

Research on Application of Environmental Protection Concept in Modern Product Design

Yuhang Xia

Wuhan Textile University, Wuhan 430073, China

Abstract: The concept of green and sustainable environmental protection is a new design concept based on the value orientation of harmony between man and nature, the main principle of green and low-carbon cycle, and the basic starting point of ecological civilization construction. Its emergence has changed the traditional development of modern products in the past. Through the analysis of the concept of environmental protection and the application of modern product design, this paper understands the design concept and methods, so as to provide practical and feasible methods for the green development of product design.

Keywords: Environmental Protection Idea; Modern Product Design; Design Idea and Technique.

1. Research Background

Modern product design is an applied discipline of modern product design, which combines engineering technology with modern aesthetics, materials science, computer application and even social psychology. It was born with the wave of industrial revolution, and directly linked with human product demand; And in today's rapidly developed industrial and technological industries, it is more prominent is the concept of "people-oriented". Modern product design from the clothing, food, housing, transportation, use and other aspects of our life, to a certain extent also reflects the changes in our life pattern and ideology. Due to the change of science and technology and the improvement of industrial capacity, the performance requirements of users for modern products are increasing, which leads to the reduction of product life cycle and the speed of change between products. With the global competition brought by economic globalization and the rapid development of high and new technology, users have increasingly high requirements for the functional attributes, practical value, user experience, appearance and after-sales service of modern products.

The birth and development of industrial civilization has greatly promoted the economic and technological development of modern society. Behind the development of the Industrial Revolution was a devastating blow to the natural ecology. Facing the severe situation of excessive waste of resources and serious environmental pollution, human beings urgently need a new development model to meet the challenge. The outbreak of the novel coronavirus outbreak in 2020 has faced great challenges to the life order of the whole world, and has a huge impact on the future development of modern product design. Because of the increasingly prominent environmental health contradictions, people's requirements for the coordination and sustainable development of ecosystems and modern product design have produced more changes. On the basis of maintaining the practicality and functionality of modern products, the concept of environmental protection and the core concept of green design are injected into modern product design, and the product design and production process are changed from the aspects of product production materials and processes. The application of environmental protection concept in modern

product design mainly emphasizes the strong conflict between environmental protection and vision, and pursues the coordination and unification of concept and connotation [1]. To explore and study the application of green environmental protection concept to modern product design, we should analyze specific problems, formulate corresponding plans for different types of products, adopt the most appropriate methods for reasonable application, and promote the modern development of modern product design under the concept of the new era. Faced with the increasingly complex development trend of modern products, various problems arising from modern product design and research make ecological contradictions increasingly acute, serious environmental pollution and waste of resources make us face the most serious problem at present.

How to solve the serious imbalance of the current ecosystem, reduce the serious environmental pollution and excessive waste of resources, ensure the coordinated and sustainable development of modern product design and ecological environment, realize the rational use of resources in the production and research and development of products, and effectively apply the concept of environmental protection to the whole process of enterprise development and product development and production, so as to arouse people's attention to the concept of green environmental protection. It is an important research topic in this paper.

2. Environmental Protection Concept and Modern Product Design

2.1. Environmental Protection Concept and its Specific Performance

With the increasingly serious environmental problems, the contradiction between human and nature is becoming increasingly acute, ecological environmental protection has become an inevitable topic in all walks of life in modern life, in the design of modern products, people pay more attention to environmental protection and the green and sustainable development of production links. We hope that modern product design is based on the concept of environmental protection as the starting point and landing point, but in fact, the concept of environmental protection is not very clear and clear definition and concept. The vast majority of people think

that the concept of environmental protection is to use the simplest and most original materials to produce a life concept that meets the needs of consumers and does not directly cause pollution to the ecological environment. However, the actual concept of environmental protection requires us to base on the protection of environmental ecology and the overall planning, coordination and sustainability of development in product design. The practice of this concept requires us to continuously carry out a new innovation and development in new product design and daily life, not only to make new product design meet people's full demand for practical functions and performance, maintain the design sense due to product design, but also to take the concept of environmental protection and green coordinated and sustainable development as the theme to fundamentally reduce environmental pollution. And in production into a virtuous cycle of sustainable development. To practice the concept of environmental protection, we should start from several aspects. Recyclable ecological materials should be used in the production of product design, that is, to fundamentally save resources in production, protect the environment, reduce the production burden, and meet the product demand; For the production of waste materials for recycling and reuse, make the best use of materials, reduce production costs, improve the efficiency of resource use, promote the efficient allocation of resources, so as to achieve environmental protection; Explore and study advanced environmental protection production technology, make the production process green, reduce waste emissions and reduce pollution in the production process of modern products.

