



Research on the IP Image Design of Ancient Civilization in Liaoning Based on Three-Dimensional Methodology: A Case Study of the Liaoning Provincial Museum's Ancient Liaoning Exhibits

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Abstract. To address the low public visibility of Liaoning's ancient civilization and the limitations of museum IP design in reaching younger audiences, this study focuses on the five "Ancient Liaoning" exhibition halls at the Liaoning Provincial Museum and proposes a three-dimensional methodology of "visual translation – emotional resonance – media adaptation." By integrating Peirce's semiotics (for visual translation), cultural gene theory (for media adaptation), and Norman's emotional design (for emotional resonance), this study systematically extracts and translates cultural elements from five historical periods (Prehistoric, Xia-Shang-Zhou, Warring States to Sui-Tang, Liao-Jin, and Yuan-Ming-Qing) into a Q-style anthropomorphic IP character system, supported by emoji packs for digital dissemination. The findings show that this method effectively integrates cross-period cultural resources, enhancing visual appeal and recognizability while preserving cultural authenticity. Emotional design further enriches user interaction, transforming cultural dissemination from an "exhibition-oriented" model to a "usage-oriented" one. This study offers a feasible approach for integrating cross-epoch cultural IP design with emotional communication, providing theoretical and practical value for museum digital dissemination and cultural product development.

Keywords: Cultural IP Design, Ancient Civilization of Liaoning, Semiotics, Emotional Design, Digital Dissemination

1 Introduction

Liaoning, as a key birthplace of Northeast Chinese civilization, possesses a continuous cultural lineage from prehistory to the Ming-Qing period. However, compared to the well-established narratives of the Central Plains, Liaoning's ancient civilization remains less visible to the public. Archaeological findings are largely confined to academic circles, and museum exhibitions rely mainly on static displays, failing to engage younger audiences. In today's digital media environment, traditional culture urgently needs a more approachable and communicable form of "re-expression."

In parallel, regional cultural elements are increasingly being transformed into sustainable heritage through modern IP design, facilitating a dialogue between traditional aesthetics and contemporary concepts. Current museum IP design, however, tends to focus on single historical periods and adopt a serious, realistic style, lacking cross-period integration and youthful emotional interaction. As a result, it is difficult for even culturally valuable IPs to spread virally on social media. To better position the novelty of this study, a brief comparison with existing successful cultural IPs is helpful. For example, the Palace Museum has successfully developed a series of cultural IPs (e.g., the "Emperor's Cat" series) that blend traditional elements with playful, approachable designs, achieving significant social media engagement. Compared to these cases, Liaoning's ancient civilization IP is still in an early stage. The Palace Museum's success demonstrates the value of Q-style anthropomorphism and emotional design—strategies that this study adopts. However, unlike the Palace Museum, which often focuses on a single dynasty (Qing), this study tackles five consecutive historical periods (from Prehistoric to Qing) under a unified methodological framework. This cross-period integration is the primary novelty of the proposed three-dimensional methodology.

To address these issues, this study takes the five "Ancient Liaoning" exhibition halls at the Liaoning Provincial Museum as its research object and attempts to construct an IP design system that combines cultural depth with communicative vitality. Through Q-style anthropomorphic characters and emoji packs, it integrates the cultural features of five periods: Prehistoric, Xia-Shang-Zhou, Warring States to Sui-Tang, Liao-Jin, and Yuan-Ming-Qing.

Methodologically, the study introduces semiotics and emotional design theory, proposing a three-dimensional framework of "visual translation – emotional resonance – media adaptation," and implements it through a four-stage design process: extraction, transformation, reconstruction, and validation. The paper covers theoretical foundations, design methods, practical analysis, communication strategies, and reflections, aiming to provide a reference for systematic regional cultural IP design[1].

2 Theoretical Foundations

2.1 Peirce's Triadic Classification of Signs

Three theories are selected to answer three fundamental questions in cultural IP design:

- (1) What cultural elements can be translated? → Cultural gene theory;
- (2) How to translate them into visual signs? → Peirce's semiotics;
- (3) How to evoke user engagement? → Norman's emotional design. Together, they form a logical chain: cultural genes provide the "raw material," semiotics the "translation rules," and emotional design the "interaction goals."

Peirce classifies signs into iconic, indexical, and symbolic. Iconic signs rely on formal similarity (e.g., prehistoric bone ornaments). Indexical signs indicate causal relationships (e.g., Liao-Jin sabers reflecting nomadic life). Symbolic signs depend on cultural conventions (e.g., Ming-Qing red/yellow symbolizing power)[2]. In this study, this distinction directly informs the "visual translation" dimension: prehistoric bone

ornaments as iconic, Liao-Jin sabers as indexical, and Yuan-Ming-Qing costumes as symbolic (see Section 4 and Table 1).

