

Embodiment of Interdisciplinary Subject in Package Design

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Abstract—The basis theory of the modern packaging discipline is related to various theories of different subjects. In essence, the package design is an interdisciplinary subject, therefore, the research for itself also including the learning of relevant subject knowledge. Through discussing the aspects of package technology aesthetics, consumer psychology, management theory, ergonomics, conservation and environmental science and finished product evaluation, this article aims to promote the understanding of the elements of interdisciplinary subjects of package design.

Keywords-Psychology; Ergonomics; Package Design; Management; Evaluation;

1 INTRODUCTION

The package design, which has the significance of direct economic benefit, can be traced back to the period of Yangshao culture of Clan Commune in China, such as the ancient painted pottery, pot, earthen bowl, kettle, bottle and other types of ware, from the perspective of holding and protecting the food, and from the perspective of easy to exchange and use, it has already been the sprout of original package^[1]. With the civilization and progress of society, development and prosperity of economy, the new products has appeared, the requirements of customers has increased, and the market competition has also become increasingly fierce, with the constantly development and application of new materials and technologies, the topic and scale that the modern packaging faced has become wider and deeper. In addition, the neglect of theoretical study and guidance of disciplines related to packaging design, as well as the current situation that packaging design still remains at the stage of decoration and beautification of the packaging surface, requires our packaging designers to strengthen the research and study of marginal disciplines, contributing to the development of Chinese packaging industry toward a more scientific, rational and artistic aspects.

The basic theory of modern packaging subject is related to various theories of many other subjects. The development of the research on modern science also become deeper and more comprehensive, the knowledge of many disciplines permeates and is interconnected to form the knowledge structure of organic connections. Essentially, the package design is an interdisciplinary subject, the research on itself also including the research and learning of related subject knowledge.

2 PACKAGE DESIGN AND CONSUMER PSYCHOLOGY

The modern package design shoulders an important mission of improving people's life quality and leading the consumption structure to develop towards a reasonable lifestyle. The value centered on consumption requires the designers should concern for the spiritual life of human beings (conscious life) and put it in a very important position. From the birth of the packaging to now, its design become more and more exquisite, practical and scientific to satisfy the real needs of consumers and follow the development of the market. Although for consumers, the value of commodity is the most important thing, the packaging is the visual image of commodity, which represents its quality and grade^[2]. The final goal of package is to sale and be easy to use, under the situation of the commodities have same natural functions, if the appearance of package cannot perform up yo their expectations, it will influence the customer's purchasing psychology.

From the theory, the Consumer Psychology, which belongs to the main research direction of Psychology, mainly analyze the existed psychology and their consumption custom in the process of consumption. The modern consumer psychology focus on exploring the motivation and needs of customers in this process, to clarify their preferences, their experience, and the factors that influence their psychology, then according to the results to prepare enterprise management policies and the knowledge of sales. Based on this, quantitative analysis methods such as factor analysis and structural equation modeling are introduced to study the mechanism of the role of commodity packaging on consumers' willingness to purchase, summarize the key points in commodity packaging that have an impact on consumers' willingness, so as to prioritize the elements of commodity packaging design, propose targeted design strategies to guide designers to complete the design of commodity packaging, demonstrate the allure of commodities, and improve the competitiveness of commodities. Through reasonable design to meet the different needs of consumers.

Before packaging design, we obtain the packaging factors that affect consumers' willingness to purchase goods through questionnaires and other research methods, and transform these factors into design elements, then use factor analysis to divide the obtained design elements into dimensions, further analyze the several dimensions of the role mechanism that affects consumers' willingness to purchase with the help of structural equation modeling, and determine the priority of design elements under each dimension, so as to guide design of product packaging, as shown in fig.1.

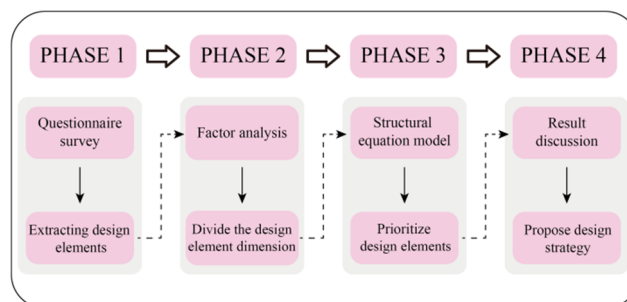


Figure 1. Research process

3 PACKAGE DESIGN AND MANAGEMENT

The modern package design of volume production and standardized production is the emphasizing result of packaging industry management, and the design has become a more and more complex system engineering. The interrelation between design and management has two problems, the first one is the design behavior itself, the other is the interconnected process of production management and design in the modern packaging industry.

