

# Design Morphology in Brand Logo Development: A Case Study of Gao Cheng Palace Noodle

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## ABSTRACT

*This study explores the role of design morphology in innovating brand logo design, with a focus on "Gao Cheng Palace Noodle" as a cultural case study. Using the principles of "form" and "state" within design morphology, the research applies morphological analysis to deconstruct and reassemble visual and symbolic elements rooted in traditional Chinese culture. The methodology involves extracting cultural motifs, analysing morphological dimensions, and synthesizing them into a unified graphic-text logo design. Findings indicate that design morphology enhances the creativity and cultural expressiveness of brand logos, especially in combining typographic and symbolic elements. This research demonstrates how traditional visual languages can be revitalized through a morphological design framework, offering a practical model for culturally embedded branding strategies and contributing to the evolving discourse on cultural identity in visual communication.*

**Keywords:** Design morphology, Gao Cheng Palace Noodle, Brand Logo, Cultural Symbolism



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## 1 INTRODUCTION

Recent developments in logo design have expanded beyond traditional focuses on aesthetics and semiotics to include broader considerations such as cultural meaning, user experience, and adaptability to digital platforms. Branding today serves as a powerful medium for cultural expression, especially for traditional brands seeking to modernize their identity. However, many heritage-based brands face the challenge of converting deep-rooted cultural values into fresh and compelling visual identities. This study addresses this challenge by exploring how traditional design patterns can be extracted, analysed, and transformed into meaningful brand visuals. Recent research highlights the influence of logos on consumer perception, brand image, and emotional connection, reinforcing the need for culturally relevant design approaches (Zhang and Wang, 2023).

This study focuses on Gao Cheng Palace Noodle, a local specialty with strong ties to imperial tribute culture and regional heritage. It applies the concept of design morphology, which examines both the visual structure referred to as "form" and the symbolic meaning referred to as "state". A three-part analytical model is constructed to guide the design process: cultural genes, morphological elements, and design strategies. Through this framework, traditional visual and symbolic elements are systematically transformed into contemporary design components that communicate brand identity

effectively. This aligns with current views on how cultural heritage can be integrated into branding through thoughtful design methods (Li and Chen, 2022).

By emphasizing the design of graphic and text combination logos, this research demonstrates how design morphology can be used to reinterpret traditional cultural symbols into visually impactful and culturally expressive brand identities. The objective of the study is to create a logo for Gao Cheng Palace Noodle that reflects cultural authenticity while enhancing visibility, relevance, and competitiveness in today's market.

## **2 LITERATURE REVIEW**

### **2.1 Brand Logos and Cultural Identity**

The brand logo is a fundamental element in shaping a brand's visual identity. It functions not only as a symbol of recognition but also as a medium to communicate a brand's values, personality, and positioning. Effective logo design plays a strategic role in influencing consumer perception, enhancing memorability, and reinforcing emotional connection with the audience. As noted by Yahaya et al. (2024), the deliberate combination of text, imagery, color, and symbolism is essential in delivering a compelling brand message through visual means. This is especially relevant to this study, which applies graphic-text combination logo design in creating a culturally expressive identity for Gao Cheng Palace Noodle.

Incorporating cultural and ideological dimensions into logo design has become increasingly important. The use of color, for instance, is not arbitrary but often reflects specific ideological meanings or cultural associations. Casiraghi et al. (2023) emphasized that the colors used in logos can convey ideological positions and influence public interpretation. In the case of Gao Cheng Palace Noodle, traditional Chinese red and golden tones drawn from imperial architecture are intentionally selected to evoke cultural heritage and prestige, thereby reinforcing the brand's narrative as a royal tribute product.

Furthermore, Ghazali et al. (2021) argue that establishing a distinct brand identity is the starting point in shaping public perception and emotional value. This insight directly supports the goal of this study, which is to transform traditional cultural elements into a modern, distinctive logo that resonates with contemporary audiences. Through the application of design morphology, the study systematically translates historical and symbolic references into a cohesive logo, reinforcing both cultural depth and market relevance.

### **2.1 Graphic - Text Logo Design**

According to their basic constituent elements, logos can generally be categorized into three main types: wordmarks, logotypes, and combination marks (Liu Ping, 2023). Combination marks, which bring together textual and visual components, represent an evolution in logo design that allows more flexibility and layered brand expression (Li Kaiyu, 2014). Unlike wordmarks that focus mainly on text, or logotypes that may lack symbolic meaning, combination marks combine the strengths of both to offer clarity, symbolism, and strong visual adaptability. These qualities have made combination marks a popular choice in contemporary brand identity systems (Liu Ping, 2023).