2.2 Cultural Gene Theory

Cultural gene theory posits that culture consists of transmissible "gene units": explicit (shapes, colors) and implicit (beliefs, values)[3]. In IP design, ignoring implicit genes leads to superficial "symbolic collage." In this study, cultural gene theory guides the "media adaptation" dimension: explicit genes (pottery shapes, Hanfu silhouettes) are directly visualized, while implicit genes (ancestor worship, ritual order) require narrative embedding in emoji scenarios.

2.3 Norman's Three Levels of Emotional Design

Norman's emotional design comprises visceral (aesthetic), behavioral (use experience), and reflective (identity) levels[4]. These three levels are mapped onto the "emotional resonance" dimension in this study: visceral appeal drives Q-style aesthetics, behavioral interaction is realized through emoji use, and reflective engagement emerges when users recognize cultural meanings during daily digital communication.

2.4 Three-Dimensional Methodology Framework

Based on the above, this paper proposes a three-dimensional methodology. Each dimension is directly supported by one primary theory (see Fig. 1):

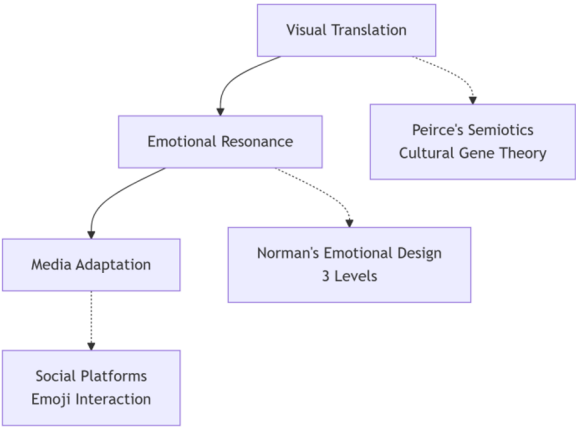


Fig. 1. The three-dimensional methodology framework showing how each theory supports one dimension

Visual Translation (supported by Peirce's semiotics): Translating cultural elements into iconic, indexical, or symbolic signs.

Emotional Resonance (supported by Norman's emotional design): Building user engagement through visceral, behavioral, and reflective levels.

Media Adaptation (supported by cultural gene theory): Directly visualizing explicit genes while embedding implicit genes into emoji scenarios for social media.

Cultural identity plays a core mediating role between cultural cognition and cultural confidence: IP must evoke a sense of cultural belonging to achieve effective communication[5].

3 Research Methods and Design Process

This study focuses on the five major exhibition halls of the Liaoning Provincial Museum, "Ancient Liaoning," covering a complete historical sequence from prehistoric times to the Ming and Qing dynasties. Data sources include field research, museum collection catalogs, and relevant archaeological reports to ensure the academic reliability of the design basis.

The design process is divided into four stages:

1. Extraction: Extract key cultural symbols from artifacts and historical materials;
2. Transformation: Translating symbols into visual design elements;
3. Reconstruction: Conducting Q-version anthropomorphization integration design;
4. Validation: Evaluating effectiveness through expert feedback and dissemination data.

This process emphasizes a closed-loop logic from academia to design and then to dissemination.(see Fig. 2):

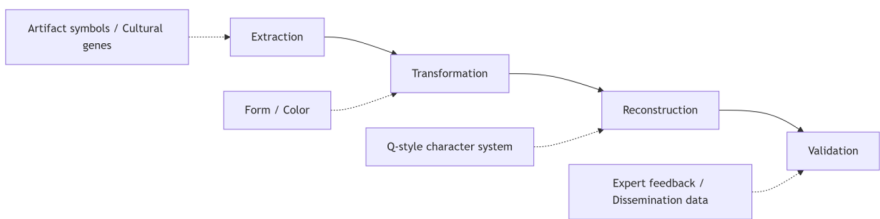


Fig. 2. The four-stage design process

4 IP Character Design Practice

4.1 Prehistoric Period

Prehistoric characters are centered around elements such as animal skin clothing and bone headdresses, with an overall warm brown color scheme. The bone shapes serve as image symbols, directly derived from unearthed artifacts; they also imply the cultural gene of ancestor worship. The character proportions are rounded, enhancing a primitive yet not rough sense of approachability.

4.2 Xia, Shang and Zhou Periods

Characters from this period are inspired by pottery culture, with headdress designs resembling high buns shaped like pottery jars, using a combination of light green and ochre colors to reflect the texture of early pottery. The symmetrical structure and stable proportions reinforce the characteristics of ritual culture, representing a combination of image symbols and symbolic signs.

4.3 Warring States to Sui and Tang Periods

The character is dressed in a wide-sleeved Hanfu, featuring a blue-gray color scheme that reflects the aesthetic tendencies of Central Plains culture. The half-up hairstyle and hairpin design serve as index symbols, suggesting the ceremonial system and social hierarchy, giving the character a graceful and regulated demeanor.