As the most important core concept of modern product design, the concept of environmental protection can fundamentally strengthen the protection of ecological environment in modern product design, and reduce unnecessary environmental pollution and resource waste caused by production and life, so as to realize the rational utilization and transformation of resources to a large extent, and improve the utilization efficiency of resources. Visually increase the craft beauty of modern product design, so that modern product design can realize the true sense of green design and sustainable development. In order to make the concept of environmental protection more harmoniously applied to modern product design, we should start from the actual situation, and conduct specific analysis of modern product design, formulate a reasonable and clear plan, inject green sustainable environmental protection concept for different products and use different environmental protection means to maintain the environment.

2.2. Modern Product Design

Modern product design originates from industrial design, which is the product of human social development and scientific and technological progress [2]. Modern product design is the core of industrial design from the beginning of its birth, it covers all aspects of the development of human society, in short, people can not live without modern modern product design.

Product design is a multi-dimensional, containing people's aesthetic needs, full of art and craft production skills of the sum of the creative process. Modern product design mainly includes four process stages: extensive market research and clear market demand analysis, market positioning formed by multiple product data analysis, modern product conceptual design and product detailed design and process production

process. These process stages form a complete design system and lifeline of modern product design. The life cycle of modern product design mainly includes: product design, product manufacturing, product sales and product maintenance, recycling and other ten stages. Product design develops with the development of each round of industrial revolution and scientific and technological revolution. The renewal of science and technology and the improvement of industrial production capacity make product design have the mass production capacity to meet human needs, and have the practical attributes, functional attributes and beautiful attributes of modern products. When it enters the market as an exchange, it has the commodity attributes. Moreover, it is recognized and accepted by people, which is different from those artistic works that can only be appreciated by a few people through the aesthetic expression of artists on the basis of rich aesthetic experience.

There are many modern product design theories, which can be divided into axiomatic design, robust design, reliability design, optimal design, green design and sustainable design. With the wave of economic globalization sweeping the world, the allocation of market resources in the world has been more reasonable, and the international competition is more urgent and fierce. Modern product design theory is not applicable to all product design and development. From some perspectives, modern product design theory should absorb nutrients in product design and continue to enrich and develop. Make modern product design theory more practical. However, due to the development of scientific and technological revolution in the new era and the improvement of industrial production capacity, excessive resource development and industrial production have not only caused a devastating blow to the ecosystem, but also forced people to seek a new mode of production and life to cope with it. In this process, green environmental protection design seems to have become the core of the design with the characteristics of The Times, so that modern product design and sustainable development as the core of the environmental protection concept in the face of global environmental problems have a closer link. The new environmental protection concept into modern product design has become the consensus reached in today's international production and manufacturing industry. The concept of environmental protection will play an increasingly irreplaceable role in all aspects of modern product design.

3. The Application of Environmental Protection Concept in Modern Product Design

3.1. Promote the Use and Promotion of Ecological Materials

Modern product design into the concept of environmental protection, the most direct, the most obvious effect is to make corresponding changes in the raw materials of product design, the use of ecological materials, green sustainable development as the core of the environmental protection concept in the modern product design the most direct reflection. It is also an important guarantee for the environmental value of modern products. Ecological materials are designed to improve the relationship between human and nature, reduce the pollution caused by product production to the ecosystem, and realize the green, coordinated and sustainable development of product design

from the source of production, and have gradually become the focus of domestic and foreign scholars in the field of materials research, whose importance can be seen.

Traditional product design often pursues the good performance and function of the product in the development and utilization of materials, while ignoring the environmental problems caused by the production, use and disposal of materials. For example, the use of plastic bags ignores the harm of plastic bags to the environment while pursuing the ultimate convenience. It consumes more resources to deal with the environmental pollution of plastic bags. In the face of the environmental problems of traditional materials, the promotion and use of ecological materials has gradually become the mainstream material of modern product design, playing an important role in promoting the sustainable development of product design. Ecological materials are those that have good performance, cause little pollution to the ecology and environment, have high recycling rate or can be degraded and recycled, can be integrated with the ecological environment, and have certain restoration and purification functions for the environment [3]. Ecological materials are a new concept put forward by human beings in order to cope with the increasingly serious environmental crisis, protect the ecosystem, and satisfy the unity, coordination, sustainable development and symbiotic relationship between human beings, nature and society. It conforms to the core concept of sustainable development pursued by human society at present, and is conducive to the realization of a new pattern of harmonious development between human beings and natural ecology. Natural feathers, bamboo leaves, cotton and hemp fiber has good performance, its decorative, serviceability, recyclable degradation is a high-quality ecological material. Can be used in all walks of life product design and manufacturing. Similarly, for non-ecological materials that have been used for production use, this type of material should be controlled accordingly. At present, China has made corresponding measures on the raw materials of milk tea straws, as we all know, the number of milk tea sold every day in China is countless, after a large number of plastic straws of milk tea gathered, the damage caused by environmental pollution is shocking, and now has issued a clear provision of "plastic restriction order", requiring the use of degradable paper straws instead of plastic straws. Thus, it has been responded in most milk tea enterprises, and truly and effectively realizes the green environmental protection design of modern products in enterprise production.

