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Innovative Design Research of Time-Honored Brands Based on Haipai Cultural Genes: A Case Study of Maochang Glasses

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ABSTRACT

Using the Cultural Genome Theory to study the design strategies and paths for the innovative development of time-honored brands, we aim to assist in their transformation towards innovation. Employing the ZMET metaphor extraction method, we construct a cultural genome index system rooted in the Shanghai style culture. Through the Analytic Hierarchy Process (AHP), we filter and rank the cultural indicators, identifying those with higher weights. Focusing on Maochang Eyewear products, we conduct virtual product design practices informed by these cultural factors, collaborating with the brand to execute activities with significant exposure. Integrating the research methodology of cultural genome with the innovation path of time-honored brands effectively facilitates the synergy of cultural resources, offering new insights for brand transformation.

Keywords: Time-honored brands, Cultural genes, Analytic hierarchy process

INTRODUCTION

With economic development, against the backdrop of an upgrading consumption structure, time-honored brands face the dilemma of outdated product images and entrenched consumer groups. In recent years, the country has strengthened its focus on revitalizing time-honored brands, emphasizing the exploration and utilization of culture. The inheritance and development of time-honored brand can consider tapping into its unique cultural genes. Shanghai Maochang glasses brand boasts a profound historical and cultural background, and its geographical location as well as brand philosophy are deeply rooted in the Haipai culture. However, through research and visits, the author found that Maochang glasses failed to sufficiently consider and innovate from the perspective of young consumer groups in its transition journey. This led to the brand relying on the personal cognition and subjective consciousness of designers in the product development process, failing to fully grasp the needs of young consumers. Therefore, exploring innovative paths for such brands has become an important issue nowadays.

Ke et al. (2023) adopts a dual-ethical model perspective, focusing on the domestic context, to explore the ethical impact of traditional culture and marketization on innovation investment in time-honored brands. It is found that both traditional culture and the degree of marketization have a positive impact on innovation in time-honored brands, and these two factors are mutually exclusive. Zhao and Xiang (2023) selected China Wufangzhai Company for case analysis, summarizing that the process of brand inheritance and innovation is the integration of "dao" (philosophy) and "shu" (technique), requiring a deep excavation of the brand from different angles. Huang (2019) organized the packaging of time-honored brands and the characteristics of Haipai culture, constructed a Haipai packaging design gene library, and developed creative Haipai packaging designs using programming languages. Hu and Zhuang (2022) applied the theory of cultural genes, combined with interviews, to analyze the cultural genes of time-honored brands in Qingdao. Li (2022) applied interdisciplinary theory to study the combination of nostalgia and time-honored food brand design and produced design practices.

Many articles combine the theory of cultural genes to conduct research, aiming to address the challenges faced by time-honored brands by delving into cultural essence and crafting unique brand genes. However, the research methods mostly rely on interviews and manual induction, often depending on the subjective decisions of designers. Therefore, this article introduces the theory of cultural genes combined with scientific and systematic methods to study the innovation path of time-honored brands and applies it to Maochang product design to verify its feasibility.

CULTURAL GENES

The concept of "cultural genes" originated from Richard Dawkins' book "The Selfish Gene" in 1976. He introduced the idea of "cultural replication" with the term "meme," proposing that cultural genes are the basic units of cultural transmission and imitation (Dawkins, 2016). Dawkins' innovative use of the concept of biological genes to analogize and explain the genetics of cultural transmission attracted considerable attention from scholars. "Chinese Systems Thinking: A Perspective on Cultural Genes" regards the underlying structures and ways of thinking that have profoundly influenced culture and history as cultural genes (Liu, 1990). Zhang (2022) first categorized and summarized the genes of the Central Plains culture, then, using the Analytic Hierarchy Process (AHP), calculated and analyzed the relationship between factors and visual design, transforming it into design strategies to create a set of image designs with distinctive Central Plains cultural characteristics. Liu et al. (2023) utilized the Analytic Hierarchy Process and shape grammar to extract the cultural genes of the Grand Canal and demonstrated the feasibility of this method through design practice. According to Professor Liu's viewpoint, people's underlying psychological structures can be regarded as cultural genes, and contemporary design increasingly emphasizes people's emotional needs. The brand philosophy of Maochang glasses coincides with

the core of Haipai culture. By tapping into the cultural genes of Haipai culture and constructing cultural symbols based on different consumer positions, brand cognition can be formed (Ni and Liu, 2021). Therefore, this article proposes to combine the ZMET metaphor extraction method with the AHP hierarchy analysis method to extract the cultural genes of Haipai culture, applying cultural genes to Maochang product design and exploring the path of innovative design for time-honored brands.