4.4 Liao and Jin Dynasties

Characters from the Liao and Jin periods highlight the characteristics of nomadic peoples, wearing Hu clothing, donning horse hats, and carrying sabers. The overall color scheme leans towards cool tones, reinforcing associations with the grassland culture. The saber is not only a decoration but also an index symbol of a lifestyle, embodying the culture of horseback archery and nomadism.

Table 1. Summary of IP character design by period

Period	Key Features	Dominant Colors	Sign Type
Prehistoric	Animal skin clothing, bone headdress	Warm brown	Iconic
Xia-Shang-Zhou	Pottery-shaped bun, symmetrical structure	Light green, ochre	Iconic + Symbolic
Warring States to Sui-Tang	Wide-sleeved Hanfu, hairpin	Blue-gray	Indexical
Liao-Jin	Hu clothing, horse hat, saber	Cool tones	Indexical
Yuan-Ming-Qing	Standing-collar jacket, official hat	Yellow, red	Symbolic

4.5 Yuan, Ming, and Qing Dynasties

During this period, characters primarily feature standing-collar jackets and official hats, using a yellow and red color scheme that symbolizes imperial power. Details such

as hat insignias serve as symbolic markers, reinforcing the hierarchical system and political authority. The character images are relatively formal, reflecting the characteristics of an institutionalized society.

5 Emojis and Digital Communication

Based on the IP, this study further develops an emoji system to enhance emotional dimensions and communication capabilities. The design includes ten categories of emotional labels such as "confused," "happy," "like," "playful," "crying," and "good morning," each matched with different historical characters. For example, the "loading" emoji is designed to fit the historical background of prehistoric characters, who may find it difficult to understand many new things. Other emojis also consider certain historical factors, combining them with the emoji usage habits of modern young people to create designs that align with lightweight interaction habits on mobile devices.

This fusion of "traditional symbols + modern emotions" transforms historical images into a social language that can be used in daily life.

In terms of media adaptation, the size and style of the emoji packs are optimized for platforms such as WeChat, QQ, and Bilibili, while also employing looping animations and brief text to enhance communication efficiency. (see Fig. 3):



Fig. 3. Display of IP characters and emoji pack

6 Cultural Value and Application Scenarios

Museums, as important platforms for inheriting and promoting excellent traditional culture, need to focus on brand building to achieve better promotion and marketing effects through cultural and creative products. By shaping a representative brand image, the communication effect of cultural and creative products can be enhanced, gaining market competitiveness. Based on this concept, the IP system of ancient civilization in Liaoning constructed in this chapter aims to create a unified and recog-

nizable cultural brand symbol for the Liaoning Museum, thereby expanding its application value in different scenarios[6].

This IP system reflects the historical characteristics of the integration of diverse cultures in the Liaoning region, forming a complete narrative chain from prehistoric tribes to Central Plains culture, and then to nomadic and imperial societies.

In terms of application, it mainly includes:

Social Communication: Emoji packs serve as lightweight cultural carriers, increasing the frequency of communication;

Educational Assistance: Can be used as illustrations for history teaching, enhancing students' understanding;

Cultural and Creative Development: Extended into products such as blind boxes, keychains, and stationery, forming an industrial chain.

7 Methodology Refinement and Limitations

This study, based on the "Ancient Liaoning" exhibition at the Liaoning Provincial Museum, proposes a three-dimensional methodology of "visual translation – emotional resonance – media adaptation" and implements IP character and emoji design from the Prehistoric to the Ming-Qing periods. Results show that this method effectively integrates multi-period cultural resources, enhances visual expression of cultural symbols, and increases user engagement through emotional design, thus activating traditional culture in digital media environments. This study provides a feasible pathway for integrating cross-epoch IP construction with emotional communication, offering reference for museum digital dissemination and cultural creative design. Future research can combine user data and multi-platform practices to expand the method's applicability and explore its potential in other regional cultural contexts.

Despite its effectiveness, the proposed methodology has three limitations. First, it relies on rich tangible artifacts; for cultures with fewer physical remains, visual translation becomes more difficult. Second, the emoji-based emotional resonance assumes familiarity with Chinese historical symbols, limiting cross-cultural applicability. Third, media adaptation is currently optimized for Chinese platforms (WeChat, QQ, Bilibili); effectiveness on global platforms like Instagram or TikTok requires further testing. Future research should address these constraints through universal design strategies and cross-cultural studies.

8 Conclusion and Outlook

This study constructs an IP image and emoticon system covering five historical periods based on the resources of ancient Liaoning civilization, and verifies the feasibility of the three-dimensional methodology of "visual translation - emotional resonance - media adaptation." Design practice shows that this method can effectively achieve the digital translation and youth-oriented communication of traditional culture.

In the future, immersive experiences can be realized by combining AR/VR navigation technology, and personalized emoticons can be generated using AI to expand user

engagement. At the same time, through cross-media development such as animation and games, cultural IP can be promoted to extend into a broader digital ecosystem.

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