

# Research on Bionic Design Strategies for Northeast Regional Cultural and Creative Products

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## ABSTRACT

This paper focuses on the design strategies of cultural and creative products of regional specialties in Northeast China's regional culture. The paper discusses the importance of establishing a reasonable theme in the design of cultural and creative products, which have both cultural and functional themes. It is proposed that the establishment of a complete chart of regional cultural elements and a chart database of cultural and creative product categories is the basis and prerequisite for better establishment of cultural and functional themes, and for smooth design of cultural and creative products. A mind map model is established to summarize the overall strategy and process of bionic design of Northeast China's cultural and creative products, with the intention of providing some theoretical guidance and design reference for the bionic design of Northeast China's cultural and creative products.

**Keywords:** regional cultural elements, bionic design of cultural and creative products, category, strategy.

## 1. INTRODUCTION

Cultural creative products are the products of modern society that present cultural resources in the form of creativity. As a product, it has to have certain practical functions, and it has to have a specific functional theme, or call it a product category theme from the perspective of the product, which defines what the product is and what function it has. It has to be applicable to contemporary life, so the functional theme (category theme) is also its life theme. As a cultural product, it also has certain cultural connotation, so it also has a cultural theme, which is a materialized cultural symbol. The theme of such a creative product is a composite of its functional theme and cultural theme, or it has both cultural and functional themes. For example: a tiger head children's hat, "tiger head children's hat" is a double theme, its functional (category) theme is "children's hat", the cultural theme is "northeast tiger".<sup>[1]</sup>

The creative design of cultural and creative products is how to choose the theme and determine the specific design after the theme, the key is the reasonable choice

of functional theme and cultural theme with. The purpose and meaning of creative design is to make the functional products more cultural and interesting to enhance the market competitiveness, and also to make the regional culture have a deeper life carrier, more symbolic and more lifelike.<sup>[2]</sup>

## 2. THE NORTHEAST REGIONAL CULTURE ELEMENTS

Northeast regional culture covers a wide range of content, the natural environment, history and culture, regional customs and social and economic development of the differences determine the characteristics of the Northeast regional culture is heavy, rustic. Among them, folk culture and specialty culture are more suitable for the extraction of cultural elements in bionic design as explicit culture, and are the main research fields of cultural and creative design. Folk culture is an objective reflection of the long-term humanistic accumulation of a region. The visual elements of Northeast folk culture, such as leg warmer shoes, playing apricot kernels, shuttlecock, shamans and other visual elements, have become the symbols of Northeast regional culture. The

three new treasures of Northeast China - "ginseng, mink skin and antler" and the three old treasures of Northeast China - "ginseng, mink skin and leg warmers" are representative of Northeast China's regional specialty culture. mink skin, leg warmer grass"; rare wild animals such as the Northeast tiger and plum deer; black fungus and various mushrooms; birch, elm, spruce, camphor pine and other plants. In addition, there is the nation's leading ice and snow culture and the unique Changbai Mountain culture, etc., which has become a treasure trove of extracted cultural elements.

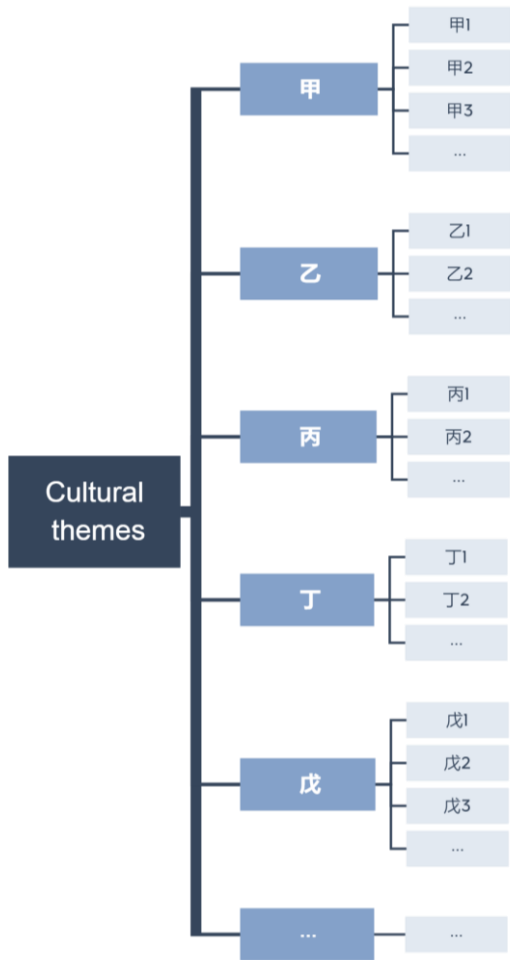


Figure1 Cultural Elements Chart

The cultural elements determine the cultural theme of the product, so in order to better design the product, it is necessary to select and extract the cultural elements from the Northeast regional culture, form a scientific multi-level classification, and make a regional cultural elements chart (Figure 1). Figure 1 is a brief model of the regional cultural elements chart. In reality, the chart is much more complicated in terms of layers and sub-categories of each layer, which should be combined with the main design directions and market trends to refine the corresponding cultural elements and form a perfect and complex tree chart of regional cultural elements. The cultural element chart is an important basis and