The different formations of cultural genes result in various cultural representations, with different regions and environments presenting diverse cultural forms. Just as the description of organisms exhibits diverse characteristics, cultural genes also possess various classification methods. According to the classification of cultural heritage in the UNESCO World Heritage Convention, cultural heritage can be divided into tangible cultural heritage and intangible cultural heritage (Yang et al., 2019). Correspondingly, the forms of cultural genes are tangible cultural genes and intangible cultural genes. Tangible cultural genes are cultural genes with physical states, through which cultural transmission and inheritance are achieved. Examples include architectural culture, literary culture, and artistic culture. Intangible cultural genes, also known as "non-physical culture," exist in non-material forms, with oral storytelling and personal behavior being common modes of expression and transmission, such as handicraft culture, language culture, and skill culture. This provides a reference for the gene classification in this study.

CONSTRUCTING THE INDICATORS OF HAIPAI CULTURAL GENES

Haipai culture, since 1843, has gradually formed as a unique cultural phenomenon in Shanghai, blending traditional culture from the Jiangnan region of China, the Wu and Yue cultures, and elements of modern industrial civilization from Europe and America. It not only embodies modern urban culture in China but also represents the urban spirit of Shanghai. It leads fashion trends through the fusion and transformation of Chinese and Western cultures. The most representative visual feature of Haipai culture is the elements of old Shanghai, and its rich content and historical cultural connotations serve as important sources of creativity for Haipai cultural and creative products.

ZMET Metaphor Extraction Technique

The ZMET metaphor extraction method is a means of integrating text and images organically and leveraging the unique metaphorical characteristics of symbols to elicit visitors' inner feelings towards a viewpoint or issue through mental mapping. By encouraging users to engage in reflection, recollection, and the application of implicit knowledge, this method assists designers in accurately extracting impressions and emotional perceptions of regional culture from the group. Traditional surveys and interviews often struggle to capture individuals' true thoughts and feelings.

Process Design and Interviews

The ZMET is a qualitative research method aimed at providing reasonable explanations for objective phenomena without the need to consider validity issues. Therefore, it can use a small sampling approach based on the research object of this article (Jiang and Du, 2023). According to validation findings, the ZMET technique typically requires only 4 to 5 respondents to encompass around 90% of the ideas of a large sample of respondents, making concept extraction tend towards saturation (Zaltman, 1996). The recent product innovation of Maochang glasses targets primarily young consumers. Therefore, specific requirements were outlined for interviewees as follows: Firstly, they should belong to the young demographic and be willing to participate in related interviews. Secondly, they should have lived in Shanghai for a period of time and have some understanding and personal experience of Haipai culture. Based on these criteria, five interviewees were selected (see Table 1).

Table 1. Interviewee profile overview.

Code	Age	Occupation	Residence	Note
P1	24	Engineering Assistant	Shanghai	Lived in Shanghai since childhood
P2	23	Graduate Student	Shanghai	Lived in Shanghai since childhood
P3	21	Undergraduate Student	Hubei	Attended university in Shanghai, lived there for 3 years
P4	22	Web Assistant	Anhui	Attended university in Shanghai, lived there for 3 years
P5	23	UI Designer	Henan	Attended university in Shanghai, worked in Shanghai for 1 year

Seven days before the interview begins, the interviewees are asked to find 10 images that can express their feelings and thoughts about Haipai culture, with no restrictions on the source, and to prepare corresponding descriptions for the images. During the interview, the interview team first reads the stories described by the interviewees and judges whether the stories have formed a relatively complete concept chain. The MEC (Means-End Chain) requires that the story reflects certain logical thinking, progressing from the surface to the core, from the specific to the abstract. In a complete story, there should be an initial concept reflecting attributes (A), a connecting concept reflecting consequences (C), and an ultimate concept reflecting values (V). For incomplete stories, interviewers need to repair or reconstruct the story based on the Laddering Technique (Zaltman, 1982). After completing the interview, through the convergence of concepts, an impression value map of Haipai culture is drawn (see Figure 1).

