serving as the primary data collection instruments.

Data Analysis

Through fieldwork and other research methods, as well as public information on the website of the local people's government, the author collected and organized the regional culture and cultural heritage resources of Baihuazhou and preliminarily screened out the elements with relative regional cultural identities, with a total of 166 samples, providing a favourable foundation for establishing the brand database.

Research Results

Focus Group Discussion Results

This experiment mainly screens elements from three aspects: regional culture, tangible cultural heritage, and intangible cultural heritage. The focus group extracted 54 images for the

following demonstration study. The three types of cultural elements selected by the focus group are shown in Table 1–3.

Table 1 Regional cultural elements

Ategory	S/N	Name	Image	Ategory	S/N	Name	Image
Street style	01	Qushuiting Street		Plant elements	12	Lotus	
	02	Yuhe Lane			13	Bamboo	
	03	CountyWest Lane			14	Yew	
Architectural style	04	Fuxue Confucian Temple		Cultural and Folk Customs	15	Celebrity Culture	
	05	Ming and Qing houses			16	Dyeing Workshop	
	06	Church			17	Intangible Heritage Theater	
	07	Yuheju			18	Chinese Medicine Exhibition Hall	
Spring water element	08	Pearl Springs			19	Lantern Festival	
	09	Houdequan			20	Baihua Station	
	10	Wangfu Pond		Festival celebration	21	Collection intangible cultural heritage New Year goods	
	11	Yudai River			22	Baihuazhou performances	

Table 2 Intangible cultural heritage elements

Ategory	S/N	Name	Image	Ategory	S/N	Name	Image
Art and craft	01	Jinan paper cutting		Traditional medicine	12	Hongjitang Traditional Chinese Medicine	
	02	Cloth tiger			13	Dong'e donkey–hide gelatin craft	
	03	Jinan dough figurines			14	Zhang's bone setting	
	04	Jinan Shadow Play		Folklore	15	Thousand Buddha Mountain Temple Fair	
Traditional opera	05	Liuzi Opera			16	Hungry Ghost Festival customs	
	06	Wuyin Opera		Traditional dance	17	Drum yangko	
	07	Shandong Clapper			18	Joe's stilts	
Traditional skills	08	Lu embroidery		Traditional sports	19	Eight Diagrams Tai Chi	
	09	Wicker			20	Praying Mantis Fist	
	10	Black pottery making process		Folk literature	21	Legend of Daming Lake	
	11	Shandong Cuisine Cooking Skills			22	Legend of Shun	

Table 3 Material cultural heritage resources

S/N	Name	Image	S/N	Name	Image
01	Governor's Yamen in Shandong Province in the Qing Dynasty		06	Ming City Wall	
02	Tibitang Theater Building of Qing Dynasty		07	Ruins of Bixia Palace in Ming Dynasty	
03	Taoist buildings		08	Houzaimen Street Christian Church	
04	Fuxue Confucian Temple		09	Lu Dahuang Former Residence	
05	Chen Mian Zhuangyuan Mansion		10	Sun Family Mansion	

Cognitive Experiment Results

"Cultural imagery" forms an artistic image through the inner emotional processing of the creator. Imagery empowerment in branding refers to the brand's ability to connect the cultural meaning and spirit of the place with the needs of the target consumers, find one or more points of fit, use the unique artistic imagery of the place to give the brand cultural connotation and spirituality, shape the brand image, enhance the value of the brand. One hundred fifty participants were invited to participate in this cultural cognitive intention experiment. Out of these, 146 valid questionnaires were collected. The statistical analysis of these valid questionnaires is shown in Table 4.

Table 4 Results of the Cultural Intention Cognition Experiment

S/N	Elements	Score	S/N	Elements	Score
01	Spring	3.01	14	Hongjitang Traditional Chinese Medicine Culture	2.59
02	Lotus	2.99	15	Liuzi Opera	2.22
03	Qushuiting Street	2.54	16	Lu embroidery	2.08
04	Fuxue Confucian Temple	2.51	17	Black pottery making process	2.08
05	Yuheju	2.10	18	Jinan wicker	2.76
06	Baihuazhou Theater	2.44	19	Drum yangko	2.45
07	Baihuazhou Workshop	2.03	20	Lu cuisine production process	2.40
08	Fuxue Confucian Temple	2.98	21	Fuxue Confucian Temple	2.98
09	Ming and Qing houses	2.06	22	Houzaimen Street Christian Church	2.92
10	Lantern Festival	2.92	23	Chen Mian Zhuangyuan Mansion	2.90
11	Jinan Shadow Play	2.98	24	Taoist buildings	2.77
12	Jinan paper cutting	2.87	25	Governor's Yamen in Shandong Province in the Qing Dynasty	2.50
13	Rabbit king	2.63	26	Ming City Wall	2.34

