Cognition and Design: Selection of Illustration Style in Native Products Packaging Design Based on Neurocognitive Science

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ABSTRACT
From the perspective of neurocognitive science, this paper studies the selection of illustration styles in the packaging design of native products. In terms of illustration culture and packaging design art form, this paper explores the application of illustrations in the native products packaging by taking the visual cognitive performance elements of neuroscience as an example, in order to highlight the unique artistic features and rich cultural heritage of the illustrations. This will not only effectively enhance the brand connotation of the product, but more importantly, it will enable consumers to have a more three-dimensional understanding of the entire product and help create more brand-influential packaging.

Key Words: Cognition and Design, Illustration Style, Packaging Design, Neurocognitive Science

Introduction
With the increasingly fierce competition in commodities, various enterprises have been more aware of the importance of product packaging for products sale. By picking out the most typical native products and transforming the traditional packaging styles, the visual elements such as text, colour and graphics are applied; the integration of packaging and illustrations shall break through the limitations of traditional packaging, create new packaging styles, and bring products from a dazzling array of native products. Also, the illustration can inspire the customers’ desire to buy these native products, set up a brand image, and increase its sale volume (Edward, 2012). Illustrations have a long history and profound humanities. In the expressive art of illustration, the painters use colours, lines, patterns, and figures to display their idea. So, it can be seen that the most important factor for the long-standing illustration art up to now is that it blends in the emotions of the art designer, which promotes the continuous improvement of the illustration art (Verghese et al., 2010). Applying illustrations into product packaging can effectively enrich the artistic style and material of the painting. By integrating products and arts effectively, a brand-new unity will be constructed. In the illustration art performance, the most prominent feature is that the illustration works not only describe a certain thing, but also further integrates the creator’s emotions, manifesting an intuitive, direct and vivid visual effect. With the continuous advancement of society and art development, illustration art will inevitably go further in the future (Borland et al., 2013).

A brief introduction to neurocognitive Science
Since the late 1980s, the study of neurocognitive science has made remarkable progress in a short period of time, having a tremendous impact on
the theoretical construction of traditional cognitive psychology and developmental psychology as well as the study of various content areas. The study of cognitive development is no exception. As cognitive development psychology and the neuroscience are of interest to many common problems, the development of neurocognitive science derived from it is gaining more and more attention and becoming one of the most popular cross-cutting fields (Mittal et al., 2010). People often confuse neuroscience with neurocognitive science. In fact, the focus of neurocognitive science is "cognition", while the neuroscience is only on technical means and methods, as shown in Table 1. The focus of cognitive science is to study the human mind and cognitive processes, and that of neuroscience is the human nervous system. The current hottest topic is the human central nervous system, esp. the study of the human brain.

Figure 1. Brain science research content schematic

In the narrow sense, the brain science means neuroscience for understanding the molecular level, cellular level, and intercellular changes in the nervous system and the integration of these processes within the central function control system. In the broad sense, it is the science that studies the structure and function of the brain, including the neurocognitive science (Figure 1). Studying and developing the brain is one of the hot issues that scientists and scholars around the world have been concerned about, because the study of brain science has extremely important significance (Sperduti et al., 2012). Firstly, understanding the principles of brain work can provide a scientific basis for making high-level computers that mimic human brains. Besides, it can treat the brain diseases so as to improve people’s quality of life; the brain is the psychologically generated organ; if it fails, the person’s mind or behaviour will be abnormal.

The neurocognitive science research aims to clarify the brain mechanism of cognitive activity by studying the cognitive processes such as perception, attention, memory, language, thinking, and consciousness etc. and also the nature and origin of intelligence. It includes neurocognitive psychology, cognitive psychophysiology, cognitive physiological psychology, neurocognitive biology, and computational neuroscience etc. (Becker et al., 2011). The ultimate goal of neuroscience is to expound the structure and function of the human brain, the material basis of human behaviour and psychological activity, and also clarify its mechanisms at all levels, improving the efficiency of human neurological activities, and promoting the prevention, diagnosis and treatment service level of neurological disorders.