The management of design industry is an important component of modern design methodology. Since William Morris founded Morris&CO, as the company manager, the design management has gradually presented in his various design plans and business management, the whole process of the design in the management totally has four steps: planning, designing, developing and production, market feedback^[3]. However, the process of package design, which has embodied between designer and enterprise manager, started from accepting the mission, marketing research, drawing the draft, the final manuscript, the printing and implementation to put the packaging on the market. But within certain limits, there still exists the formalism of packaging and the repeated pursuit of one-sided commercial profits, which are deserved for enterprise manager and package designer to develop and improve. In this regard, Japanese design management researcher Chinnosuke Shimizu has developed a conceptual diagram of how “social conditions”(external economy) and “corporate activities”(internal economy) should be approached, using the axis of operation and management, as shown in fig.2. The “specificity” on the horizontal axis refers to ensuring the specificity of companies and products, while the “unity” refers to ensuring the unity of external conditions such as industrial structure, social structure, life structure, and institutions. For example, when the structure of life changes and cultural and value changes occur, companies need to respond to the times and market needs. “Profitability” on the vertical axis refers to two aspects: capital benefits and value-added benefits; “sustainability” refers to the need to consider not only profitability, but also minimum benefits, boundary benefits, and labor distribution rates as opposed to profit maximization. The relationship between specificity and integration, profitability and continuity shows that a company can rely on “specificity and profitability” at the beginning of its development, but as time goes by and the industry develops, it will gradually shift to rely on “integration and continuity”.

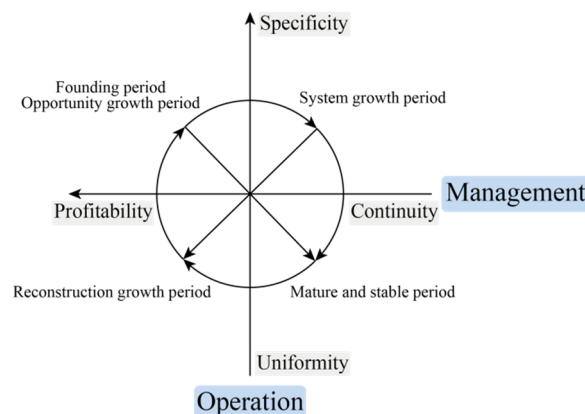


Figure 2. Operation and Management axes of thought

4 PACKAGE DESIGN AND ERGONOMICS

With fast development of social productive forces and technology, people's ethics and morality have changed. Pursing comfortable and joyful life has already become one of the main trend in modern society. The rapid development of science and technology has made people's living condition become more complex, and if we want to solve the complexity, we needs simplicity, it is not only a problem brought by technology, but a problem that technology should solve^[4]. Therefore, the problems of package design and ergonomics has already attracted attention, all obsolete, cumbersome, rough and vulgar will be weeded out, and we will have more novel, practical, interesting and luxuriant packaging, in fact, the combination of ergonomics will directly bring us from the relationship for human physiology and psychology to the research of designing discipline, it is also the method and principle of modern packaging design.

Ergonomics is always applied to the humanized design of product packaging. It takes people's comfort level as core design concept^[5]. The ergonomics of packaging mainly research how the packaging to adapt to the requirements of human body functions to use the packaging or package object safely, reasonably and comfortably. The packaging ergonomics is different from general ergonomics, its main research subject is the human body parts involved in the use, loading and unloading and transportation of packaged products and their functional responses. Such as the requirements and degrees of height, shoulder height, hand power (the power of gripping, thrust, lifting force), gesture (grab, lift, pull, hug, roll, hold), usage mode (open, put together, inhale, spurt), skin, smell, gustation, vision, touch and other requirements and degree of various aspects. What's more, its development and research let the package design gradually become scientific.

5 PACKAGE DESIGN AND CONSERVATION AND ENVIRONMENTAL SCIENCE

Nowadays, in the modern society with large production and consumption, the product packaging has updated and developed fast with the pace of the Industrial Revolution. It is convenient for promoting product selling, promoting the increase of economy and satisfying consumers' various desires, and it is also benefit for the social life. However, in order to maximize the profit, some merchants have excessive pursuit of luxury of the product packaging, and the packaging and material selection have become more and more unreasonable, which has not only spent a lot of human and financial resources, the packaging waste it generated has also hindered the sustainable development of China. As the world begins to pay more attention to ecological and environmental issues, people has realized that the concept of green and low-carbon is the key point for achieving sustainable development^[6]. Therefore, from the perspective of ecology, to revisit and review the evolution of changes of packaging in human history, to imagine and prospect the application of new energy development on product packaging in the future, which has already become the new mission of package design.

