The Application and Research of Green Design Concept in Information Art Design

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Keywords: Green Design; Information Art Design; Sustainable Development; User-Centered

Abstract: Combining the relevant developments and problems in the industrial age, aiming at the status quo of information art design in the information age, the green design concept guides the sustainable development of information art design. Based on the information theory basis of Shannon, it is proposed to use the principles and methods of green design to effectively express information and disseminate information. Linking the technical characteristics and aesthetic characteristics of the information age, the green design concept is efficaciously extended in the field of information art design and the humanistic care of the green design concept applied in information art design is proposed.

Introduction

In the history of human civilization in the hundreds of million of years, human beings and the living environment in which they live have inextricably linked. Elements in the living environment include: air, water, soil, plants, animals, etc. In the industrial society, many environmental problems arise. As early as the 1980s, there are scholars at home and abroad who study the concept of "green design" and make it developed and improved. With the advent of the information society, computers and the Internet brings unimaginable information to the ocean of information. The environment with the most human interaction time gradually transform from the biological environment and the physical environment into the information environment, that is, the way of using or facing the user, the model of acquiring, processing and storing information within the information environment. The information society with excess data, the hungry audience of information, and the series of information problems that follows will gradually indicate that the green design concept is important guiding significance in the sustainable development of information art design.

Green Design in the Information Age

Green design is an international design trend that emerged in the late 1980s and is first proposed in Green design, co-authored by Avril Fox and Robin Murrell in 1989[1]. It reflects people's reflection on the environment and ecological damage caused by modern science and technology culture-air pollution, energy depletion, global warming and other environment problems emerge one after another. In the context of various environment problems, "green design" is jointly proposed by designers, and its essence expresses the awe of nature. The green design means that in the life cycle of the product, the designer needs to fully consider the environmental attributes of product, such as recyclability, reusability, etc., in addition to product design. And these elements are regards as important considerations, and while considering environment protection, the functions, service life and quality requirements of the products should be guaranteed. Its core is the "3R" idea: Reduce, Recycle, Reuse. Green design requires not only the minimization of material and energy consumption, but also the benefits of environment protection, and the design of products and components to promote effective classification, recycling and reusing.

At the same time that green design was proposed, the rapid development of information technology promotes the transformation of material civilization in industrial society into non-material

civilization in the information age. After the industrial revolution, the design form of natural matter(such as soil, paper, plastic, etc.)as a carrier is developed into an immaterial form(such as virtual reality technology, graphical user interface, etc.), and the design is no longer an artist. Or the world of "craftsmen" such as designers, the universality of design and the popular form make everyone become the maker, communicator, processor or storage of information, and generation of information becomes easy and impossible to calculate.

After more than 30 years of development, the tremendous changes in society have not only bring huge impacts on the economic, political and cultural aspects inherent in human society, but also transform the design field into tangible field, and information design came into being. The green design in the information age should not only be used to reflect on the environment problems caused by people in the industrial production and life since the industrial era, but also to provide sustainable development thinking on emerging design forms, such as information art design. How to effectively apply the concept and method of green design in the field of information art design and avoid the recurrence of environment problems in the information age since the industrial era is an important dimension of information design research.

Elements of Information Art Design

The ontology of information art design is composed of three aspects: designer, information and carrier. In the earlier forms of design, most designers prefer to obtain information from nature, such as patterns and forms, and use natural matter as a carrier to summarize and convey information about life and work. 1962, the French archaeologist puduoma says in his research report that in the Stone Age of 25,000 years ago, a series of bison running analysis maps were found in the rock caves in the archaeologist remains of southern France. Humans try to capture the information record and spread of bison's form and movement. After the industrial revolution, artificial physical media represented by film, tape, etc. is produced, and the information dissemination factors of art design were greatly physics. After the birth of computer, the design form of computer-based carrier began to diversity, the design content change from two-dimensional to three-dimensional, and the information spread changed from static to dynamic. In the information age, the traditional carriers and expressions of various periods of history are integrated, and the expression of information design is increasingly dynamic, multi-threaded and interactive.

Looking at the design process, information design is not only a product of the information age, it exists in the history of various human society. In the information age, more and more design art forms are dematerialized. Information art design is considered as "image interpretation of concepts and a series of data". It is based on the concept of information visualizaiton and recombines information with re-creation.

