STUDY ON DESIGN OF DYNAMIC INFORMATION VISUALIZATION IN THE NEW MEDIA AGE

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ABSTRACT

Dynamic information visualization design originated from the joint collaboration by various industries and also is the inevitable outcome caused by the development of technology in a certain stage. Knowing the changes and development caused by the improvement of technology, change of the times and ideas as well as other reasons is helpful to conclude the advantage of dynamic information visualization design.

Research on dynamic information visualization design can be conducted through the diversity of techniques of expression, the innovation and uniqueness of visualization effect. Because of the huge number of information contained in information visualization, it is necessary to collect and integrate information reasonably. In other words, the necessity is the dynamic, real-time, accuracy, effectiveness and hierarchical relationship of information when designing dynamic information visualization.

This paper introduces the distinctive advantage of dynamic information visualization which is obtained by the comparison with traditional media when spreading information in the new media age. Meanwhile, the paper points out that the visualization of information is realized by using more abundant and perfect information language and expression forms, which makes the spread of information more convenient, efficient and humanized, showing the advantages of new media when designing dynamic information visualization.

KEYWORDS

Information visualization, New media, Digitalization, Dynamic application.

1. THE CONCEPT AND CONTENT OF DYNAMIC INFORMATION VISUALIZATION

1.1 Concept of Dynamic Information Visualization

Information design is a crossed discipline which integrates design and statistics. It combines rationality and sensibility perfectly. Based on a study, it can be dated back to 2000 and software that is used to make dynamic information visualization [1]. With the software, many designers designed artistic dynamic information visualization and visualized the abstract information. It is a crossed discipline and linked with visual communication design, color psychology, statistics and so on. In other words, it is complex [2].

Visualization is realized by computer that generates a series of graphs and videos [2]. Visualization can be used everywhere and can guide designers. Information visualization is not only the stacking of data but also of significance since it can help people to better understand information and data. Meanwhile, guided by information visualization, people may be eager to get more knowledge [3]. Dynamic information visualization is a kind of visualization design in four-dimensional space i.e. the changeable information spread image in the motion state, including 4 main elements like reference material, sense of space, direction and speed of motion [4]. However, dynamic is one of the most important forms of information visualization in the process of information communication. Moreover, in

the process, the visualization of language form and information contains the general property of graphic design [5].

The visual design of dynamic information can be designed by the designer for the audience's preferences and habits, and the computer program can't do this [6]. It can be said that both clarity and effectiveness are taken into account in the presentation of information, but there is no specific solution to the aesthetic information visualization that attracts the audience and conveys the overall picture [7]. Dynamic information visualization design combines the professional content of graphic design, can better create a visual communication atmosphere, enhance the visual appeal and impact and influence, so as to dig up information after graphically shows the unique aesthetic feeling.

1.2 The Component of Dynamic Information Visualization

1.2.1 Expressive Visual Elements

According to a research, dynamic information visualization design mainly spread the information via visual elements, and that information can be converted to expressive visual language [8]. The substantive purpose of information design is not simply to convey information, but to focus on the process of communication, which is how information is present to users. The visual elements of the design include graphic, color, data, character, and dynamic effect as shown in Figure 1:

Figure 1: The visual elements of the design include graphic, color, data, character, and dynamic effect (Image from: Design Surgery, Creative Agency)

(1) Graphics: reasonable graphics will simplify the content in charts and figures in visual sense, and vivid graphic language can play a decisive role to a certain extent. In the design of dynamic information visualization, we can use concrete graphics and abstract graphs respectively, and visualize the graphics to serve the content, and clearly and accurately convey the content of the information.

(2) Color: The color that conforms to the content of the information can easily distinguish the different meanings in the charts and figures: choose the color that is welcomed by people so as to convey the information smoothly when using color. Color is not only a decoration, but it is important to meet the needs of information content and express some abstract content which is not easy to deliver.

(3) Data: Concise and accurate data can make information charts more scientific and convincing, and the combination of graphics and data in information charts can make the effect too. The content of the information in the content of the size, height, and how much can be used to update the trend map to the audience. The corresponding data appears, and the text information content and the chart content further explain the data increase certain credibility.

(4) Characters: Characters should be used to describe the title and content of figures and charts since each chart or figure is them-oriented. Because the title of the text is different, it needs to be a simple and clear title, or an intuitive type of information to guide the audience's choice of information. The graphics and data information used in the infographic can clearly convey the information content, and the text can be minimized.