inspiration for the design of cultural creation. It can be either the starting point of the design - to determine the cultural theme first, and then find the corresponding functional theme; or the goal of the design - to determine the functional theme first, and then reasonably match the corresponding It can also be the goal of the design - to determine the functional theme first, and then match the corresponding cultural theme.

### 3. CATEGORIES OF CULTURAL AND CREATIVE PRODUCTS

There is no official classification method for cultural and creative products. According to traditional customs and different classification perspectives, there are categories such as daily necessities, office supplies, tourism souvenirs, tourism food, local specialties, cultural and creative products of cultural expositions, arts and crafts and other creative products. There is a crossover between the categories, such as tourism souvenirs include: office supplies, clothing accessories, household goods, toys, handicrafts, etc.. Each category can continue to be divided into multiple sub-categories, such as clothing accessories can be divided into two categories of clothing and clothing accessories, clothing accessories can be divided into: earrings, necklaces, bracelets, scarves, hats, glasses, masks and so on.<sup>[3]</sup>

To determine the product category, the functional theme of the product is determined. In order to better design cultural and creative products, it is necessary to make a scientific multi-level classification of cultural and creative product categories and make a chart of cultural and creative product categories (Figure 2). Figure 2 is only a brief model of the product category chart. In reality, the hierarchy of the chart and the sub-categories of each level are much more complicated, so we need to combine the main design direction, investigate the hot product categories and explore the potential market, and focus on refining the corresponding product categories to form a perfect and complex tree of the product category chart. It can be the starting point of design - to determine the functional theme of creative products first, and then to find the corresponding cultural theme; or it can be the goal of design - to make cultural elements in the design targeted.

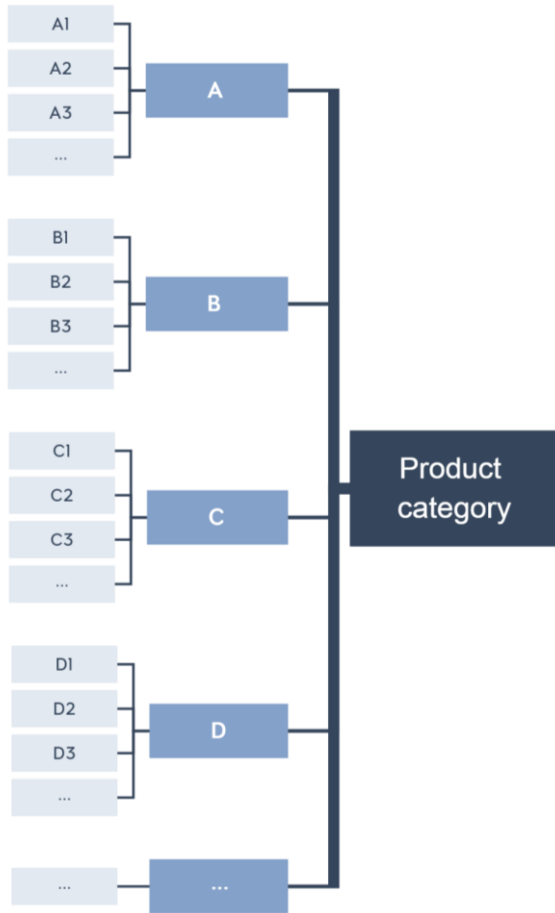


Figure2 Cultural and Creative Products Category Chart

#### 4. BIONIC DESIGN STRATEGY FOR NORTHEAST REGIONAL CULTURAL AND CREATIVE PRODUCTS

The bionic design of cultural and creative products emphasizes the visual elements of external forms and mainly applies the principles of morphological bionic, color bionic, texture bionic and structural bionic to design. [4]This paper focuses on the strategy of bionic design for cultural and creative products, and does not elaborate much on the methods of bionic design. The following are the strategies and design methods of bionic design for cultural and creative products from the perspective of design process.