The Necessity of Green Design in Information Art Design

In 1980, the American futurist Toffler's "the Third Wave" put forward the concept of "information circle". The concept shows that the ecological problems in the field of information science has been considered and paid attention. 1997, American management scientist Thomas H. Davenpont first proposed the concept of information ecology; in April 1998, the US Department of Commerce in the study report "the Digital Economy in the Emerging" shows the network links with Internet ecology. The problem of information ecology is fully explained as an emerging field of information research, which is received extensive attention and vigilance from relevant scholars at home and abroad. In the field of philosophy, the famous French literary theorist Epopoli Adolf Dana believes in the "Philosophy of Art" that the creation, development and extinction of all things have their inherent laws. "Because people are not isolated in the world: the natural environment revolves around him, human beings surround him, and the tendency of contingency and second sex conceals his original inclination, and the physical environment or social environment influences the essence of things. The effect of interference or solidification"[2]. In the information society, the environment that human beings face is not only the natural environment that cannot be calculated. The purpose of green design

is to save and protect the environment, emphasizing User-centered. This coincides with the basic principle of effective transmission of information in information art design. In the industrial age, the design bears the bridge function of technology and market and meets people's demand for technology in the form of products. Its "User-centered" design concept is indispensable." User-centered" design concept is indispensable , and it should have two meanings, one is to meet people's contemporary needs, and the other is to benefit human development in the future. Obviously, the previous design has been realized or partially realized in the format, but we have found a crisis in the latter [3]. The ecological crisis in the industrial age has affected the living environment of human beings. The field of graphic design and industrial design begin the transformation of the idea of "green design". In order to avoid the emergence of information society ecological problems of "first pollution, the governance", the application and research of green design in the information society should be one step ahead. On the one hand, it should adhere to the "User-centered" to meet people's demands, on the other hand, it should also guide the users to follow green design concept. This is more persuasive in the information society: information as a non-material virtual form can only be perceived through perception. This further confirms the importance of green design as a concept used in the design process and user communication. In his book, Dana scientifically clarifies the close relationship between literary art and the three elements of race, environment and age. The environment that Dana said has two levels of meaning, first, it refers to the natural environment such as geography and climate, and second, it refers to the social environment such as social and culture concepts and thoughts. In the information age, more and more people are facing the information environment. The design and application of green design in the information art design will be more perceived by human beings and thus have and impact on human society.

The Concept and Method of Green Information Art Design

Kevin Kelly, a representative of futurism, said, "the future is technical, but this does not mean that the future world will be a gray and cold steel world. On the contrary, the future guide by technology is a new one. Biological civilization"[4]. In the process of information design process and dissemination, guided by green design, the design can meet the needs of human beings as well as meet the adapt to the demands of the environment, called green information art design. Among them, the demands of the environment contain two meanings, one is the ecological needs of the natural environment, and the other is the sustainable development of the information environment. Green information art design is based on people, emphasizing people's own values, and paying attention to the ecological balance between people and nature, people and information, information and nature. "the ecological system generated by the integration of design behavior with the natural environment, social environment and cultural needs helps to meet people's labor and psychology while paying attention to the harmonious coexistence of human and natural environment"[5]. After the industrial age, environment problems occur frequently, and ecological problems in the natural environment attract global attention. In addition to the natural environment, the ecological problems in the information age should be paid more attention to.

Shannon, the father of information theory, as one of the representatives of information technology cybernetics school, together with Weaver, proposed the media communication processs model of information, namely information, coding, media, decoding, and uses. He believes that communication is not an accidental process, but involves various issues such as information transmission, coding, decoding, information redundancy and noise interference. Green information art design is based on Shannon's information theory. It minimizes the need for ineffective information, information fragmentation, and unnecessary information. It proposes effective transmission and sustainable development of information art design from the following three aspects: nature creates information, .

Nature Creates Information.

The natural environment, as a large and complex biological system, constantly produces a variety of information. However, the information generated in the natural environment cannot have an

important impact on human conscious and philosophy without the conscious intervention of human beings. In recent years, many artists use the natural environment as a carrier to design and express information, that is, earth art.

Figure 1. Qingsheng Zhu "Qishan"

In the past 24 years, Qingsheng Zhu continues to engage in an important artistic creation involved in nature in different time and space, that is, "Qishan Plan"(see Figure 1). "Qishan" is a creation in Qingsheng Zhu's maintenance of nature plan, located near Guilin, Guangxi Province in China. A beautiful hill becomes a bald mountain because of pollution from surrounding chemical plants. Qingsheng Zhu wants to paint the bald mountain as a warming to human disasters caused by natural environment pollution. This contemporary experimental art is devoted to nature. The carrier, even taking the natural environment itself as a work, creates information in the natural environment, and transmits the concept of green ecological design, which arouses people's awakening and thinking about the ecological environment. Qingsheng Zhu's art form makes art creation as artifacts to the natural environment itself. Through the paint mountain, it shows the natural changes, highlighting the information flow caused by human intervention in nature, and leading human beings to think about the ecological problems of the natural environment[6, 7].