For brands rooted in cultural heritage, such as those using Chinese characters, combination marks are especially meaningful. The structure of Chinese characters allows them to serve both as text and as visual elements, enabling the integration of tradition, symbolism, and aesthetic beauty. In the case of Gao Cheng Palace Noodle, this approach allows the brand to incorporate meaningful cultural imagery, including Chinese character forms and references to imperial architectural motifs, into a design that visually expresses its origin and identity.

To achieve effectiveness, designers must ensure that the text and graphic elements interact in a balanced and harmonious way. This requires careful attention to principles such as simplicity, uniqueness, legibility, and scalability. According to Aziz et al. (2023), the ideation phase of logo design involves exploring a range of visual concepts, including typography and symbols, that reflect the brand's identity and purpose. Similarly, Yahaya et al. (2024) emphasized that a successful logo must visually connect with its audience through consistent and well-integrated symbolic language. In this study, the application of design morphology ensures that the final combination logo maintains visual unity, conveys cultural meaning, and adapts effectively across various media and formats.

## 2.2 Understanding Design Morphology

Design morphology is an interdisciplinary field that merges principles of morphology with design, focusing on the study of form, structure, and their relationship to meaning and function (Ao Jiawen, 2024). It is often defined as a branch of design studies that emphasizes the systematic analysis of visible and invisible elements in design objects. The discipline explores two major dimensions: "state," which refers to the visual structure and outward appearance, and "form," which addresses the internal logic, emotional qualities, and conceptual intent behind the object (Jiang et al., 2025). This dual analysis allows design morphology to serve as a comprehensive tool for examining both the aesthetic and functional aspects of visual communication. It supports the expansion of design knowledge and facilitates the integration of cultural, symbolic, and user-centered concerns.

Recent studies have applied design morphology in innovative ways, including its combination with digital tools and conceptual frameworks. Chen et al. (2024) introduced a model that integrates large language models into morphological analysis, helping designers decompose, generate, and combine elements more effectively during conceptual development. In logo design, morphological charts have also been used to systematically analyse visual components, as demonstrated by Hülägü (2023), enabling structured experimentation and creative exploration. In this study, the principles of design morphology are used to dissect and recombine traditional Chinese characters, architectural motifs, and symbolic forms in the logo of Gao Cheng Palace Noodle. This approach ensures a meaningful connection between cultural heritage and modern design logic, resulting in a visual identity that is both expressive and functional.

## 3 RESEARCH METHODS

This study adopts a design-based research method grounded in the principles of design morphology to achieve its objective: to develop a culturally grounded and visually innovative brand logo for Gao Cheng Palace Noodle. The methodology follows a structured process involving the decomposition, recombination, and evaluation of design elements rooted in Chinese cultural heritage. Gao Cheng Palace Noodle was selected as a case due to its strong historical association with imperial tribute culture and its distinctive cultural value, which makes it suitable for exploring visual transformation through design morphology.

The research process is structured into three phases: form analysis, morphological recombination, and application testing. In the first phase, the logo is analysed based on visible and invisible form components. The visible form refers to external visual structures such as outline, typography, and composition, while the invisible form refers to internal elements such as cultural symbolism and conceptual intent. These elements are systematically organized into a morphological matrix to facilitate a logical analysis of design possibilities. As Chen et al. (2024) explain, integrating morphological tools in early design phases improves creative focus and reduces conceptual ambiguity.

The second phase focuses on morphological innovation by combining modular elements derived from traditional Chinese characters, palace motifs, and food symbolism. Through controlled experimentation with these variables, multiple logo versions are generated. The third phase involves iterative application testing, in which the designs are evaluated based on clarity, cultural relevance,

graphic-text harmony, and scalability. The evaluation includes self-assessment by the designer as well as expert feedback, echoing the methods recommended by Hülägü (2023) for validating visual identity outcomes. The design development is mapped into five steps: defining the theme, collecting traditional pattern references, generating a morphological element table, experimenting with recombinations, and selecting the most effective visual solution. This iterative and reflective process ensures the final logo retains cultural depth while achieving contemporary visual appeal. All the research steps are visually represented in Figure 1 below.