3.2. Promote the Recycling, Reuse and Degradation of Modern Product Materials

To promote the promotion and use of ecological materials is to solve the material problem of modern product design from the source, and the main attention needs to be paid to the recycling, utilization and re-degradation of modern product materials. For modern product design, the recycling and reuse of modern product materials can improve the efficiency of resource use and avoid the reuse of resources and unnecessary waste. It is also a necessary way to minimize the environmental hazards of modern product design materials, and to process old materials into new production areas. Of course, not all materials can be recycled and put into new production, some simple composite materials often lose their new use value after use, and this time the degradation of materials will play a huge role in dealing with this type of material to achieve environmental protection. The

degradation of product materials is to chemically treat those non-recyclable waste materials through some specific means, and bury them in the soil after decay for degradation. More common is the recycling and degradation of materials such as plastics. Due to the indiscriminate use of plastic products by humans, there are a large number of microplastics in the ecosystem, which has become the focus and focus of environmental pollution. Microplastics, which are difficult to degrade in the ocean and soil, have gradually become the "natural enemies" of Marine organisms and the "killers" of soil destruction, and the odor emitted by the incineration and storage of plastics also has a large amount of pollution to the environment and is accompanied by harmful irritating odor. The harm of microplastics is not only through the harm of the surface, but also into the ecological cycle. Plastic materials because of its plasticity, reuse and can be processed and used in a wide space, we can recycle it, through the process to make new plastic products, so as to maintain its utilization efficiency. For unusable plastic waste, plastic bags can be buried underground for degradation after process treatment. Recycling, reuse and degradation of product materials is an important way to achieve sustainable development in recent years, with strong development potential, and through a good way can also bring certain economic benefits, to achieve a win-win situation.

3.3. Promote Green Environmental Protection in the Production Process

The green and environmental protection of the concept of modern product design not only depends on the raw materials of product design. The green selection and environmental protection treatment of raw materials of modern product design only fundamentally solve the environmental problems caused by materials, and modern product design is processed and recreated on the basis of raw materials, so as to obtain satisfactory modern products that meet People's Daily needs. People often ignore the environmental pollution of the production process, and the environmental problems brought by the production process are even more serious than the environmental pollution brought by the non-environmentally friendly product design raw materials, so the attention to the green environmental protection of the production process has gradually become the focus of attention.

The traditional washing process of denim in the clothing industry not only consumes a large amount of water resources, but also uses most harmful chemical materials in the dyeing process of denim, such as potassium permanganate, pumice stone and hypochlorite. These chemical materials will not only cause harm to the human body in the fabric production process, but also affect the function and wearing experience of denim clothing products. And in the sewage treatment and discharge link will also cause pollution to the ecological environment, therefore, the production process with less impact on the environment has been put forward. To this end, people have developed new technologies such as electron flow technology, nanocatalysis technology, ozone, enzyme replacement pumice stone to reduce the environmental pollution caused by denim washing. Due to the use of emerging technologies and driven by sustainable environmental management, more and more enterprises have begun to change their mode of operation. Sustainable and environmental protection production process has gradually become an important and indispensable part of modern product design, which focuses on the quality of designed

products and the manufacturing process, including the initial design product to the final terminal product. Through continuous research and improvement of production processes and procedures, to maintain the health of the ecological environment. Therefore, it is also crucial to promote green environmental protection in the production process of modern product design and production chain.

4. Conclusion

With the development of economy and society, modern product design has not only satisfied people's basic needs of life, but more like a transmission symbol, implying people's more aesthetic and spiritual and cultural needs, which is endowed with more rich spiritual and cultural connotations in addition to products. To tell people about the changes in the history of industrial design.

When people's material life is satisfied, the demand for products will develop in a deeper direction, so as to begin to think about the higher spiritual connotation of product design, under the influence of modern environmental protection concept with sustainable development as the core, so as to think about the environmental protection concept in modern product design. With modern product design as the starting point, it is associated with the environmental protection problems generated in the manufacturing process, and then

through research and practice, people have a more new exploration and understanding of environmental protection. Through thinking about all aspects of modern product design, people constantly consider how to achieve a higher level of ecological environmental protection through process improvement and change of production concept, and put it into practice in each production link to achieve the desired effect. Thus promote the promotion and development of modern product design.

Acknowledgments

Love yourself is the beginning of romantic life, even if the road ahead is difficult, I will not give up, I hope to give myself a satisfactory answer next year.

References

- [1] Weilin Qiu: Application of Green Environmental Protection Concept in Modern Product Design, *Grand Stage*, (2015) No. 10, p.75-76.
- [2] Lvbo Mai: Standardization Theory and Method of Top Design for Products, *China Standardization*, (2013) No. 3, p.73-78.
- [3] Yiming Cui, Fan Zhang: Analysis on The Concept of Sustainable Development of Service Design: Taking Ecological Material Design Research as An Example, *Design*, Vol. 32 (2019) No. 14, p.99-101.