People Creates Information.

Information design in the information age is no longer only in the physical form in the natural environment, but also in the information environment in an immaterial form. In order to minimize the ecological deterioration of the human nature, the information design in the natural environment should take into account a series of environment problems bring about by the design, production, transportation, sale, replacement and recycling of the material form of the design. Such as energy depletion, ecological pollution, global warming and so on.
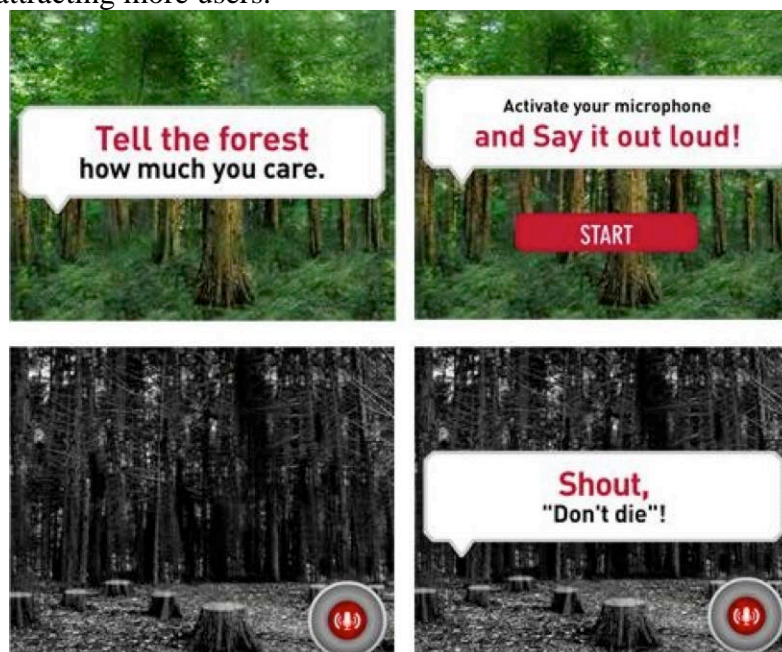

Figure 2. "Please Tell the Forest How Much You Care About"

In the information environment, information creation and transmission, information exists as non-material form, visualization as its important information art design method, there are three guidelines in visual language to help humans create and transmit information better. First, how to distinguish from other information; second, how to effectively transmit information; third, how to pass green information.

A fast food restaurant in the United States called "Bob's" promotes a hamburger wrapper that can be eaten directly, and used the Internet to place advertisements and videos in the forms of pre-publication to convey the concept of green ecology to customers (see Figure 2). After the customers learned of this new form, they go to the store and get the hamburger to be able to bite straightly and boldly. The wrapping paper is also edible. In this respect, the wrapping paper lost its original value. The implementation of this edible package can effectively reduce the amount of garbage from the root cause, and the logo information on the package could also cultivate the green concept of the audience. Edible hamburger wrappers fully embody the three principles of visual language, and short effective information promotes the 3R concept of green design.

Human-computer Interaction Creates Information.

After the advent of the Internet-based technology, the information dissemination and acquisition methods in people's environment have undergone major changes, and human-computer interaction becomes an important design and dissemination tool for information design. The essence of interaction is to structure the information in which aims to achieve more effective information transfer. Interactive advertising promotes the interaction between audiences and advertisements, to obtain advertising information, reduces the ecological loss of paper and materials in physic, what is more important is attracting more users.

Figure 3. Hamburger wrapper for direct consumption at Bob's fast food restaurant

This form is accepted and sought after by many users. "Please Tell the Forest How Much You Care About" is a interactive installation. The users interact with the advertisement through the microphone and calls for the resurrection of the forest with their own shouts (Figure 3). The louder the voice of the audience, the more images of the green trees that comes with it. This kind of human-computer interaction creates a form of information that is simple and interesting. It is an important way to realize the simplification and effective transmission of information, avoid redundant information, and change the trees in the virtual world through the information created by humans in the process of human-computer interaction. The way of life reflects the balanced humanistic care that green design advocates between human beings and nature.

Conclusion

Reviewing the human design process, the purpose of self-development and the neglect of sustainable development design work together create the glory of industrial civilization and the environment problems behind industrial civilization. In the history of the evolution of technology, human supernatural desires bring speed and enjoyment to human beings. The humanistic care and culture color of green design should not be erased. The human-centered design concept in the information art design should follow the true "wisdom", in order to build a more humane information environment for survival, in order to build sustainable development framework in the information society on which consider the knowledge and technical means at the same time. As an important wisdom, "green design" is demanded in the field of information design cause it emphasizes the value of human beings, and pay attention to the balance between people, nature and information.

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