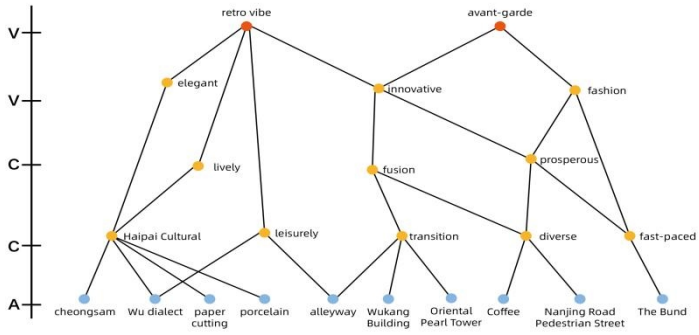

Figure 1: An impression value map of Haipai culture.

Interview Results

Based on the results of the interviews, we sorted and analyzed the data, extracting the core concepts of Haipai culture as perceived by the interviewees and summarizing them into cultural factors. Taking one of the interviewees as an example (see Table 2).

Table 2. Interviewee partial interview data.

Key Sentences	Concept Extraction	Classification
You can find coffee shops everywhere in Shanghai, which is in line with its international metropolitan status. Coffee, being an imported beverage, gives me a sense of the fusion of Eastern and Western cultures, which resonates well with the essence of Shanghai's local culture—a blend of delicacy and a touch of retro.	Coffee Metropolis East-West Fusion	Cuisine Culture Architectural Culture
At first glance, this exudes a strong sense of Shanghainese culture. It's a narrow lane bustling with life. As you step in, you can hear authentic Shanghainese dialect and the calls of vendors.	Nongtang Wu dialect	Traditional Residences Language and Culture
Wukang Building, a famous landmark in Shanghai, attracts visitors for photography every year. With its predominantly European style, it blends beautifully with the riverside scenery. There are also some craft sales nearby.	Wukang Building River view Handicrafts	Historic Buildings Natural Landscapes Traditional Craft Culture
This is a scene from Shanghai Huju, which is one of the intangible cultural heritages of Shanghai. Many people are involved in its inheritance, always evoking memories of my childhood.	Huju (Shanghai Opera) Intangible Cultural Heritage Childhood Memories	Literature and Art
The Oriental Pearl Tower, the Shanghai World Financial Center, and the Bund are all iconic buildings of Shanghai, with a long history. In the pictures, we see the changes over time, giving a sense of old Shanghai.	Oriental Pearl Tower Old Shanghai	Landmark Buildings Folk Culture
This photo is of Nanjing Road Pedestrian Street, where there are always many people during holidays, leading to traffic controls and the like. The current trend of city walks also indicates that Shanghai residents generally enjoy strolling and shopping.	Nanjing Road Pedestrian Street Holidays Strolling and Shopping	Landmark Buildings Festival Customs Folk Culture

After in-depth interviews with 5 interviewees, combined with collecting online data and video footage, a total of 9 main core factors were selected to express the primary classifications of Haipai culture. Specifically, they are: historical architecture, traditional residences, natural landscapes, culinary culture, handicraft culture, literature and art, folk beliefs, language customs, and festival customs.

EXTRACTION OF CULTURAL GENES BASED ON THE ANALYTIC HIERARCHY PROCESS (AHP)

The Analytic Hierarchy Process (AHP) is a method that combines qualitative and quantitative approaches. It decomposes decision problems that are difficult to compare into different levels, such as the goal level, criteria level, and alternative level, and then performs calculations and tests based on this structure. This process helps derive the final solution and prioritizes the importance of the goals to be achieved (Li et al., 2021).

The nine core factors obtained using the ZMET metaphor extraction technique are categorized into four classes and transformed into a hierarchical model. The cultural genes of Haipai culture are represented as the goal level A; Residential Culture B1, Production Culture B2, Spiritual Culture B3, and Customary Culture B4 are at the criterion level; Finally, the nine indicators are classified and represented as the solution level C (see Figure 2).

