

Research on Product Form and Shape Design Based on Intelligent Information Fusion

Jian Xu

Taizhou College, Nanjing Normal University, Jiangsu Taizhou 225300, China

Abstract: In the history of human civilization, with the rapid development of science and technology, people's lifestyles and object manufacturing methods are constantly changing, and it is subtly affecting people's aesthetic concepts and product cognition. In the traditional product design, the product form design plays a vital role, it directly conveys the name, information and basic functions of the product and other information; Nowadays, the connotation of product design is also constantly repeated, no longer simply playing the characteristics of using tools, but also realizing human-computer interaction and interpersonal communication, and it is also an important language symbol for information transmission and emotional communication. Different products convey the information content of extension and connotation with their unique forms and visual symbols, which have a comprehensive impact on consumers' cognition, operation and use, and emotions.

Keywords: Intelligence; Information fusion; Product form; Modeling design

Fund Project:

First-class Curriculum Construction Fund project of Taizhou College of Nanjing Normal University "Cultural and Creative Product Design" (project number: 141220162318).

1. Based on the change of product form under the fusion of intelligent information

1.1 The dissolution and transformation of the public's traditional visual cognition of products

In the traditional product production concept, the design and expression of product form must accurately reflect the function of the product and take care of people's cognitive habits. When the designer completes the design of the product draft and then puts it into the factory mass production, the first thing people see after browsing or buying the product is to have a preliminary understanding of the external form of the product, obtain a certain rational cognition, than the shape, size, color and pattern of the product, and then find the function, internal structure and design of the product during reading the instructions or using the process, and finally have a more comprehensive understanding of the product. Therefore, product designers must design and determine the shape of the product, realize the integration of product form and function, and convey the correct product semantics and information to the user.

Based on the environment of intelligent information integration and scientific and technological development, in order to more comprehensively and accurately evaluate the performance of all aspects of the product, there are professional quality inspection departments to comprehensively assess the product form, color, function and quality in various aspects to ensure the quality and performance of the product.

The wide application of microelectronics technology and multimedia has prompted people to have different experiences in the form and shape of information products. The modeling design of electronic information products belongs to a new discipline, which is the product of the combination of science and technology and human literature and art, which can basically meet people's needs

for the practicality of products and the aesthetic pleasure of artistic language. Therefore, in the design of the product, in order to comprehensively consider the effective combination of science and technology and literature and art, to ensure the practicality, rationality, economy and creativity of the product, the product material selection, structural arrangement, function setting will be rigorously designed and arranged, to ensure that the basic needs of humanization are met to the greatest extent, to meet the visual enjoyment of consumers, so that they can enjoy the convenience of product functions in the process of use, but also get the pleasure of art appreciation; Secondly, the design of electronic smart products generally adheres to the economic principle of product modeling, because the current cost of intelligent products is generally high, so saving costs from product modeling design is the primary problem to be solved when intelligent products are designed in form, which also prompts intelligent products to achieve the perfect combination of form and functional structure in product shape design, to ensure that the design and arrangement of each product structure is necessary, to avoid the waste of materials and space. In the product appearance size design, the general electronic information products to dexterous, lightweight features, to micro, small and medium-sized size mainly, easy for people to fold and carry, and because the speed of electronic information products is very fast, will not be easily eliminated by the market, and durable for a long time by consumers love and pursuit. Therefore, when designing the product shape, the designer will meet the actual needs of the customer to adjust the size of the product twice, and develop in a more compact and exquisite direction. At the same time, when the artistic language settings such as materials, colors and decorations on the product form, it is also necessary to incorporate economy and practicality into the measurement standards, for which many scientific and technological product forms and shapes are gradually developing in the direction of simplicity and high-level, and the generalization and simplicity of the design are difficult to reflect the specific functions of the product; Finally, the progress of science and technology and technology so that more products have a multi-faceted function, to achieve the possibility of cross-border use, such as smart charger can also have the function of flashlight and clock, modern smart phones are a set of many powerful functions in one of the intelligent information processor, which also leads to people's functional cognition and development of the product is not comprehensive enough, it is difficult to directly judge its function from the appearance of the product, it can be said that with the product shape and form of the increasingly simplified, People's ability and experience to perceive products through morphological language is gradually deteriorating.

1.2 Dilution of the relationship between product form and operation behavior

The important guiding ideology of modern design is that the form follows the function, the form reflects the content, and the product form uses specific material materials and artistic language media to determine the appearance, size and color of the product to convey specific product information, functions and other content. Advocate the form and shape of the product to focus on the product design concept and function, the biggest benefit of this design concept is the directness and simplification of the expression of basic information such as product functions. However, the development of modern technology has prompted changes in the correlation between the morphological attributes of the product and the behavior pattern of the person, such as wired or Bluetooth headsets have changed the traditional power-up mode, so that people can answer the phone almost in any situation and continue their own things at the same time, distracting the user's attention at the same time The lack weakens the correlation with traditional telephone gestures.

