

Analysis of Time's Influence on Change Regarding a Products Manner of Use

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Abstract – This paper proposes a specific definition for the manner of use and deeply analyzes the relationships among the way products are used and their changing design concepts in a bibliometrics method. Besides, the characteristics of how a product is used, the core element of industrial design and the medium of interaction between users and products are discussed from the historical perspective. Finally, it concludes that products' manner of use is the consolidated manifestations, which accomplish the usage and the emotional reflection of products with the analysis of the characteristic of times and the development of product design. The purpose of the research is to introduce the significance of manner of use in design process and design cognition. Authors try to establish a conceptual framework for further study on manner of use design and develop the theory of arts of design research.

Keywords – Manner of Use, Emotional Reflection, Interactive Behavior, Characteristic of Times, Industrial Design, Nature of Design.

I. INTRODUCTION

Industrial design has been around for more than a century, of which the development has always been related to many disciplines, such as architecture, mechanics, computer science, art and so on. However, the nature of design is an important factor that can obviously distinguish industrial design from the other disciplines, which is to design the manner of use (Han and Hu, 2005). Due to changing times, design content and object have undergone gradual transformations too. Does the nature of design vary with the design content? This paper will focus on the way products are used and the influence of social evolution.

II. MANNER OF USE

The earliest record of human culture is originated in stone. Similarly, design was born in stone (Li, 2005). Human beings underwent a stage, evaluating from the use of natural wood to stone tools when they evolved from apes to human beings. As complex and intelligent human, they tended to utilize these tools in a better way (Xu, 2010). In order to achieve a special intention, the earliest object manner of use was generated from a simple touch and an operational behavior of human with the selection utilized natural wood and stone tools. When natural wood and stone tools couldn't meet the further demands of human beings any more, the complex and intelligent man would reform them or create a new tool. Thus, design and culture emerged gradually with the creation of artifacts

(Simon, 1996). In fact, manner of use existed before the birth of design as a presentation form of the behavioral beauty on human labor and an internal factor which drives design development. After the industrial revolution, people manipulated machines and had to think over the interaction between man and machine so as to accomplish work more efficiently and comfortably. The behavior process of human interaction with machines was the manifestation of manner of use during the industrial age.

Some scholars have provided kinds of explanations for a specific concept on the manner of use. Donald Arthur Norman stressed that the only important measurement for a product is how well it performed and how comfortably when people used it. The design should be based on human-centered design to avoid user frustrations (Norman, 2012; Zhang, 2011). Norman illustrated the importance of products manner of use by studying users' satisfaction. Feng Yi described manner of use as a specific form that users interact with products for their needs in a particular environment (Feng, 2006). Su and Yang illustrated products manner of use is the manifestations of interaction between human and products, and are decided by both interactive sides and affected by their environment (Su and Yang, 2013). Overall, this paper defines manner of use as a comprehensive manifestation of interactive behavior. It occurs when people use an object and also allows users to perceive an object's features and formal beauty. The core of manner of use is to create an interaction between products and users, and convey the products' technical and artistic beauty to users at the same time.

III. PRODUCTS MANNER OF USE AND DESIGN CONCEPT

Although 150 years the history of industrial design is, the concept of design has been changed several times with social development. First, the period, which was dominated by industrial production after the industrial revolution, focused on utility and functionality to meet people's physiological needs and the lifestyle of industrial society. At that time, the main purpose of product design was usability. Second, a variety of new technology and materials trickled in the leading era of market economy (from 1950s to 1960s). Because of the plentiful supply, industrial design transferred from basic functions to multiple demands, that is to say, products should be useful and pleasurable. Third, industrial design aims to lead users' experience of full service design. The theme of design, therefore, went beyond product features and shape, and turned into worth and use later during the leading

times of information technology after the 1990s. In fact, the above concepts in three dominant eras correspond to the three levels of product design, namely instinct, behavior and reflection, which are raised by Dr. Donald Arthur Norman to a certain degree. However, it only provides the direct function for use on the instinctual level, rather than the emphasis on function, accessible, ease of use, and the feeling of products on the behavioral level. Users play a so vital role in product design that designers should pay more attention to the emotional experience that is conveyed via the use of products on the reflection level. The product itself does not change too much, but new technology and material are always promoted by experts when the design concept turns from instinct function to human generosity behavior, and to emotional experience reflection. What industrial designers attach to products is its creative manner of use in user interaction (Yang, 2003; Zhou, etc, 2011), distinguishing themselves from artists and engineers. Overall, in the function leading era, people had to adapt to products and neglect the importance of products manner of use; then design required products to meet the needs of human beings and to create a new manner of use in the consumption culture period; finally, in information times, designers use different styles of users' experience to achieve emotional reflection by the creative usage of products. To sum up, products manner of use represents a figurative expressionist form of the abstract design concept.

IV. THE TIMES CHARACTERISTICS OF PRODUCTS MANNER OF USE

A. Artifact Design and Manner of Use before the Industrial Revolution

Anthropology shows the evolution from ape to human. Actually either apes or humans began to realize how to complete a task with natural wood and stone tools successfully before human civilization. Since the earliest times, chimpanzees could insert into caves with small twigs and dig for ants to eat, and early humans learned to use wooden sticks or sharp edges of stones for defense or digging later. Then, rough stones emerged during the Paleolithic. For example, OlduvaiCanyon choppers in Tanzania (showed in figure 1) are one of the earliest stones which were made and used by humans nearly 200 million years ago. From the age of apes to the Paleolithic, the products manner of use is the particular intentional behavior that humans improved external objects to meet basic survival needs. Since there were kinds of troubles with using the raw natural wooden and stone tools, they began to explore further-improved natural tools so that they could be adapt to harsh circumstances better in a more comfortable way. Therefore, the appropriate tools manner of use is a milestone in the history of creation .It marked the birth of design and culture. It is worth mentioning that products manner of use, which belongs to survival design scope in Paleolithic, is a manifestation of social working beauty.