(5) Dynamic effects : Dynamic information visualization is a suspended dynamic phenomenon based on the principle of vision, and dynamic information visualization usually has a lot of static frames that are continuous and circulate at a certain speed. Most of the dynamic information visualization in the application of electronic media more extensive, dynamic information visualization is a process used for the development of the whole things update and continuous, can bring to the audience the enjoyment on the vision.

1.2.2 Sound Element

Study showed sound element can be added when designing dynamic information visualization. Voice is the sound wave generated by the object's vibration, and it is perceived by human's auditory organ through a certain medium, and it greatly activate the cells [9]. Can cause hearing organs nerve to distribute incoming information, it is the body of the second channel perception, hearing can more direct understanding of the content of the information transmission, so the voice also plays an important role in information in the chart.

As for the spread of information transmission, sound element is used in

electronic information charts, including sound effects, voice, real-time data and information broadcast. Sound main function is to optimize the content of a dynamic information visualization, information to highlight the theme of the graphic design and attributes, can join in the process of dynamic information visualization design of voice, convey to auxiliary information content [10]. In the real-time dynamic visual design, sound elements, but also play a decisive role, should according to the information, data, graphics, display media to voice for an overall planning and layout.

1.3 The Characteristics of Dynamic Information Visualization Design in New Media Age

From the point of view of design elements, the elements of information visualization design of dynamic generally contains both text and image dynamic expression. We are considering in the process of information transmission, not only consider the information transmission of dynamic visual elements itself, but also to consider the transmission elements in the process of information communication is the transmission of information on how to effectively, we need to make full use of the design thinking, should from the solid multidimensional perspective of creative thinking and creative works [11].

With the fast development of new media, dynamic images became a powerful design element and the dynamic image mainly focus on new media, like interactive advertisement, dynamic icons, electronic reading and propaganda and people-beatifying in radio and television station. Based on dynamic image of wide application in the field of new media, it has formed a new information dissemination art form with their characteristics, compared with the static information dissemination and graphic design in terms of both dynamic image better able to attract the public attention, as shown in figure 2 using new media technology to image the shape, color, size, and so on the changes of time is a good way to bring the public rich rhythm and visual experience of the movement, the feeling of the more comprehensive by dynamic information visualization design of aesthetic experience and emotional stimuli [12].

Figure 2: Visual design of dynamic information in new media (Image from: Yuan Ren, ART DATA LAB)

Dynamic image in new media is based on computer technology, information technology and information visualization design of those three pillars of the combination of science and technology, it has, the typical technological and time changed people to accept information degree and aesthetic experience of information, information in the process of transmission because of the dynamic performance of the way and become vivid and more easily accepted by the public and understanding [13].

For future development of dynamic image should to have their distinctive characteristics and personalized development, make the design style of information dissemination showed diversity, to the masses better and update all visual experience and enjoyment.

2. APPLICATION OF DYNAMIC INFORMATION VISUALIZATION DESIGN IN NEW MEDIA COMMUNICATION

2.1 Optimization of Dynamic Information Visualization in the Dissemination of New Media

2.1.1 Visual Physiological Optimization

The dynamic symbols and elements have a strong visual appeal. It will be more vivid, visual, three-dimensional, and full of vitality. At the same time, it will cause people's unconscious attention and observation, leading the process of sight. Information visualization in the design of dynamic and static design in comparison, the difference is not only a good processing plane of the elements of the visual information forms, reasonable arrangement of well between each element in the form of its own, but also to consider the visual elements in a space of the image, the rhythm of movement and mastering time line transitions between these different pictures [14]. With movement route and movement process of information element, the vision will be attracted people's attention and, to make people better integrated into the information transfer process, arouse people's psychological reaction and emotional communication.

2.1.2 Information Dissemination Quantity and Effect

Dynamic information visualization design is a multimedia information arrangement composed of multiple screens and multiple elements. Compared with the propagation of information in the general static plane, it has great advantage in the process of information dissemination in terms of vividness and information bearing capacity. The study found that people's acceptance of information in the process of information dissemination is not unlimited, but rather limited, as shown in Figure 3 with concise and clear features design information will be more easily accepted by people, but also easier to get people's favor Dynamic information visualization design distributes information on different screens, and finally consists of multiple information screens combined to allow people to receive information in a state of maximum ease.

Figure 3: Information dissemination quantity and effect (Images from the network)

Dynamic information visualization design was originally designed because of the different screen carriers. The dissemination and dissemination of information has unique advantages in online media or mobile media in terms of wide coverage, fast dissemination, and long propagation cycle. This is more in line with the requirements of information dissemination in contemporary fast-paced life.

