Research on the Application of Computer Aided Technology In Graphic Design Visual Aesthetics

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Abstract. With the continuous progress of The Times, the traditional paper graphic design has been unable to meet the needs of graphic design, through the use of computer aided technology in graphic design visual aesthetics, can effectively improve the aesthetic sense of the work. In this paper, first of all, the visual aesthetics of graphic design and graphic design of the construction type and computer aided technology analysis, at the same time, the specific application of computer aided technology in graphic design, for the reader's reference.

Keywords: Graphic Design, Visual Aesthetics, Computer Aided, Golden Section

1. Introduction
With the continuous development of information technology, more accurate geometric design can be carried out in the field of graphic design through the use of computer-aided technology, which makes visual elements present more diversified effects. At the same time, the application of symmetry aesthetics and golden section aesthetics improves the overall aesthetic feeling of design works.

2. Overview of graphic design visual aesthetics
The first is aesthetic design geometry, in the aesthetic design geometry, the golden ratio is part of the content. The golden proportion exists in the nature, no matter for the seasons of plants, or the growth rules of animals, or even the various growth rates of human bodies, it can be explained and observed by the Golden proportion system. Secondly, the golden proportion is adopted in graphic design. Has a very unique performance, for example, after a AB segment is segmented [1]. Two stages, AC and BC, were formed, in which the ratio between AB/AC and AC/BC were similar, both of which were 1.618:1. From the theoretical point of view, the golden ratio is an infinitely close to perfect ratio structure. Finally, we have dynamic rectangles, where the golden ratio creates visual beauty, and there are several other elements that create visual beauty, one of which is dynamic rectangles. Theoretically speaking, the aesthetic design of the dynamic rectangle is based on unreasonable fraction ratio, for example [2]. After use, it can bring a kind of visual pleasure on the works. The golden rectangles and these rectangles are collectively called dynamic rectangles. Therefore, in graphic design, many designers use dynamic rectangles to combine with other rectangles.
3. Analysis of graphic design construction types and computer-aided technology

3.1. Types of geometric aesthetics construction in graphic design

3.1.1. Construction of symmetry aesthetics

Through reviewing all kinds of graphic design works through the ages, designers have always followed the design principles of symmetry and harmony, and applied symmetry aesthetics in their designs. Through accurate calculation, the design works reflect a kind of harmonious beauty. A large number of symmetrical patterns and elements are used in the design of buildings, clothing, daily necessities, handicrafts and so on. By using computer-aided technology, designers can construct symmetry aesthetics in graphic design works through the powerful data processing and computing power of computers, which makes the symmetry of design works stronger and gives people a strong visual impact [3].

3.1.2. Aesthetic construction of golden section point

The so-called optimal golden ratio is 0.618 to 1. In graphic design, designers properly apply the principle of golden section ratio to achieve better visual aesthetic effect through reasonable segmentation. In order to effectively achieve yellow segmentation, designers must use computer-aided technology to ensure that the segmentation is in place, reduce errors, and make the design works more natural and beautiful with accurate golden segmentation, so as to give people a better visual experience and obtain ideal graphic design effects.

3.2. Computer-aided technology analysis in visual aesthetics of graphic design

Graphic design pays attention to the visual design of geometric aesthetics, especially the harmonious and natural visual aesthetics of design aesthetic elements, which is the basis of shaping perfect design elements. Based on the visual aesthetics in graphic design, this paper discusses the system platform construction and auxiliary tools of COMPUTER-aided technology. System platform construction. As an auxiliary platform, it is necessary to build a perfect system framework in plane design. First of all, it is necessary to establish the graphics input terminal, and then to establish each subsystem, among which map analysis, graphics segmentation and auxiliary tool template are the core of the subsystem. Moreover, the functional construction of the subsystem is mainly based on the visual aesthetics of design elements [4]. Moreover, the digital processing function construction of the system platform, especially the proportion calculation, position control and so on, is the core part of the assistive technology. Finally, suggestions and modifications are given based on the construction of design elements.

(1) Design element analysis, especially drawing analysis.

At the base graphics input end, design elements are imported into the subsystem, and then the graphic element analysis is carried out. In the analysis of each element, the basic operation of the graph is improved to form a good picture effect.

