

Discussion on the Composition Method and Development Trend of Industrial Product Modeling

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Abstract As a part of social economy and culture activity, modeling design of industrial is the direct symbol of the demands of survival and the development trend of Human beings. Man is central of industrial design. There are two kinds of compositions: one is that it is a creation which depends on nature and man. Another is that it applies the principle of cubic composition. At the same time, with the appearance of new requirement, possibility, and problem during the development of technology and civilization, a new concept appears, that is, design is no longer a creation of single production, but a concert for the circumstance system of mankind.

Key words Industrial modeling design; Cube composition; Green design; Personalized

1 Introduction

Industrial product design, as a part of socio-economic and cultural activities, is a direct embodiment of humans' basic needs to survive and development orientation, and it has a lasting effect on the human development.

Industrial product design of composition is realized through certain styling forms based on the product usage and appreciation requirements, combined with specific technology, material and craft ideas. Industrial product design of composition can be put into two categories, one is the recreation of natural and man-made forms, the second is created using the principles of stereoscopic; at the same time, with the appearance of new requirement, possibility, and problem during the development of technology and civilization, a new concept appears. The two primary manifestations are "green design" with the consideration of ecology and more humane and personalized embodiment of form design.

2 The Method of Composition

To create a model with one's imagination is like fishing with a single hook, while to create a model with certain methods of modeling is as fishing with a net. Single thought on body, from the beginning is easily to be trapped in a particular shape of the body, and it is not possible to better develop ideas nor to make comparison or choice among different models. Industrial product design's composition, methods could be concluded into the following two types.

2.1 Reconstruction of natural and man-made forms

The form can be divided into natural morphology and human forms, natural morphology include the nature of the original organism, such as animals, plants, etc. Human forms are subjective design and construction of the physical form created in labor and human life on the basis of the natural form, such as housing, clothing, tools, machinery, etc. The human form is the combination of objectivity and subjectivity, the human spirit is added into the objective form, reflecting the subjective awareness and creative forms of recycling. For example, the nature of the flower, through people's subjective design, using simulation techniques, calla lily flower is evaluated into the vase shape; and the employment of natural animal sculpt is more extensive, such as toys, gifts, etc. There are also water drop-shaped tea set, etc. (Fig.1).



Figure 1 Water Drop Shaped Tea Set

In addition, recreation of forms also refers to indirect creation and application according to art works. Through getting familiar with modern art formation, and studying on tradition and innovation, the objective and subjective, content and form of study, shape and recycling. Such as Henry Moore's sculpture, literature, permeate, atmospheric, simple, broad, can be applied to the design of furnishings in display; the works of first character of cubism Picasso, the Ya-weinong girl, you can use the screen resolution, and reorganization of the structure to the ceramic sculptural composition; artist Salvador Dali, Mandarin's works are the art of pure visual aesthetics. Hat modeling designed after Mandarin's painting style adds fresh parts to the plastic arts. The chairs and tables designed after Dali's painting give a new aesthetic feel.

2.2 Constitutive principle for the creation of the body

Stereoscopic is the science of the about study, how to add a 3-d elements following certain rules into the personalized, aesthetic stereo modeling in three dimensions. Its basic constituent elements include: point, line, plane and block, they each have their own rich expression semantics. Stereoscopic is to build out a certain sense of amount and sense of space with them in 3D, and its shape is subject to aesthetic rules.

The principle of the dimensional structure, not only emphasizes methods and science, but also stresses the feelings of the objective world, including feel, analyzing, and understanding of a natural body, geometric and human body. Body characteristics are observed and understood not only from the normal conditions, but also from the macro-and micro-perspective, anglicizing the object from various aspects, accumulating knowledge, and all substances in morphology and conceptual form helpful to shape formation will be absorbed, by different methods to realize a transform variation and then further process it depending on the specific design needs, making it the new body styling.

The principle of the dimensional structure, as to the basic elements of the body: point, line and plane, body, from the perspective of geometry builds scientific concepts, and from the perspective of psychology analyses the perception effect on humans, cognition and the science of emotional impressions together, as the body of the Constitution from the most basic components of new concepts and understanding of the basics, this use of basic constituent elements, in a variety of body structure, develop its own characteristics, different methods, and they are very important.

2.3 The usage of modern technology

Industrial model reflects a certain emotion, mood and sentiment; it is different from a general styling of the image, that is, it not purely emotional product. Industrial product design is in the premise of function, given certain feelings a combination of living art, science, technology. Product specific requirements in life plays a leading role; science and technology plays a role of ensuring that the implementation without the mentioned composing parts, art will be disappeared, and it will be unable to meet people's aesthetic requirements. Therefore, in the composition of the industrial design, the basic shapes formed by the functions, and the structure formed by the material and technology, which contain a lot of science, mathematics and mechanics knowledge, for new industrial molding body are beneficial, and it is valid.

In modern science and technology, involves the processing mode of producing and changing the shape of an object, and that is enlightening to industrial composition. For example, pressing, cutting, distort, cut, and modern architectural forms, have also been applied. The research and application of the composition methods are inseparable, and it deed explores the design area and brings about some new and beautiful shapes.