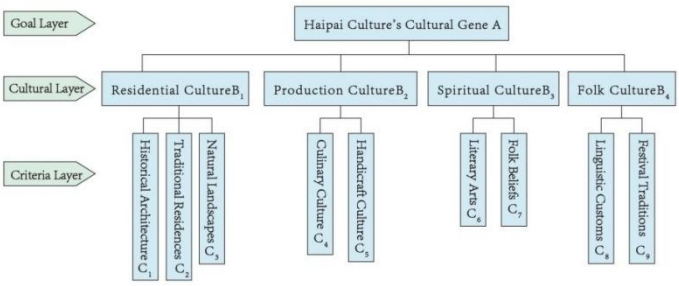

Figure 2: Model of hierarchical structure of haipai cultural genes.

According to the Analytic Hierarchy Process, scoring is conducted using a 1–9 scale (see Table 3). Pairwise comparisons are then made using the multiplication and integration method to obtain the weight values of each element and to construct the judgment matrix A.

$$A = \begin{bmatrix} 1 & \ldots & b_{1i} & \ldots & b_{1j} & \ldots & b_{1n} \\ b_{i1} & \ldots & 1 & \ldots & b_{ij} & \ldots & b_{in} \\ b_{j1} & \ldots & b_{ji} & \ldots & 1 & \ldots & b_{jn} \\ b_{n1} & \ldots & b_{ni} & \ldots & b_{nj} & \ldots & 1 \end{bmatrix} = (b_{ij})n \times n$$

Table 3. Judgment matrix scaling.

Factor 1 compared to Factor 2	Scale
Equally Important	1
Slightly Important	3
Moderately Important	5
Strongly Important	7
Absolutely Important	9
Midpoint of Judgment	2,4,6,8
Reciprocal	Reciprocal of each other

According to the constructed judgment matrix, the weight values of each factor are calculated using the multiplication and integration method, as follows:

$$\varpi i = \frac{1}{n}\sum_{j=1}^{n}\frac{cij}{\sum_{k=1}^{n} ckj}(i,j=1,2,...,n) \tag{1}$$

To ensure the consistency of the evaluation process, it is necessary to conduct a consistency check on the results:

$$CR = \frac{\text{CI}}{\text{RI}}(\text{The RI value can be obtained by referring to a table})$$

When the calculated CR < 0.1, the consistency test of the matrix passes. When CR > 0.1, it indicates that the consistency test of the matrix fails, and it is necessary to re-evaluate and score the factors in the matrix. Following the above approach, the judgment matrix scoring and weight calculation for the cultural genes of Haipai culture will be conducted, and three experts from the design industry will be invited to compare and score the factors (see Table 4 to Table 9).

Table 4. Criterion layer judgment matrix and weight values.

A	B_1	B_2	B_3	B_4	
B_1	1	2	6	8	0.5387
B_2	1/2	1	3	6	0.2971
B_3	1/6	1/3	1	3	0.1129
B_4	1/8	1/6	1/3	1	0.0513

max = 4.0630, CI = 0.0210, RI = 0.89, CR = 0.0236<0.1, consistency check satisfied.

Table 5. "Residential culture" scheme layer judgment matrix and weight values.

B_1	C_1	C_2	C_3	
C_1	1	8	9	0.8004
C_2	1/8	1	2	0.1244
C_3	1/9	1/2	1	0.0753

max = 3.0373, CI = 0.0187, RI = 0.52, CR = 0.0359<0.1, consistency check satisfied.

Table 6. "Production culture" scheme layer judgment matrix and weight values.

B_1	C_4	C_5	
C_4	1	5	0.8333
C_5	1/5	1	0.25

max = 2.0833, CI = 0, RI = 0, CR = 0<0.1, consistency check satisfied.

Table 7. "Spiritual culture" scheme layer judgment matrix and weight values.

B_1	C_6	C_7	
C_6	1	9	0.9
C_7	1/9	1	0.1

max = 2, CI = 0, RI = 0, CR = 0<0.1, consistency check satisfied.

Table 8. "Customary culture" scheme layer judgment matrix and weight values.

B_1	C_8	C_9	
C_8	1	5	0.8333
C_9	1/5	1	0.1667

max = 2, CI = 0, RI = 0, CR = 0<0.1, consistency check satisfied.

Table 9. Comprehensive weight values and ranking at the scheme layer.