2.2 The Advantages of Dynamic Information Visualization Design

2.2.1 The Artistic Expression of Dynamic Information Visualization

In the process of information transmission of dynamic information visualization, the performance at the artistic level is mainly reflected in the non-linear editing of different elements. Based on a study, the technology is a new type of integrated information technology that combines the features of different fields [15]. It is composed of traditional television and modern computers. With the improvement of computer hardware functions, the quality of video has gradually improved. This non-linear editing technology has gradually become an important element in the visual design of dynamic information. For expressions of text and images, videos have more vivid expression capabilities. The visualization of dynamic information combined with video, audio and text can carry more information and improve the efficiency of people's acceptance of information.

Adhering to the principle of aesthetics, a design is bound to experience the functional practicality to the art aesthetic from the beginning to the end and finally becoming an excellent work. The objects and buildings that we normally come into contact with and see in our lives are based on satisfying the most basic functionalities, and then we begin to pursue our own aesthetic and unique art forms. The same is true for new media. With the satisfaction of basic media functions brought by new media technologies, new media arts will follow. In the design of new media, we also see more and more expressions that tend to be artistic. When the media technology provides complete possibilities for the successful display of dynamic information visualization design, and the technology is no longer a barrier to design communication, we should also present it

Information in all fields needs a better way for the general public to understand and charts are undoubtedly one of the best ways to spread. For example, the medical industry needs to transmit information on various devices, drugs, and food safety. Enterprises need to transmit various financial and administrative information. The industry needs to transmit the use of various products and technical information.

Although a firm commercial position has been established, there are still some theories that need to be supplemented and improved in the dynamic information visualization. Only in this way can we manifest our advantages in the commercial competition and make us invincible. It is not difficult to find that the dynamic information visualization is a process of using various logic relations to deduce some stream of consciousness through dynamic images, so the basis of the principle is difficult to complete induction. With the recognition of dynamic information visualization and continuous improvement of the research team, there will soon be sound theories to support the design of dynamic information visualization.

Most of the traditional dynamic information visualization is based on text and graphics for information transfer, and the text content is rarely summed up with symbols. This form of expression will make the dynamic information visualization slightly thin. This obsolescence is the visual design is clearly eliminated by the development of the times. Nowadays, in the era of complicated information.

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Figure 5: Information visualization requires vivid and interesting communication symbols.

As shown in Figure 5, many kinds of propagation symbols are needed, and lively and interesting communication symbols. Dynamic information visualization can attract the attention of the audience, and various kinds of communication. Symbols can also enhance the dynamic and interesting aspects of infographics.

When the audience reads the dynamic information visualization, they can easily obtain the required information, and the reasonable choice of the communication symbol is always through the entire dynamic information visualization. If visual symbols are used alone, marking the same visual elements at different locations and time will make the visual communication symbols single, making the dynamic information visualization table interesting. If we lose the diversity of such communication symbols, dynamic information visualization will lose its role, use reasonable communication symbols, attract audience attention, and be able to carry out the next association and application. The dynamic information visualization and the audience will produce a kind of resonance.

3.1.2 The Richness of the Spread

Dynamic information visualization mainly presents information in a visually mediated manner. The effect of communication is the reaction of the form of information graphics to the audience's brain, which is the role of perception. While pursuing the maximization of information dissemination, we need to keep in mind that both information and infographic design are for people. People's needs gradually shift from the material to the spiritual level. In the design process, designers often pay the most attention to the user's ability to obtain the information content they need. Therefore, the form of dynamic information visualization cannot be too simple.

The single form of dissemination affects the effectiveness of communication. People often say that the single form of communication is essentially the transmission of the media through audiovisual information, which in turn has an impact on the audience. It causes the audience to take an attitude in reading, in the perception of content, and in the change of post-reading behavior. More prominent changes. Throughout the process of dissemination, multiple forms of communication can allow more information content to be added to the chart. In addition, in the dynamic chart design, there is also interaction between the information charts and people. The audience gives a feedback of dynamic information visualization. A variety of forms of communication can attract and mobilize the audience to participate in the process of dissemination of dynamic information visualization. This will increase the credibility and persuasiveness of information.