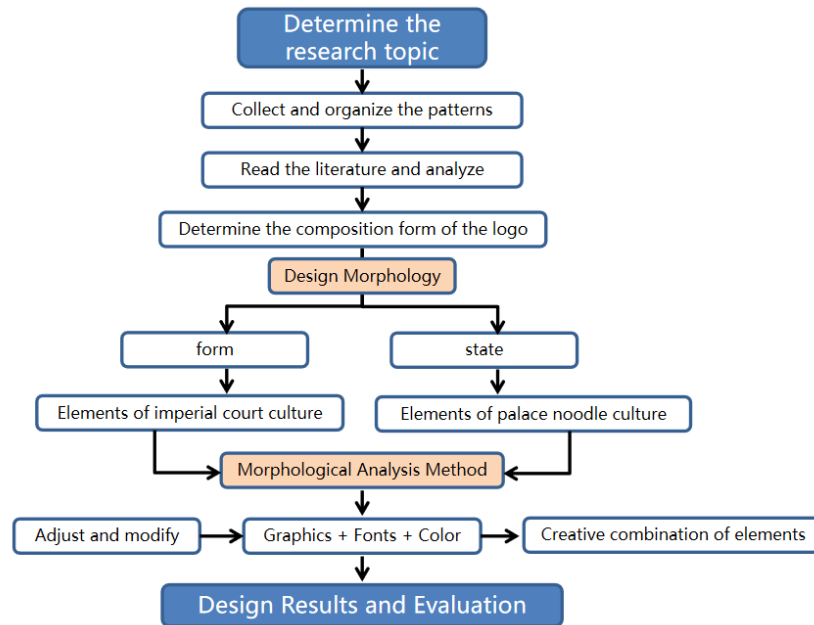


Figure 1 Research Steps

## 4 RESULTS AND DISCUSSION

The design results of this study reflect the theoretical foundation of design morphology, which emphasizes the analysis and integration of both "state" and "form" in visual communication. In the case of the Gao Cheng Palace Noodle brand, the logo design process began with the extraction and classification of key visual and non-visual elements. These elements were selected based on their relevance to traditional Chinese culture, particularly imperial architectural motifs and culinary symbolism, aligning with the research objective to develop a culturally embedded and visually innovative logo.

### 4.1 Extraction 1: Visual Elements of the Logo

This phase focuses on analysing the logo's "state," which includes its visible text and graphic components. The Chinese character “宮” was selected to represent the palace theme, reflecting the brand's historical connection to imperial culture. Graphic elements were drawn from the architectural features of the Forbidden City, including roof structures and traditional motifs, which were simplified for modern visual expression. Additionally, a stylized noodle shape was included to highlight the product identity. These visual elements were systematically extracted and organized through morphological analysis to form the foundation of the logo's overall design structure.

#### 4.1.1 Morphology of Chinese characters

The Chinese characters “宫” (palace) and “面” (noodles) were selected as core visual elements to represent the identity of Gongmian. As a pictographic character, “宫” evokes strong associations with ancient palace architecture, making it ideal for linking the brand to royal heritage and cultural prestige. Through morphological analysis, the character is broken down into its structural components to explore connections between its traditional form and the visual features of ancient palaces. This process allows the logo to reflect both historical symbolism and modern design aesthetics. The character “面” is seamlessly integrated with imagery of noodles, effectively highlighting the product's core identity.

These two characters, when paired, offer contrasting yet complementary shapes that enhance the overall visual composition. Together, they convey both the cultural depth and product specificity of the brand. The design transformation adopts the Song typeface as its foundational structure. Known for its balanced proportions, refined lines, and formal tone, the Song typeface reinforces the elegance and solemnity of palace culture. Its clear horizontal and vertical strokes also ensure high legibility across various media. By applying morphological principles to these characters, the final design achieves a blend of traditional meaning, visual harmony, and communication efficiency.

#### 4.1.2 Morphology of Architectural graphics

In the morphological extraction process, emphasis was placed on architectural appearance elements. Structural forms such as layered rooftops were simplified into clean, linear silhouettes to emphasize their iconic shapes while ensuring visual clarity. The curvature of the cornices and the form of traditional brackets were reduced to essential geometric lines, removing ornamental excess but retaining their rhythmic and symbolic qualities. This abstraction preserves the spatial rhythm and dignified posture of traditional architecture while aligning with modern design principles.





By selectively refining the visual features, the design achieves a balance between historical richness and minimalist form. The simplified motifs maintain strong recognizability and visual continuity with the cultural identity of the Forbidden City. These graphic elements, when integrated into the logo, help reinforce the brand's connection to its palace heritage while supporting scalability and adaptability across various media applications.