	B_1	B_2	B_3	B_4	Comprehensive Weight	Ranking
C_1	0.7644				0.4311	1
C_2	0.1659				0.0670	5
C_3	0.0698				0.0406	7
C_4		0.75			0.2476	2
C_5		0.25			0.7428	4
C_6			0.9		0.1016	3
C_7			0.1		0.0113	8
C_8				0.8334	0.0428	6
C_9				0.1667	0.0086	9

Based on the previous analysis and ranking of cultural genes related to Haipai culture using the AHP hierarchical analysis method, it is determined that Residential Culture has the highest weight value, followed by Production Culture, Spiritual Culture, and Customary Culture. The order of the solution layer is as follows:$C_1 > C_4 > C_6 > C_5 > C_2 > C_8 > C_3 > C_7 > C_9$, Historical architecture is the most representative cultural gene of Haipai culture, followed by culinary culture and literature and art. By selecting the most representative cultural genes and applying them to the design practice of Maochang glasses, Maochang can construct Shanghai cultural symbols, form distinctive brand recognition, adapt to the needs of new consumer groups in intense market competition, and enhance market share.

DESIGN PRACTICE

Through product research on Maochang glasses and competitive analysis, combined with the brand's future development direction, virtual eyewear products are chosen as the design output. The design practice is initiated based on the impression value map and calculation results. According to the calculation results, prototypes are selected from the top four ranked cultural genes for design. The final outcome consists of six virtual eyewear product designs (see Figure 3 to Figure 4).

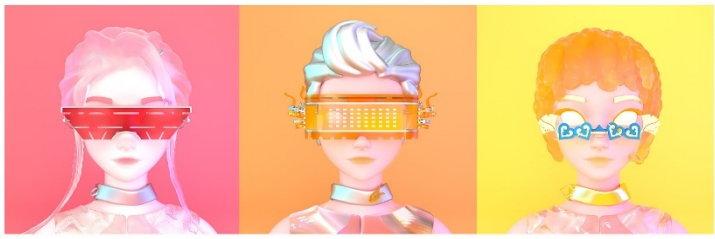

Figure 3: The design of the first to third virtual glasses.

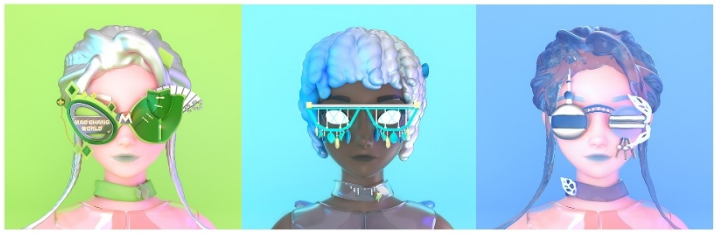

Figure 4: The design of the fourth to sixth virtual glasses.

The first design draws inspiration from the Zhonghua Art Palace and Shanghai paper-cutting. The primary color is red, presenting a simple and fashionable style. The second design is inspired by the Wukang Building and crab feast, using alternating decorations with different materials. The third design takes the patterns made of shell fragments inlaid as the design prototype, simplifying and abstracting the pattern to express it in a minimalist technological manner. The fourth design is based on the neon signboard and calendar-themed cheongsam women at the Maochang flagship store on Nanjing Road Pedestrian Street. The brand color of Maochang glasses is used as the main color, brightened in both brightness and luminance, with overall metallic and acrylic materials to create a futuristic technological feel. The fifth design is inspired by the Waibaidu Bridge, with the frame designed to resemble the silhouette of the bridge and abstracting the Huangpu River as a gemstone. The sixth design is based on the Oriental Pearl Tower, dismantling its appearance into two lenses and using dazzling materials to express a sense of technology.

The six designs created have received approval from the Maochang glasses brand. They have collaborated with the brand to bring the virtual designs to life through 3D printing, and showcased them through a themed eyewear fashion show titled "Encounter with Mirrors," portraying visions for the future (see Figure 5). This exhibition has garnered media coverage and social attention.

Figure 5: Event site photos.

CONCLUSION

This study demonstrates through examples that the ZMET metaphor extraction method and AHP hierarchical analysis method can sift and rank the cultural genes in Haipai culture based on consumers' thoughts and feelings. It enriches the brand recognition of the time-honored brand Maochang glasses, rejuvenating its vitality and providing new paths and methods for the inheritance, innovation, and design transformation of time-honored brands. In the future, consideration can be given to expanding the brand genes of time-honored brands from various perspectives, further exploring the combination of time-honored brands and cultural genes, and exploring more comprehensive paths for the integration of brands and culture.

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