Symbolic Translation Results of Biaxial Analysis Method Saussure proposed that symbols have two unfolding directions, namely the lineage axis (paradigms) and the adjacency axis (syntagms), and the imagery activity of any character necessarily unfolds in this two-axis relationship (Joseph, 2017),as shown in Figure 3.
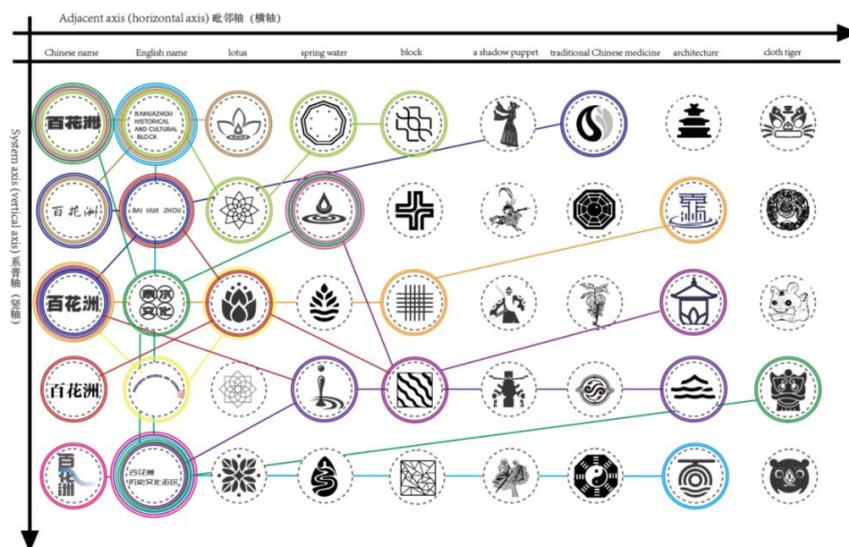

Fig.3 Design Object Element Combination

After combining the two axes' elements, ten monochromatic "Bai Hua Zhou" symbols from A to J were obtained， as shown in Figure 4.

Fig.4 Visualization of Design Portfolio

Design of Program Evaluation Results

One hundred fifty audience groups were invited to participate in the evaluation test of the perceptual evaluation experiment. According to the evaluation of the target audience, the highest scores are scheme C, scheme F, and scheme A. According to the scores, Option C scored the highest, as shown in Table 5.

Table 5 Evaluation Result Data Analysis

S/N	Design plan	Score	S/N	Design plan	Score
01	Option A	2.75	06	Option F	2.86
02	Option B	2.67	07	Option G	2.61
03	Option C	2.93	08	Option H	2.13
04	Option D	2.03	09	Option I	2.55
05	Option E	2.12	10	Option J	2.08

The researchers built a brand database around regional cultural elements and cultural heritage elements. They designed auxiliary brand graphics and used 26 brand artistic genes extracted from cultural intention cognition experiments for design. Finally, these elements were decomposed into geometric figures to form a relatively concise and general pattern for design practice as a brand image development project of the Baihuazhou Historical and Cultural District, as shown in Figure 5.

Fig.5 Brand Support Graphics

Brand Visual Image Design Effect

Offline application materials are divided into office supplies, advertising, and peripheral product applications, which can meet the basic needs of tourists, residents, staff, and private shop owners, as shown in Figure 6.

Fig.6 Derivative product applications

The research data strongly shows that the sample selected by the audience is consistent with the goals of the current Jinan Urban Cultural Tourism Development Outline. The impact of local culture on city branding is a multifaceted and dynamic phenomenon that plays a crucial role in shaping the identity and perception of a city or urban region.

There are four most significant implications of this study. First, the protection of cultural identity and heritage has been strengthened. Second, the city's brand image has been effectively promoted. Third, the relevance of design transformation and modernity. Fourth, symbolic meanings and cultural nuances are emphasized. Highlights the semiotic depth of these visual symbols.

Discussion

The critical role of visual symbols in promoting urban development is affirmed. The importance of visual symbols as carriers of cultural heritage encapsulates layers of history, memory, and identity in a single image. It reveals the depth of meaning embedded in its form and context that is meaningful to study.