Second, the diversity development of stone tools completely satisfied human's basic survival needs when human society developed into polished stone in the Neolithic. However, as psychologist Abraham Maslow proposed in 1943, a pyramid of hierarchical human motivational needs: once the needs of the first level are met, humans will pursue higher-level requirements (Zhang, 2011; Taormina and Gao, 2013). Figure 2 shows the stone plate unearthed from Pei Li Gang in Xinzheng prefecture, Henan province, which was used to make processed food for civilians originally. This stone is a processed stone plate, which was manufactured after repeated practice on a variety of stone tools by original inhabitants. In fact, there was no long oval stone plate in earlier food processing since people were often scratched by sharp edges when stone tools are used. Given the users' security, the long sleek stone rods was altered or manufactured from the rough stone in early times. As a result, a new behavior manifestation form was accumulated and discovered to guarantee the security, which indicates a period that manner of use design is a part of the security attributes of design category.



Fig.1. Olduvai Canyon Choppers



Fig.2. Unearthed Stone Plate

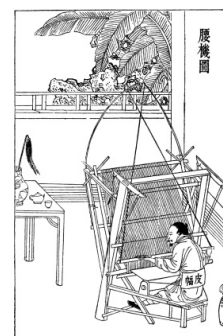


Fig.3. Waist Machine Diagram

When comes to the farming civilization stage, folk production tools are another kind of labor creativity, combining the technical with artistic beauty of manner of use. Figure 3 shows the waist machine from "Heavenly Creations" (Song, 1976), a complex product, which has a decorative aesthetic shape and a special manner of use. During a production process, farmers always run into various problems with tools inevitably because of the deficiency in manner of use. Therefore, it led to the production of tools' frequent transformation up to well-formed. It is the case for the Literati Class with daily necessities – they would turn to craftsmen for a better manner of use. Sometimes they would study the manner of use from folk arts and craft as well. Consequently, the design creation motivated by social property needs on manner of use could be classified into to the social attribute of design category.

B. Products Manner of Use after Industrial Revolution

The development of design was deeply influenced by new technical and production methods of the industrial revolution from the middle 19th century to the beginning of the 20th century. Designers attempted to establish a language process of product's beauty in order to adapt the new technical and production methods. This exploration aims at building appropriate relationships among new technologies, new inventions and human usages, and seeking a proper manner of use for technology at the same time (Sangelkar, etc, 2012). Afterwards, great quantities of mechanical products were produced to liberate the labor force in mass industrial production. Most of them preferred to utility functions on the principle that people should be adapt to the product's features. As a result, industrial products cause great inconvenience to workers inevitably. Manufacturers must address them and recognize the necessity of improvement. Moreover, customers choose the products from market according to the functions at first, but they would decide whether to continue use and recommend to friends or not based on its manner of use. Thus, market sales served as a way of feedback for products' specific problems back to the manufacturer. To deal with it, industrial designers were employed as factory staff to solve the operating problems that occurred during the using process. The new design, the continuation of human basic physiological and living needs, embodies the function-oriented innovation adequately. Designers did not have to take manner of use into consideration during the design stage, but to improve it gradually in accordance with customers' feedback.

Due to the prosperity of the commercial economy, the functional use of products gets blooming after World War . They began to pay more attention to emotions during using process. The designs focused on human usage habits and meeting human demands (Liangxing Su and Zheng Yang, 2013), that is, human-centered design of a product's manner of use. Although material products still exist in the market, manner of use for traditional products have changed dramatically with the emergence of information technology in the 1980s. A good example is interactive

user design that has developed into virtual reality. Meanwhile, the manner of use transferred from tangible to intangible, which means, the medium of manner of use would not be just limited to material products and people would not have to interact with objects directly. Therefore, it is the needs of user experience by manner of use in a virtual reality environment that drives the birth of new areas of industrial design – interaction and experience design. In addition, customers not only buy the products' functional manner of use, but also desire for the emotional reflection from manner of use.

Overall, before the industrial revolution, the development of object design is an instinctive and interactive behavior that occurred between human and objects for survival, security and social attributes. The problems and faults during interactive behavior processes contributed to the transformation and manufacturing of design, which made it possible to approach to technical and artistic beauty. It is concluded that manner of use influences design development through product modeling, just as internal reasoning to external reasoning. Design shift its attention from "objects to human" to the relations of human and objects in terms of the operative behavior problems between users and products in different circumstances and times. What is more, operational behavior influenced the representative material form of design, which motivated the evolution of design tremendously.

V. DISCUSSION AND CONCLUSION

Although the concept of industrial design is gradually improving its elements with the changing times, the products manner of use has always been an eternal theme. Products manner of use existed much earlier than design, serving as a catalyst to speed up the emergence of new designs. Product design takes attention to satisfy human demands eventually. Here, human needs refer to the behavior of users' particular desires (Taormina, etc, 2013), which transfer to psychological motivation and carry out according to the purpose. The behavior translates into products manner of use, embodied human interacted with objects in specific details in life. Manner of use is the source of particular semantics of products and the starting point to develop products in their concept stage. It is the representative form of interaction between users and products, and the process medium to accomplish the function and value of products as well. As the core element of industrial design (including tangible product design and intangible service design), manner of use is the final form to achieve interactive experience between users and products. Therefore, no matter how the times change, manner of use always is the nature of industrial design (Han and Hu, 2005), the experience to achieve product satisfaction and sustainability, and the origin of design which is so significant to be studied by designers.

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