Nowadays, the packaging industry has been developing rapidly. The development of advanced packaging equipment, new packaging materials and high-end packaging products should be accelerated accordingly. With the intensified market competition, the disparity between similar products has gradually reduced, the homogeneity of the commodity use value has gradually increased, and the dependence of product sales on the display of external packaging has become increasingly significant (Ning et al., 2010). Taking the total consumption volume of

Table 1. Neurocognitive research content

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<th>Research goals</th>
<th>Cognitive science</th>
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<tr>
<td></td>
<td>The nature and law of human cognition and intelligence</td>
<td>The structure and function of the human and animal nervous system</td>
<td>Clarifying the brain mechanism of cognitive activity</td>
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<td>Branch of discipline</td>
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<td>Neurocognitive psychology, cognitive psychophysiology, cognitive physiology, psychology, neurocognitive biology, computational neuroscience.</td>
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<td>Characteristic</td>
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the global liquid packaging market as an example, it is expected that by 2020, the packing design companies in Zhengzhou will consume 3.6 million tons of the market consumption; per the 2014 price conversion, the market size will be approximately US$1.38 billion, and the total liquid packaging consumption is shown in Figure 2. With the sustainable development of green and low-carbon environmental protection, the packaging will also be oriented to safety, environmental protection, and intelligence, making packaging more diverse and multifunctional. People have different visual perceptions of colour, leading to great difference in the evaluation of packaging design. Based on the development of optics etc, people have also changed their visual perception of colour and knowledge background (Azzi et al., 2012). Packaging design effect is presented generally through the visual perception of colour and shape. The research on the selection of illustration style in the packaging design of native products is made below on the basis of neurocognitive science.

**Figure 2.** Liquid packaging consumption

The visual elements analysis of native products packaging design

**The application of illustration art in packaging design**

The illustration art can fully reflect the unique ideas and display technique of the designer by effectively using and combining different colours and lines and displaying different artistic features and expressions. Thus, the effective integration of illustrations into packaging design can bring visual shock to consumers (Figure 3). In terms of colour expression of the illustration, more attention should be paid to the correlation between the product and the colour, and the colour cannot be abused, otherwise the overall effect of the packaging and product expressiveness shall be undermined (Svanes et al., 2010). Therefore, the designer needs to find the connection point between the product and the colour so that the consumer can imagine the function and characteristics of the product while enjoying the package.

**Figure 3.** Illustrations and packaging drawings

In the packaging art performance, some more lively and interesting illustrations should be selected to improve the quality of tea packaging. "Tea" is a symbol of greenness and health. Its packaging design must highlight the essential characteristics of the product; with the vivid, interesting and visual illustration art, the tea packaging can ultimately bring people a high-quality, greenness feelings, thus promoting consumers' purchase (Velasco et al., 2014).

The illustration has the characteristics of the vivid picture effect. When applying the illustration, special attention should be paid to the appearance, content, and form of the product. It can neither meet the needs of consumers blindly, nor can it all be based on the subjective feeling of the designer. After analysing the illustration elements, the tea culture needs to be embodied by the rational use of related elements, and the intuitive and connotative features are effectively combined in a package through a concise and clear illustration.
Cognitive elements of visual cognition based on Neuroscience

Figure 4 depicts the cognitive elements of visual cognition of native products based on neuroscience:

![Figure 4: Visual elements of neurocognitive science](image)

(1) Text element
In the design of native products logo, local elements should be extracted, by closely surrounding the local characteristic culture and combining with the brand name, e.g., in some areas, the traditional culture includes dishes, and enclosures etc.; to design this type of native product, the logo design should be simple and straightforward; for example, product name is embedded inside the round plate. Product attribute is sub-colour, indicating other information. In the entire product packaging picture, the logo plays a coordinated role.