3.1.3 Efficiency of Transfer

In the process of dynamic information visualization and transmission, the efficiency of information transfer is the core. The Internet opens up countless opportunities for people and breaks many barriers to communication. The traditional dynamic information visualization can only perform the fluctuation of simple data and does not change in form. Therefore, in the process of transmission, the audience needs to spend a long time looking for the required information, which greatly reduces the work efficiency. However, it is now possible to use non-linear editing of audio and video to enable the audience to quickly grasp the core of information and improve the efficiency of reading. However, there are certain deficiencies in the process of designing the information chart, which makes the process of transferring information content less efficient. In terms of the efficiency of recognition, such a communication method will decline.

The efficiency of information transfer is worth for the designer to ponder in the kind of macroscopic and microcosmic coexistence perspective. In the visual design of dynamic information, the efficiency of the dissemination of information is very important. As a designer, it is not enough to focus only on the transfer of content that is designed to be localized but should also be broadened to focus on the reading efficiency of information delivery. Dynamic information visualization design also requires the injection of efficient and interesting elements. Always pay attention to the needs of the audience, let people find the charm of the design itself, design can continue to move forward.

3.2 Reflections on the Design of Dynamic Information Visualization in the Era of New Media

3.2.1 The Transition from Commercialization to Humanism

In the era of digital media, people's mode of dissemination and communication of information is no longer the same as the mode of information dissemination in traditional media, and technology, personal computers, and smart terminals have been used in people's daily lives. With regard to information visualization design, when the basic functions and meet the general needs of the public for information, people's attention began to shift toward the psychological level and emotional experience.

Figure 6: Add Chinese elements to information visualization (The artist: PengYuan Zhao)

In the process of the development of new media, only to the public's psychological feelings and aesthetic requirements into the design, to create content and depth of information visualization design, such information in the process of spreading constantly to progress, not immediately replaced by other information. Most of the visual design of dynamic information will appear in the commercial market, and we will ignore the aesthetic value of the cultural behavior and aesthetic behavior that it can live in.

As shown in figure 6 artists in the dynamic information visualization design elements into the Chinese culture, people can very good enjoy the excellent profundity of traditional Chinese culture, at the same time under

the advanced technology of the new media environment, reflects our unique national culture values and aesthetic artistic value. Due to the change of development in the world slowly into a large global village, caused by different national cultural exchange and communication barriers are reduced, we can better create excellent publicity of information visualization excellent development of our nation's history and the current, increase of our national cultural pride and identity.

3.2.2 From Information Dissemination to Emotional Experience

With the development and popularization of dynamic information visualization design in the new media, the design and dissemination of information began to emphasize and focus on the emotional experience generated by the public in this process. People also pay more and more attention to the exchange of emotional experience in the design and dissemination of information. The unique and interactive nature of the new media provides the public with information that can be realized in the emotional experience process.

The communication of modern society is no longer restricted to the communication of words, and the rapid development of information visualization has made it convenient for people to communicate and communicate information. People are no longer just through newspapers, static image acquisition letter, under the environment of new media, people can have two-way communication and information, people don't like to have the right to refuse to their information and choose their favorite information, is no longer mandatory passively receiving information.

Dynamic information visualization visual communication design is no longer limited by these factors, information communication becomes more simple and easy, communication and understanding between people also become easier, civilization development and exchanges to promote more effectively.

4. CONCLUSION

This paper takes dynamic information visualization design as the research object. Through the analysis of the concept, elements and characteristics of dynamic information visualization design, and the analysis of the advantages of dynamic information visualization design, the existing problems of dynamic information visualization design are discovered, and the effectiveness of dynamic information visualization is proposed so that the design method is applied into practice.

With the intervention of new media technologies and the advent of the age of digital synthesis, the fixed stylized design has already covered the corners of the public's life. Information dissemination under the information visualization design can better exert the advantages brought about by technological changes. To make the design perfect and rich, the exchange of information becomes more humanized and aesthetically esthetic. These problems are all considered when we design and create. Different artistic forms and art types have also greatly changed the way of dissemination of information and the form of design. The development of new media technologies has provided a more rapid form of expression and design method for the promotion and development of information in the dissemination process of information. Making dynamic information visualization design have more ways to express and also providing more creative thinking for our design.

However, the emergence of new media allows us to easily rely on computer technology when it brings great convenience, resulting in the

loss of personal style and design creativity. Although the technical development has brought about a visual shock effect, it is just merely on the surface. It cannot communicate and resonate emotionally with the public. What a good design pays most attention to is the creativity of the design itself and the thoughts and connotations it wants to convey. In the development of media digitalization of dynamic information visualization design, we should make a better think about how to use the existing new media technologies to express the concept and transmission of dynamic information visualization design in a more plentiful manner.

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