Application Analysis of Computer-Aided Technology in Visual Aesthetics of Graphic Design

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Abstract. Any work involving design, art knowledge is the most basic. Every design industry you can think of, such as clothing, architecture, interior, plane, product, vision, web, etc., will involve related art, such as color, composition, proportion and so on. Most people more or less will have art related knowledge, professional can be expressed in words, the average person can see the color is not coordinated but can not say specific problems. All these show that visual aesthetics is a very important part of the design work. Graphic design is the art of modern science and technology, and art is to be achieved through long-term training and edification, not in a day. Therefore, with the support of current scientific and technological means, the application of computer-aided technology in graphic design visual aesthetics to help the appearance of the picture has become a common practice. Based on this, this paper discusses the application of computer aided technology in visual aesthetics of graphic design.

Keywords: Graphic Design, Visual Aesthetics, Computer-Aided Technology, Application

1. Introduction

In the process of graphic design, the reasonable use of visual elements can not only improve the aesthetic effect of the design work, but also ensure the economy of the work, so that the work can achieve innovation. Color, text, graphics and other elements are an important part of graphic design, but also the most basic visual aesthetic elements. Designers should pay attention to the combination of aesthetic elements in the design, which can more directly present the value of the product itself, bring visual impact to consumers, arouse consumers' desire to buy, and finally achieve promotion and marketing. And computer-aided technology can make the visual elements even more beautiful [1].

2. Graphic design under computer-aided technology
With the development of computer technology, the research and development of related computer-aided technology has made a breakthrough, the application in graphic design is increasing, and the application field is wider [2]. With the help of computer platform, designers can better display visual aesthetics in graphic design, and the elements of visual aesthetics in graphic design are increasing.

Generally speaking, excellent graphic design works must follow the design principles of visual aesthetics, among which the most prominent visual aesthetic principle is to use symmetrical and golden section elements in the design, so that the design works give people a good aesthetic experience in visual aesthetics [3]. The design patterns and shapes make people feel comfortable and harmonious. In graphic design, the position and proportion of the relevant design elements will have a certain impact on the visual aesthetic of graphic design works. With the help of the intelligent processing function of computer, the designer can construct and reorganize the visual aesthetic elements in graphic design scientifically and effectively, so as to achieve the goal of harmonious design and collocation.

3. Types of geometric aesthetics construction in graphic design

![Figure 1. Type](image)

3.1. Symmetrical aesthetic construction

Looking at all kinds of graphic design works from ancient to present, designers have always followed the principle of symmetry and harmony in design, using symmetry aesthetics in design, and making the design works reflect a harmonious beauty through accurate calculation [4]. For example, a large number of symmetrical patterns and elements are used in the design of architecture, clothing, daily necessities and handicrafts. By using computer aided technology, designers can construct symmetry aesthetics in graphic design works through computer powerful data processing and computing ability, which makes the symmetry of design works stronger and gives people a strong visual impact.

3.2. Aesthetic construction of golden segmentation point

The so-called optimal golden section ratio is 0.618 to 1. The designer applies the golden section proportion principle appropriately in the graphic design, through the reasonable division processing, realizes the better visual esthetics effect. In order to realize the golden section effectively, designers must use computer aided technology to ensure that the division is in place, reduce the error, make the design works more natural and beautiful with accurate golden section, give people a beautiful visual feeling, and obtain the ideal graphic design effect [5].

4. Main computer-aided technology software in graphic design
4.1. AutoCAD software

The designer needs to master the basic command of the AutoCAD software, the drawing, editing, display control of the two-dimensional line diagram and the three-dimensional entity diagram, as well as the dimension marking and graphic output, and combine the examples to quickly master the operation and application skills of the AutoCAD software. Through a variety of representative graphic design cases, designers should draw a complete set of construction drawings, such as plan, elevation, node, sample, section and so on according to the industry specifications, so as to learn the use of shortcut keys and improve the drawing efficiency [6].

4.2. 3d Max software

Designers need to master the operation skills of 3d Max software and its application in the field of graphic design, and master a variety of representative graphic design effect drawings and the drawing of common objects [7]. Through the software to draw their own design scheme into realistic decorative effect map.

4.3. Photoshop software

Photoshop software is a common image processing software, designers need to master the image processing, editing, channel, layer, path comprehensive application; image color correction; the use of various special effects filters; special effects word production; image output and optimization; and so on. Designers can flexibly use layer style, fluid deformation, bottom and mask to create a variety of image effects [8]. By learning the basic operation, tools and commands of the software, the designer is proficient in the application of the software for graphic processing and the post-production of the design effect diagram.

5. Analysis of computer-aided technology in visual aesthetics of graphic design

Graphic design pays attention to the design of geometric aesthetic vision, especially the harmonious and natural visual aesthetics of design aesthetic elements, which is the basis of shaping perfect design elements [9]. Based on visual aesthetics in graphic design, this paper discusses the system platform construction and auxiliary tools of computer aided technology.