(2) Graphical element
In the modern packaging design, graphic element plays an important role. With the strong appeal and direct expression effect, it has been recognized and loved by consumers. Most native products in the market use specific graphics without creativity. In order to reflect the expressiveness of the graphic elements, it is necessary to combine the characteristics of the products and allow the brand ideas of the native products to be interesting and humanized. Besides, the packing design should be innovated continuously and newer elements be injected to increase the sales and achieve more consumers’ identification of native products. Therefore, the illustrations, with certain affinity and fashion element, can be selected, and such interesting packing design shall completely subverted people’s impression of native products (Lai et al., 2010).

(3) Style element
Style element is one comprehensive element in the packaging design of native products, which is highlighted in visual expression language and internal structure. In the design of packaging, the so-called style is the combination of multi-visual elements in a specific way in the packaging picture, in order to achieve a unified and harmonious effect (Stanujkic et al., 2015) e.g. to design a package for a special product, firstly, the visual elements such as local landscape, regional dress and architecture should be distilled for ensuring the related brand concept for the product and application form of the illustration form (Figure 5).

![Figure 5: Illustrations visual elements](image)

(4) Colour elements
Packaging colour has the visual features such as practicability, simpleness, and decorativeness etc.; integrated with the commodity, a certain kind of connection shall be formed to enable the various products to be well-expressed in the colour contrast and harmony, in order to stimulate sales. Colour can bring more intuitive feelings to people, but also make differentiation from other products with special colour elements. In addition, the colour has a powerful visual effect, which should be better used to bring consumers the subjective feelings by the colour in the packaging design of native products. Through a reasonable colour match, the overall packaging design can be more harmonious and unified.

The choice of illustration style in packaging design under the guidance of neurocognitive science theory

(1) Design-sensed information
During the sales and distribution of modern commercial packaging design, the relevant information should be conveyed to the public. From the design perspective, design information is a medium of communication between the designers and customers, and the customers understand product features by reading the design information. To design the packaging of native products, attention should be paid to the diversification of illustrations; no matter whether it is a graphic symbol, a text message, or a selected colour, a certain commodity can be fully described. It can also prevent customers from reading visual errors in selecting products.

(2) Emotionality-focused product packaging

The graphics, text, and colour on the product packaging should be carefully designed, and not allowed to be inconsistent with their emotionality such as national life background and cultural customs etc. The latter requires that, in the design of product packaging, the consumer object should be taken into consideration, esp. the emotional effects caused by product sale. The former is driven by history, so it is stable and unlikely to change; while the latter is volatile and difficult to grasp. Therefore, it should be taken as the breakthrough point to compare the differences between these two features and make a more comprehensive and professional design of native products packaging.

Figure 6. The effect of packaging on sales volume under different considerations

(3) Nationality-based product packaging

With the rapid development of social economy, people’s aesthetic level and living needs have also increased. From the perspective of market competition or inheriting traditional culture, more attention should be paid to the connotation of traditional and folk customs in designing product packaging. The attraction point for customers in packaging may be either a visual form or the temperament of the entire package. Figure 6 shows the impact results of different packaging on the sales volume under different selection factors. It provides references for selection of illustration styles in the packaging design of native products based on neurocognitive science.

Conclusions

Packaging is not only a material carrier for the circulation of commodities in the market, but also a medium for people to communicate and exchange emotions with each other. It has rich spiritual connotations. The application of illustration enriches its visual language and makes it more artistic. On the basis of scientific development such as neurocognition, people have also changed their visual perception of colour and their knowledge background. In sum, to fully integrate illustration art into the packaging design of native products, the construction form based on the expressed style features and application requirements of illustrations must be followed, and the emphasis should be put on the integration of artistic form and concept on the basis of neurocognitive scientific theory. This will not only effectively enhance the brand connotation of the product, but more importantly it will enable consumers to have a more three-dimensional understanding of the entire product and help to create more brand-influential packaging.

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References