1.3 Emotional transfer caused by changes in product form

In most cases, product semantics are an important carrier and means to carry the designer's ideological and emotional factors and product connotations, which guides users to associate or explore the direct or indirect emotional experience and aesthetic pleasure expressed in the process of product use. In product styling design, designers will use various symbols, metaphors and anthropomorphic techniques to optimize the product form, through the form, method of the product or the words and marks printed on the product, convey the use, usage and origin of the contents. Let consumers see at a glance.



Figure 1 “Hey, Milk” milk carton packaging design Li Guanru 2015

As shown in Figure 1, the designer adopts a bionic technique in the design of the milk packaging box, using the structure and graphics, color to simulate the image of the cow, highlighting the product information of “pure milk”, consumers can directly obtain the “cow milk, drinks, drinkables” and other related information. The whole product shape design three-dimensional sense is prominent, especially in terms of morphological design, the cow face image and the octahedral structure of the packaging box are organically combined, the folded corners on both sides of the top simulate the ears of the cow, the product surface shows the texture of the cow’s hair on the graphic, and the black pattern and notes of the cow are reconstructed to increase the interest of the product shape and packaging. It also implies the quality of the product. Such a unique product design is obviously different from the traditional milk packaging, with good personalization and differentiation characteristics, in the shortest possible time to attract the attention of consumers, increase consumers’ good feelings about products with special shapes, enhance consumers’ willingness to buy, the beautiful product form and people’s emotions and concepts in a certain period of time to relate, such as when it comes to pure milk, people’s first reaction is “nutrition needed for growth”, It reminds people of the good old days of drinking nutritious milk as children, carrying the childhood days of the past.

For the product, the rich functions and experiences will undoubtedly make the product have more abundant emotional expression, but this diversified means will prompt consumers to ignore the appearance of the product and the transfer of form and emotion, which is manifested in two major aspects: First, the rich and diversified sensory stimulation brought by multimedia information technology will prompt users to rely on external media, that is, addicted to the novelty and high-end sense of technology itself, and it is increasingly impossible to make it from this surface, Fast-food and endless oceans of information and technological forms are extracted; Second, the sensory stimulation brought about by excessive use of high technology will increase people’s perception of the heavy taste and strong senses of the product, obsessed with the curious sensory stimulation brought by the product, and ignore the thinking and appreciation of the product form and function, more is difficult to get the aesthetic pleasure and enjoyment of the beauty, more deep emotional experience gives way to superficial, exaggerated sensory stimulation. For a long time, under the stimulation of intelligent technology, people will be more and more looking forward to the colorful “flower world” displayed after the use of products, and they are indifferent to the form and shape of the product, and it is even difficult to obtain formal beauty from the product form.

2. Based on the integration of intelligent information and product form and shape design thinking

It must be admitted that we cannot stop the pace of science and technology moving forward, nor can we stop the flood of a large

amount of information rushing to people, let alone eliminate the far-reaching impact and change brought by information technology to social life and product industry. But just like the acceptance of new things and the inheritance of old things, the emergence of new things is born from the demise of old things, only dialectical thinking about the relationship between intelligent information and product form design, and the impact of intelligent information technology on product form design is viewed and handled at the correct measurement scale.

First of all, the inevitable symbiosis between intelligent technology and traditional experience, the emergence and development of intelligent technology can not completely replace traditional experience, nor can it eliminate people's traditional empirical cognition. It is true that intelligent technology has created an unparalleled diversity of experiences for human life and improved people's lives, but human experience and culture are an important measure of the development of science and technology. Completely abandoning the past product design concepts and knowledge and purely pursuing scientific and technological innovation and the sensory stimulation brought to the audience will only become the slave of the hunting psychology. Traditional design concepts, modeling means, the choice of material media, the setting of functions, etc., are conducive to the good life experience and emotion through product production behavior to achieve inheritance, the replacement of rapid speed of information age products can bring people a huge amount of information and novel experience, let people indulge in a "fast food era", people began to become anxious, manic and depressed, urban fast-paced life prompts people to no longer be willing to invest a certain amount of time to understand the product, Get acquainted with the people around you; Although the traditional concept of creation has a slow rhythm and pure function, it allows people to have time and opportunity to ponder and appreciate the formal beauty and profound meaning of the product, and the beautiful and rich product form not only makes people intuitively feel the beauty of the shape and design of the product, but also can carefully understand the aesthetic ethics brought by the design, and understand the ideas and emotions and concepts transmitted by the designer.