As an auxiliary platform, computer needs to construct a perfect system framework in graphic design. First of all, we need to establish the input of graphics, and then establish each subsystem, in which the map analysis, graphics segmentation, auxiliary tool template, is the core of the subsystem. Moreover, the function construction of subsystem is mainly based on the visual and aesthetic angle of design.
elements. Moreover, the construction of digital processing function of the system platform, especially the proportion calculation, position control and so on, is the core part of the auxiliary technology. Finally, based on the construction of design elements, give suggestions and modifications.

5.1. Design element analysis

Especially based on the development of map analysis. Based on the input end of the graph, the design elements are imported into the subsystem, and then the element analysis of the graph is carried out. In the analysis of each element, the basic operation of graphics is improved to form a good map effect.

5.2. Geometric design platform

Especially the graph segmentation points, lines. In graphic design, we attach great importance to point and line elements. Through the computer-aided technology, the design elements of the line, point, good man-machine interaction, making the shear effect of the map more natural and beautiful.

5.3. Tool template

Graphics are "dead ", but computer-aided technology is" alive. Based on the computer standard auxiliary tool template, the map can be further analyzed. Based on the dynamic standard template, the cutting of design elements is more rhythmic and hierarchical, which plays an important role in the construction of visual aesthetics of graphic design. At the same time, scale calculator, area calculator and so on, are important platform to deepen design elements.

6. Application of computer-aided technology in graphic design

Designers can use computer-aided technology to make graphic design works to achieve higher visual aesthetic requirements. Computer aided technology can realize the automation and intelligent goal of graphic design by constructing system platform and providing auxiliary tools. The two most important links in the application of computer aided technology are the construction of system platform and the use of auxiliary tools. The former refers to the construction of a complete system framework on a computer, the establishment of a graphics input, the input of graphics data, and the construction of a subsystem with map analysis, graphics segmentation and auxiliary tool templates as the core. In addition, it is very important to do well the data processing function of the platform. Only by doing this well can we accurately calculate the relevant proportion and data and play a controlling role. At present, computer aided technology is more and more widely used in graphic design industry, which has many applications in advertising design, interior, map design, animation design and so on.
6.1. Application of computer-aided technology in 3D map design

At present, automatic 3D map generation technology has been applied to 3D map design. This technique not only allows computers to replace people, quickly merge multiple frames of 2 D of photos into 3 D, but also shows the sunken position of the building, such as the bottom of the canopy (figure 4), and can be clearly displayed as long as the object is more than 10 cubic centimeters. Stereo maps can be used for rescue work in remote areas, film stunts, etc., but attention needs to be paid to possible privacy violations. Create a square kilometer 3 D stereo map, need to take hundreds of thousands of photos, and then enter the computer to spell. Aircraft are used for large-scale shooting, helicopters for high-rise buildings, and drones for a particular building. The three D maps produced by Apple and Google (Fig. 5) consume a lot of manpower and material resources to input 2 D digital photo conversion data [10]. Automatic new technology allows computers to replace human input, a common computer can process 1 square kilometer of 3 D of images a day.

Depending on the new computer aided technology, the image has more details and realistic texture, such as the depression of the exterior wall of the building, the 3 images made by the current technology can not be displayed, and the new technology is clearly visible. Furthermore, the image of the new technology is quite fine, as long as the object volume is more than 10 cubic centimeters and 3 D maps can be displayed. 3 maps made using D new technology are available to the public, but there may be privacy violations.

6.2. Application and development of computer-aided technology in graphic design aesthetics in the future

Computer aided design, computer graphics, computer animation and games, virtual reality, visualization and visual analysis, electronic design automation, digital content and media and other related computer technology has been continuously developed, graphic design image recognition, virtual reality, geometric modeling and design, visualization, realistic rendering and so on can be realized, so that the graphic design effect has undergone essential changes.

In the future, computer-aided technology will develop towards the application of artificial intelligence in mobile terminal. Graphic designers in the visual art industry core technology at the same time. The field of mobile photography will also have the world's leading visual algorithms and core technical capabilities applied on various platforms, and continue to provide personalized computer vision solutions for more graphic design enterprises. Graphic design products and technologies under computer aided technology will also be widely used in smart home, smart finance, smart security, smart medicine, smart city, industry 4.0, self-driving, personalized customization, AR, VR and other fields. Related design works are ubiquitous in the field of electronic consumption and intelligent equipment.

7. Conclusion

Text, graphics and color are an indispensable part of graphic design, but also the most basic aesthetic elements. These aesthetic elements have visual impact, can enhance the artistic connotation of the design, reflect the economic value of the design. In the process of graphic design, designers must pay attention to the reasonable use of visual aesthetic elements, while playing the function of composition, but also to present the visual effect of the picture, so as to fully express the artistic value of graphic design.
Obviously, computer aided technology can help these technologies to better present, the future graphic design visual aesthetics and computer aided technology will be more closely combined.

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