#### 4.1.3 Morphology of Noodles Imagery

Among the visual elements, the representation of noodles is the most direct expression of Gao Cheng Palace Noodle's product identity. To strengthen brand recognition and recall, the physical characteristics of the noodle were abstracted into graphic lines that reflect its texture and form. Straight lines were used to suggest the firmness and resilience of the noodle, while curved lines conveyed its smoothness and fluid motion. These line-based forms were intentionally simplified to align with the visual language of modern logo design, which emphasizes clarity, symbolism, and adaptability.














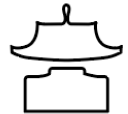
The varied arrangement of these lines creates dynamic visual effects that hint at the product's fine texture and craftsmanship. Through this abstraction, the design communicates not only the material qualities of the noodle but also the heritage and continuity of its traditional preparation. This symbolic visualisation plays a crucial role in defining the brand's identity within the logo. Together with the architectural graphics and typographic elements, the stylised noodle lines complete the set of extracted components that define the logo's visual “state,” as summarised in Table 1.

**Table 1** Sources of extraction of "State" elements

"宫(gong)"	"面(mian)"	The Palace Museum	The Palace Noodle
			

Based on the analysis of Chinese characters, architectural graphics, and the form of the noodles, this study identified different visual elements. These elements were then organised into a table that shows the structure of the logo's visual design. This structure is referred to as the morphological analysis matrix of the logo's "state" and is presented in Table 2.

**Table 2** Morphological analysis matrix for "State"

Independent Elements	Name of the Element	Element Sample	Element Extraction	Graphical Induction	Constituent Components
State	The Chinese character "宫"	Song yeface → 宫			
		Song yeface → 面			
	Gao Cheng Palace Noodle				
	The Palace Museum				

## 4.2 Extraction 2: Non-Visual Elements of the Logo

Non-visual elements in logo design refer to the meanings and cultural values expressed through visual choices. In design morphology, these elements help show what the logo represents beyond its appearance. For the Gao Cheng Palace Noodle logo, the non-visual elements are based on the cultural background of Gongmian as a tribute food for the royal court.

To reflect this heritage, palace culture was used as the main reference when selecting colours and fonts. These visual details carry cultural meaning and help the logo communicate the brand's traditional values. The chosen colours and font style aim to express the elegance, seriousness, and historical importance of the brand, linking its identity to its rich cultural roots.

### 4.2.1 Analysis of standard colour elements

Colour is one of the most visually powerful elements in brand identity. For the Gao Cheng Palace Noodle logo, the chosen standard colour is based on the traditional colours used in the architecture of the Forbidden City. The buildings of the Forbidden City mainly feature red and gold, both of which carry strong cultural meaning.

In Chinese tradition, red symbolizes joy, celebration, and national prosperity. It also reflects the dignity and importance of the imperial court. This colour is widely used in the walls and gates of the palace. Gold, on the other hand, represents power and royal status, seen in the golden glazed roof tiles of the Forbidden City. However, gold is difficult to reproduce in printed logos due to its metallic quality.

As a result, red was selected as the standard colour for the Gao Cheng Palace Noodle logo. It carries deep cultural value, aligns with the brand's royal heritage, and ensures visual clarity and consistency across different applications.

#### 4.2.2 Analysis of standard word elements

The design of standard fonts is essential in establishing a strong and recognizable brand identity. Fonts work together with other logo elements to create a consistent and unified image. The typography commonly seen in the Forbidden City follows the Guange Style, which was developed during the reigns of Kangxi, Yongzheng, and Qianlong. This traditional style is known for its balanced stroke thickness, strict symmetry, and formal layout, reflecting a sense of order and dignity in visual form.






To reflect this traditional aesthetic while ensuring clarity and versatility, the Gao Cheng Palace Noodle logo uses the modern sans-serif typeface "Source Han Sans." This font was chosen for its clean lines, structured form, and ability to convey a refined, upright tone that aligns with the formal character of imperial tradition.

These standard colour and font choices together represent the extracted "state" elements of the logo, as shown in Table 3. Based on this analysis, a morphological analysis matrix for the logo's non-visual components has been developed and is presented in Table 4.

**Table 3** Sources of extraction of elements of "Form"

Standard Colour	Standard Typeface
	

**Table 4** Morphological analysis matrix for "Form"

Independent Elements	Name of the Element	Element Sample	Element Extraction	Graphical Induction	Constituent Components
Form	Standard Colour				
	Standard Typeface				Source Sans Han



### 4.3 Final Logo Design Development

Based on the extraction and analysis of morphological elements, this study developed a complete logo design for Gao Cheng Palace Noodle. The final logo takes the two Chinese characters “宫面” (Gongmian) as its core design elements. The character “宫” is creatively integrated with architectural imagery from the Forbidden City through the use of positive and negative space. This design choice reflects the pictographic origin of the character, which symbolizes a house or building, and reinforces the brand’s association with imperial culture.