##### 4.1. Establishment of regional cultural elements library - preliminary research stage

Focusing on the Northeast regional folk culture and specialty culture, we strive to improve the extraction of each cultural element and establish a rich and complete Northeast regional cultural element library, which is reflected in the form of regional cultural element charts as a material library for cultural theme selection. For example: ginseng, mink, antler, northeast tiger, etc.

##### 4.2. Establishing the category chart of cultural and creative products-pre-research stage

Combine your design direction and market demand to establish a detailed category chart of cultural and creative products as a reference for the functional theme selection of cultural and creative products.

##### 4.3. Accept the design task

Analyze and understand the main points of the design task and design requirements, and determine the design principles.

##### 4.4. Market research of similar products - post research stage

Organize the market research of similar products to know yourself and your opponent.

##### 4.5. Determination of the theme of cultural and creative products-conceptual design, the preliminary stage of creative design

According to the design task, establish the theme of cultural and creative products or series of cultural and creative products design, the theme of each product includes functional theme and cultural theme. The determination of the theme of cultural and creative products is the focus and difficulty of the whole design. A creative theme will make the design twice as successful with half the effort.

The establishment of a double theme follows the principle of establishing a theme first and then reasonably matching another theme. The functional theme can be established first according to the actual situation, and then use the correspondence theory method to match the cultural theme as appropriate. The focus of morphological mimicry is to properly select the counterpart of mimicry. For functional themes, a suitable cultural element corresponding to a suitable cultural theme is the suitable counterpart of mimicry. The functional theme and the cultural theme can be associated one-to-one or one-to-many (Figure 3). For example, after determining the functional theme of "raincoat", we selected the "leaf element" of the Northeast specialty culture in the cultural theme library, and then determined the "leaf element raincoat". The composite theme of "raincoat with leaf elements" was determined, and the direction of the concept design was clarified. Among them, "leaf elements" and "raincoat" can also be regarded as variables, as there are many kinds of leaves and raincoats for men, women and children, and the combination of categories and colors can design a variety of series products.

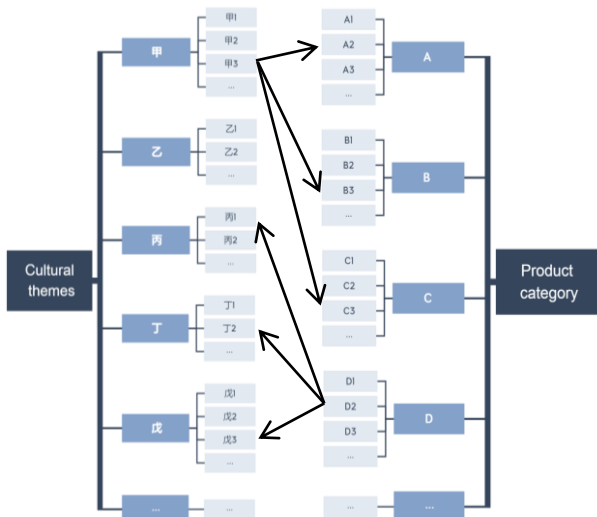


Figure 3 Mind map for determining the theme of cultural and creative products

You can also determine the cultural theme first, and then determine the functional theme (Figure 3). For example, after determining the cultural theme of "snowflake" as the element of ice and snow, we selected "magic cube" in the category of toys in the category chart of creative products, and then determined the compound theme of "magic cube with snowflake element". The compound theme of "Snowflake Element Cube" was determined. The identified cultural element "snowflake" and the category can also be associated in a one-to-many way, such as: "snowflake element postcard", "snowflake element poker", "snowflake element fan". "Snowflake element fan" and so on, forming a series of cultural and creative products with the theme of "snowflake".

The theme of the creative products can be determined by forming one or more programs and developing each program, and then determining the final program after comparing and weighing.

**4.6. Specific design the in-depth stage of creative design**

After the theme is established, apply the design principles of morphological bionic, color bionic, texture (texture) bionic, structural bionic and comprehensive bionic to carry out specific design. The main point is the

abstraction of the form and the reasonable generation of the form.

**4.7. Feedback and optimization**

After the specific design plan is formed, feedback and communication should be made in time to put forward corrective opinions and further optimize the design.

**5. CONCLUSION**

Everything in advance is established, but not in advance is invalid. Establishing a perfect library of regional cultural elements and a category chart of cultural and creative products provides a guarantee for cultural and creative design. The use of reasonable bionic design strategies for cultural and creative products provides theoretical guidance and design reference for bionic design of cultural and creative products in Northeast China.

A good idea lies in the selection of the theme, and a good product lies in the depth of the design. Living and daily use is its trend; uniqueness and differentiation is its quality; innovation spirit is its vitality; culture and fashion is its eternal theme.

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