Figure 2 Primal Pottery Danish potter and designer ole Jensen

As shown in Figure 2, the creative clay pots designed by Danish designer ole jensen represent a natural fashion that returns to the charm of logs. Each clay pot has been given a unique shape, using anthropomorphic design techniques to add “legs”, “ears” and “eyes” to the clay pot, using original clay through modern industrial design and traditional handicraft (clay sculpture). The combined approach creatively solves the problem of product modeling. Nordic designers generally oppose the excessive use of industrial and mechanical wind, oppose the suppression of human nature and personality in the mechanical age, pursue and advocate original nature, and use natural materials to maintain the innocence of product shape. Especially in the product shape using simple geometry, to create a simple, high-class and natural feeling, it retains the original organic form, natural color and texture of the material, the use of humor, ethereal and dexterity to weaken the design of the cold emotionless.



Figure 3 Hiroshima chair

Another example is the Japanese design master Naoto Fukasawa design work Hiroshima chair, which is a traditional craft full of harmony, softness and elegance, the Hiroshima chair shows honest materials and subtle warmth, the whole product shape is simple and capable, the table legs are 45 ° tendency, bringing a balanced and symmetrical beauty. Using advanced technology harmoniously in the production process, the entire armchair seems to be hand-carved from solid block wood, giving a sense of innocent handmade naturalness. The texture and color of beech and oak preserves the natural original texture and gives the chair a fresh feel. As an excellent design master, Naoto Fukasawa always pays attention to the small details of life and thinks about people's lives. For example, the multi-functional waste paper machine he designed, he pointed out that there will always be errors in printing, and the paper waste caused by printing errors, missing content or layout errors cannot be handled, for which he directly designed as a simple device with a paper basket at the bottom of the printer, which can easily crush the waste manuscript to avoid unnecessary trouble. Naoto Fukasawa once said: "Design is actually to find the core of consciousness, and when people, things and the environment reach perfect harmony, it is to find the core of consciousness."

Just as the experience provided by Japanese and Nordic design in the past, their careful screening and elimination of the material medium of the product, the preservation and admiration of natural forms, and the inheritance and love of traditional handicrafts have allowed them to occupy a place in the impetuous process of modern industrial civilization, just like a clear current in the bustling world, which is an important guarantee for the inheritance of aesthetic traditions.

Secondly, product design undertakes the important mission of humanistic emotion and aesthetic concept transmission, product is the result or product of social production, it is the designer using a certain material medium and artistic language through design conception and creation, the main and object formed in the mind unified image materialization, to create both aesthetic and use of the function of the object 。 Information products integrate functions while also gathering the user's emotions and cognition. At this stage, the development of the Internet has broken the restrictions of people's communication time and space, changed the way people communicate with each other, but at the same time as bringing convenience, people's social relations have gradually become cold and distant. It is no longer like the direct face-to-face communication in the past, even if the restrictions of time and space communication are broken, it has never been able to narrow the distance between people's hearts. Therefore, from the perspective of design, designers undertake the mission of injecting ecological design and humanistic emotions into products, and advocate and continuously innovate scientific design concepts that are conducive to the healthy development of people's physical and mental health.

3. Conclusion

Japan's famous design master Kenya Hara once put forward this view: "Contact with elaborate design can awaken the underlying consciousness, and people's desires will also change, along with consumption and resource utilization, and even lifestyle changes." "Indeed, the essence of product design is not only to meet the needs of consumers for a certain function, but also to cultivate people's desire for a better life, facilitate and optimize people's daily lives, and designers in the new era must constantly innovate and innovate." Product form and shape, establish new aesthetic laws to meet people's needs for a better future life, and integrate personal rich and diverse emotions into the product, so that the recipient has a corresponding emotional response and resonates. Product design is the designer's attitude to life, designers through the design and construction of product modeling form, convey their own aesthetic concepts and emotions, build a communication bridge between people and society, between people and things, and between people.

References:

- [1] Sun Zhaoyang, Liu Jihong. Expression of design intent in design thinking process model [J] Journal of Mechanical Engineering 2009(08).
- [2] Zhang Yingzhong, Luo Xiaofang. Research on meta representation of design intent [J] Computer Integrated Manufacturing Systems 2010(07).
- [3] Jiang Lili, Li Yan, Li Wenqiang, Xiong Yan Product conceptual design expression model based on multiple perspectives [J] Computer Integrated Manufacturing Systems 2014(05).
- [4] Yang Yanpu, Liu Qiong Product form design method driven by design intention [J] Computer Integrated Manufacturing Systems 2015(04).
- [5] Feng Nian. Discussion on Digital Media Expression in Product Design [J] Modern decoration (theory) 2015(05).
- [6] Liu Limeng, Zhang Bangao, Tan Runhua. Research on the Generation of Fuzzy Front end Innovation Imagination of Multi method Integration [J] Journal of Mechanical Engineering 2017(15) .

About the author:

Jian Xu (1981.11-), male, Han nationality, native of Taixing, Jiangsu Province, Associate Professor, Master degree, Taizhou College, Nanjing Normal University, major: Visual communication design, research direction: Regional cultural Innovation design.