From modern industrial product design, we can also see a lot of it is just pure geometric or geometric shape of the linear form. There are models sought out from graphic approaches as well as several models made from typical geometric lines. Among them are circle, ellipse, parabola and hyperbola lines, and vertical lines. Some shapes take the whole line to form the bodies, some take part of the interception of the lines to constitute a form of body, and still some put the two together. Of such kind of modeling, in industrial product model forms, there are many success stories.

3 The Future Development Orientation of the Modeling Composition and Design

3.1 Emergence of green design concept

After the mid-twentieth century, the world is increasingly faced with the serious environmental and ecological problems. Uncontrolled rapid consumption has resulted in resources shortage, such as the shortage of water resources in China; ignoring the natural consequences of resource consumption has caused the deterioration of the environment and the non-renewable resources, such as the desertification

in the northwestern part of our country. These are well-known. It is to be noted that human civilization's developing in the wrong process and the industrial designs have some connections. The United States first pioneered the commercial design "plays the inglorious role in that process". Green design concept is formed after deep thoughts and reviews and it will be one of the leading ideas of industrial design.

(1) Design should reflect "long-term"

Reflecting "long-term" is a brand new design and consumer attitudes. It explicitly asked to abandon the fashions and resist market pressure, but to reflect the product's durability, and to provide users with the possibility of using long-term maintenance products. For example, the baby bed design, their functionality comes first and it should also be able to become a baby stroller. Later you can easily change it into a bed, extending their service life. This design guide consumers not to pursue fashion or "luxury" products, reducing product complexity and useless features. Meanwhile it is also advocated that people not to pursue personal items, but to use public facilities and supplies, etc.

(2) Design should reflect "energy-saving"

Embodying "energy-saving" mainly refers to reducing the consumption of non-renewable resources and reducing energy and material (such as aluminum, the volume of cement, etc.). Such as guidelines like the use of recycled materials, the use of bamboo, rattan, reed, flax and other fast-growing plant materials, simplified packaging, etc., in general, are also environmentally friendly.

Design reflecting the energy-saving radically updated traditional design concepts, that is to say, the design is no longer a creative individual product, but rather plans on the human ecosystem. While designing good products, we shall fully consider the effects on environment during the product manufacture, use, and recycling. Using simple metal materials (without electroplating or overwriting the coating) or the single components of hot melt of plastic would be beneficial for the retrieving and recycling of materials. As for body structure, reducing the material in a product, changing welding, bond and seal integral to loose, cradled, will also be conducive to recycling. Exploitation of solar energy, clean energy and development of products, such as family multi-level water device will be the hotspot of industrial design.

3.2 Human-centered design is the requirement of development of the era

The pursuit of machines and product's strong power and high efficiency, is natural in an industrial society. But when people's living conditions have improved later, we feel that there is a class of product defects is intolerable. That is, the products (machine) are the Center, but people's principle roles as operators and users are neglected. This includes both products does not adapt to people's anatomy, physiology, features, not enough considerations on the health and safety of users, and products not adapt to people's psychological, mental, psychological demands, leading to problems like overburdened, tedious, human dignity-losing. Personalized design, or human-centered design, is to be initiated for mentioned reasons.

(1) Design should be more in line with the human anatomy, physiology, psychology, that is, human-computer science (engineering). For the reason of the objective reality, since the second half of the twentieth century, ergonomic designs of the civilian products have being more and more important. For example, the computer using stress syndrome have involved more and more people, injured parts ranging from eyes, neck, shoulder and wrist, finger to lumbar and so on. To improve the human-machine functions of computer screen, computer desks, keyboard, mouse, is of great importance. From the use of transport, production machinery, social facilities, electric tools to the use of household wares, how to be more secure, convenient, efficient and comfortable, provides us inexhaustible subject.

Entering the new century, people's basic material life needs have been met, spiritual needs have been outstanding. One of the embodiments is that people abandon the same and similar products and pursuing personalized ones to show their own unique personality, temperament and the aesthetic orientation and art. This is also further enrichment of human-centered design. In addition, modern manufacturing techniques also make low-volume products with low-cost possible. At present and in the near future, the initial period of individual design, users' participation in the design will be the main form of personalized products.

(2) The mechanical age's product have relative intuitive, easy-to-cognition functions. Entering the e-tech era, there are after large changes. The most prominent and influential problem lies in the various electronic products—they are all "boxes" in different sizes. On the one hand, one cannot know from product shape what it is, giving rise to a feeling of strangeness, distance, cold feeling; on the other hand, no matter what you want to do, the way of controlling a product is press the buttons or push switches, it has product lost connections with past life experience and behaviors, making one feel lost. How to give high-tech product good cognitive and affinity, to let people easily and product communications, are new

and important topics of the future industrial design.

4 Conclusion

The design being able to fulfill the functional and aesthetic needs of humans made with scientific methods is the ideal design. Industrial product design should follow the scientific methods, that is, to recreate based on the natural and man-made forms or to create using the principles of stereoscopic. With the appearance of new requirement, possibility, and problem during the development of technology and civilization, many new subjects have risen in industrial design. which is it is requested the product design shall meet people's aesthetic and functional demands and it also shall reflect "long term", "energy-saving" and more humane concept, and more awareness and affinity shall be given to the high-tech products, enabling the product design to become a human-centered one.

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