The character “面” is redesigned using flowing line elements that resemble strands of noodles, visually linking the logo to the product’s core identity. A curved stroke connects both characters to form a bowl-like shape using negative space, subtly suggesting the food attribute of the brand. At the base of the design, the phrase “Intangible Cultural Heritage” is included. It supports the bowl shape while also serving as a textual anchor that communicates the cultural value of Gao Cheng Palace Noodle. The interplay between positive and negative shapes adds dynamism to the composition and highlights both the product and its cultural storytelling.

This logo integrates elements of “form” and “state” extracted from Chinese characters, palace architecture, and the visual characteristics of noodles. By combining these with culturally meaningful colours and fonts, the design successfully applies the principles of graphic and text integration. The result is a modern, distinctive visual identity that preserves the symbolic meaning of an imperial tribute and expresses regional cultural pride. The final logo design, as shown in Figure 2, represents the transformation of abstract cultural values into a functional and meaningful brand symbol.

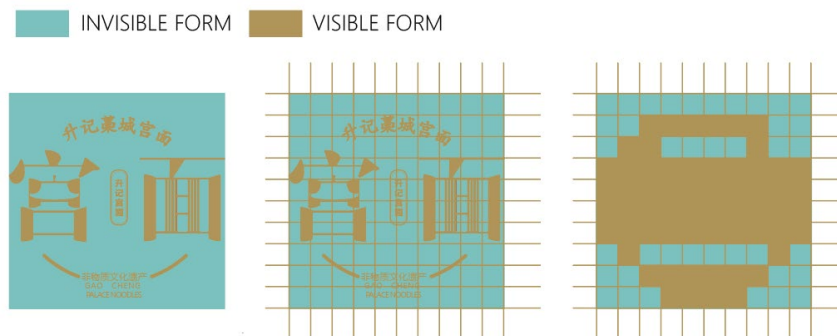


Figure 2 Final Logo Design of Gao Cheng Palace Noodle

### 4.4 Reverse Grid Analysis of Logo Composition

To further support the evaluation of the final logo design, a reverse grid analysis was conducted based on the spatial structure of the logo layout. The design space was divided into one hundred equal units using a concentric square grid that includes both radial and horizontal divisions. This method allowed for a clear assessment of the proportion between visible forms and invisible forms, providing a visual measurement of the logo's balance and structure.





**Figure 3** Reverse Grid Analysis of Logo

The analysis showed that the visible elements of the logo, including the Chinese characters "宫面" and the bowl shape formed by the curved stroke, occupy approximately sixty-one percent of the total grid area. The remaining thirty-nine percent consists of the background space that forms the invisible shape of the Forbidden City. This proportion aligns with the concept of spatial harmony described by Gombrich, which suggests that when the visible area slightly outweighs the invisible area, the result achieves a sense of visual balance. As illustrated in Figure 3, this distribution confirms that the logo successfully integrates both symbolic meaning and clear structure, resulting in a composition that is stable, recognisable, and rich in cultural identity.

## 5 CONCLUSIONS

This research was conducted in response to the challenge of translating cultural heritage into modern visual identity, particularly in the context of logo design for brands rooted in tradition. The objective was to explore how design morphology could be used to extract and restructure visual and non-visual elements from traditional culture to form a logo that communicates both product identity and cultural depth. The final result demonstrates that the Gao Cheng Palace Noodle logo successfully integrates symbolic Chinese characters, architecture from the Forbidden City, and product-related imagery into a balanced, modern logo. Key visual components were validated through reverse grid analysis, showing that visible elements accounted for sixty-one percent and invisible elements thirty-nine percent, confirming the visual harmony of the design.

The findings confirm that design morphology provides a structured and effective method for transforming cultural elements into meaningful and functional brand visuals. It is recommended that designers adopt this approach when working with heritage-based or culturally sensitive content, ensuring accuracy, relevance, and innovation. This framework can also be applied in broader design areas such as product packaging, interface design, and place branding. In future projects, involving cultural experts or end users in the validation phase will further strengthen the authenticity and usability of design outcomes. Ultimately, this study supports the use of morphological design methods as a powerful tool for bridging tradition and contemporary brand communication.

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## AUTHOR CONTRIBUTIONS

All authors played equal contributions towards the production of this paper.

## CONFLICT OF INTEREST

The author declares no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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