In addition to urban heritage protection, the importance of visual symbols in city branding and identity promotion was underlined—improved quality of life and community engagement. Visual symbols are portrayed as agents of positive change, creating an attractive urban environment and cultural atmosphere.

Knowledge from Research

This conceptual map visually represents the hierarchical organization of the research's body of knowledge, showcasing the interconnectedness of critical elements in understanding and implementing the extraction and design transformation of visual symbols for urban cultural heritage branding， as shown in Figure 7.
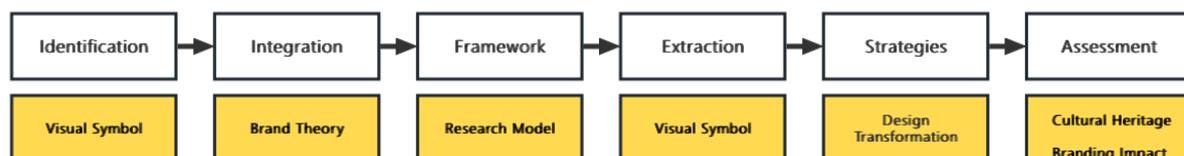
Identification	Integration	Framework	Extraction	Strategies	Assessment
Visual Symbol	Brand Theory	Research Model	Visual Symbol	Design Transformation	Cultural Heritage Branding Impact

Fig.7 Knowledge System of Research Results

Conclusion

Based on Objective 1, it is concluded that integrating visual symbols into city branding can be a focal point for revitalizing the old city and attracting attention to the historic area.

Based on Objective 2, it is concluded that creative adaptation and extraction of visual features effectively enhance and preserve Jinan's cultural characteristics and historical heritage, creating a harmonious coexistence of tradition and progress.

Based on Objective 3, it is concluded that this effective branding strategy connects residents and visitors to the cultural narrative of Jinan, contributing to a sense of place belonging and cultural relevance.

Suggestions

For the government: Incorporate visual symbols into urban planning and development strategies.

For residents: Encourage active participation in preserving Jinan's cultural heritage and learn about Jinan's history and traditions through participating in cultural events, heritage preservation activities, and historical tours.

For businesses: Ensure that branding and marketing efforts are culturally sensitive and respectful of Jinan's traditions, avoiding cultural appropriation and striving for expressive authenticity when incorporating visual symbols into commercial activities.

References

Amen, M. A., & Nia, H. A. (2021). The Effect of Cognitive Semiotics on The Interpretation of Urban Space Configuration. In The 4th International Conference of Contemporary Affairs in Architecture and Urbanism (ICCAUA–2021), 20–21 May 2021. Alanya HEP University, Alanya, Turkey. (pp.260–274). DOI:10.38027/ICCAUA2021227n9

Amin, A. (2008). Collective culture and urban public space. *City: Analysis of Urban Change, Theory, Action, 12*(1), 5–24. DOI: 10.1080/13604810801933495

Badian, N. A. (1993). Phonemic awareness, naming, visual symbol processing, and reading. *Reading and Writing, 5,* 87–100.

Chenguang, W. (2018). Research on extraction and application of cultural design genes based on eye movement analysis. *Computer Engineering and Applications, 54*(11), 217–224.

Dongnan, H. (2019). Extraction and reconstruction of Mongolian pattern elements. *Packaging Engineering Art Edition, 40*(6), 1–7.

Guohua, Z. (2016). Imbalance and adaptation: On the development of my country's traditional national sports culture. *Ideological Front, 6*(4), 33.

Jixiang, S. (2007). Construction of urban cultural heritage protection and cultural city. *CITY PLANNING REVIEW, 5,* 9–23.

Joseph, J. E. (2017). *Ferdinand de Saussure.* Oxford Bibliographies. DOI: 10.1093/OBO /9780199772810–0003

Richards, G. (2011). Creativity and tourism: The state of the art. *Annals of Tourism Research, 38*(4), 1225–1253.

Xiaogang, Z. (2022). The Chinese experience and Chinese paradigm of "urban gift" ecological construction in the new cultural and creative context. *Journal of Shenzhen University (Humanities and Social Sciences Edition), 39*(2), 54–64.

Xilong, H., Xiaoguang, W., & Mengjuan, W. (2022). Research on knowledge outline in the field of cultural heritage. *Library and Information Work, 66*(22), 106.