Now through using the advance science and technology achievement to make the packaging with modern living functions can adopt the requirements of environmental protection better, and make the packaging regulation for protecting the environment, which requires the packaging manufacturing industry and designers should have the thoughts and consciousness of

environmental protection When we design the packaging, we must consider that: (1) save materials and energy to reduce the waste of Earth's natural resources; (2). use safe, non-polluted and recyclable waste. For example, the main materials of product packaging not only use the paper material with recyclable features, the drawing of the pattern on the package and the coating used for packaging base color also use the plant ink with the characteristics of being degradable without harmful substances, which can not only get better recyclable utilization rate, but also can show the concept of green, ecological and environmental^[7]. Many successful package designs are inspired by natural forms, at the same time, people has explored the secret of natural materials deeply, the scientists use the biological engineering technology to develop biomimetic materials, and make it can be applied in various fields, and the packaging materials will have broader prospects. The development of biominetic materials will make a contribution for the environmental protection.

6 PACKAGE DESIGN AND EVALUATION OF THE FINISHED PRODUCT

With the development and improvement of socialist market economy, the product quality of enterprises has become closer and closer. Under the condition of market competition is becoming increasingly fierce, the quality of packaging design products with direct economic benefit has become more important. And product packaging design is a quite variable work, even the same product packaging, in different periods of time in different contexts need to use different design solution, therefore, under the premise of changing product packaging design conditions, how to fully and comprehensively evaluate the finished packaging design is a question that can promote Chinese packaging industry to more scientific, more reasonable, more artistic direction^[8]. The problem of the evaluation of packaging design finished product, so far, there is no unified standard and evaluation method. Currently, from Chinese awards activities, we can found that most of the activities has paid attention to the aspect of decoration design, but ignore the evaluation of packaging technique design, however, the evaluation of packaging design finished products should be comprehensive evaluation, which including the evaluation of technology creation (function, structure, material, using, loading, and reasonable size of packaging), economic benefit (cost effectiveness, production effectiveness, recycling), psychological reaction (novel, safe, complete, comfortable), aesthetic taste (style, popularity, character).

The model of product packaging evaluation system is an effective way to solve the above problem. The model is based on the idea of system analysis, and the purpose of capturing change information, selecting design solutions and providing a basis for decision making is achieved through feedback mechanism. The model is a closed-loop double feedback evaluation model, as shown in Figure 3. The model divides the evaluation process into two stages, i.e., general evaluation and detailed evaluation, which provide feedback and self-adjustment information to enhance the stability of the system and make the package design more reasonable and perfect. At the same time, the evaluation information database is set up in the system model, and each evaluation will make the database content reorganized and updated, and when there is contradictory information, a warning signal will be issued, and the information will be processed to restore the stability of the whole system, which is reflected in the packaging, that is, to make the packaging design new and more scientific and reasonable, which is the self-organization characteristic of the system.

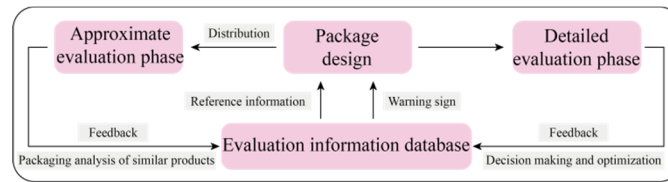


Figure 3. Package design evaluation system model

7 CONCLUSION

China has a long and splendid ancient history for five thousand years, there were brilliant design works, it even has important influence and help for western civilization and progress. However, today's China is far from the level of western modern design. Compared with the design of Western developed countries, we don't have a complete scientific system in terms of value orientation, methods and standards, especially there is big difference in the research and application of interdisciplinary subjects, which has led to the situation of a large number of foreign products pouring into Chinese market. If we want to change this current situation, the Chinese designers would have a long way to go. Today, when reform and opening up have brought about vigorous development of science and technology and production, Chinese packaging industry finally starts its new era. Therefore, if we want to study the package design systematically, we need to study the interdisciplinary subjects that related to the package design to promote the package design industry can develop towards the direction of science, art and integrity.

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