(2) Geometric design platform, which is the point line of graphic segmentation.

In graphic design, point and line elements are attached great importance. By using computer-aided technology, the lines and points of design elements are interacted well with human beings, which makes the cutting effect of the picture more natural and beautiful.

(3) Tool template.

Graphics are "dead", but computer-aided technology is "alive". Based on the standard computer-aided tool template, the image can be further analyzed. Based on the dynamic standard template, it makes the cutting of design elements more rhythmic and layered

Secondary sense plays an important role in the construction of visual aesthetics in graphic design. At
the same time, proportion calculator, area calculator, etc. are important platforms for deepening design elements.

4. The concrete application of computer aided technology in graphic design
Designers can use computer aided technology to make graphic design work reach higher visual aesthetic requirements. Computer aided technology can realize the goal of automation and intelligence of graphic design by constructing system platform and providing auxiliary tools. The most important two 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 the computer, the establishment of graphic input terminal, the input of graphic data, and the construction of a subsystem with the core of map analysis, graphic segmentation and auxiliary tool template. In addition, it is also very important to do a good job in the data processing function of the platform [5]. Only by doing this can we accurately calculate the relevant proportion and data and play a control role. At present, the application of computer-aided technology in graphic design industry is more and more extensive, and it has more applications in advertising design, interior design, map design, animation design and other fields.

4.1. Application of computer-aided technology in 3D map design
At present, automatic 3D map generation technology has been applied to 3D map design. The technology not only allows computers to quickly merge and convert multiple 2D frames of photos into 3D instead of human hands, but also shows the concave position of buildings, such as under canopies (Figure 1), and can be clearly displayed as long as the object is larger than 10 cubic centimetres. Stereoscopic maps can be used for rescue work in remote areas, movie stunts, etc., but privacy issues need to be addressed carefully. To make a 3D map of 1 square kilometer requires taking hundreds of thousands of photos, which are then fed into a computer and pieced together. Airplanes can be used for large-scale filming, helicopters for high-rises, and drones for a specific building. The 3D maps produced by Apple and Google (FIG. 2) both cost a lot of manpower and material resources to input 2D digital photos to transform data. Fully automated new technology allows computers to take the place of manual input, and a typical computer can process a square kilometer of 3D images per day. The images produced by the new computer-aided technology have more details and realistic textures, such as the indentations of the external walls of buildings. The 3D images produced by the current technology cannot be displayed, but the new technology can be clearly seen. In addition, the new technology's images are so detailed that any object larger than 10 cubic centimeters can be displayed on a 3D map. 3D maps made with new technology are available to the public, but privacy issues may arise.

![Figure 1. Canopy bottom.](image-url)
4.2. The application and development trend 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 continues to develop, graphic design, image recognition, virtual reality, geometric modeling and design, visualization, realistic rendering, changed the nature of the graphic design effects. In the future, computer-aided technology will develop towards the application direction of artificial intelligence in mobile terminal. Graphic designers will not only master the core technologies of the visual art industry, but also have world-leading visual algorithms and applications in various platforms in the field of mobile photography. Continue to provide personalized computer vision solutions for more graphic design enterprises. Computer aided technology under the plane design products and technology will be widely used in smart home, wisdom, finance, security, medical wisdom, wisdom city, industrial 4.0, autopilot, personalization, AR, VR (FIG. 3 games bring VR visual effect), and related design works in the field of consumer electronics and intelligent devices are everywhere.

Figure 2. 3D map made by apple and google.

Figure 3. Game visual effects brought by VR.

4.3. Computer-aided technology realizes standardization of auxiliary line template in plane analysis

Another application of computer aided technology in graphic design is the analysis of plane images. The main operation is to import the flat image into the computer system, and through the computer system to set it at the bottom and lock it. This operation can not only guarantee the security and stability of the image, but also avoid malicious modification of the image by criminals to a certain extent, which further guarantees the rights of the designer. Another advantage of this operation is that
when the designer layers the template together, the different images will not be obscured or masked before. At the same time, computer aided technology can be used to determine the composition of the image after it is locked by analyzing the attributes of the image, so as to provide a judgment basis for the explicit coordinates of the image insertion point, so that the designer can grasp the numerical ratio of the image contour [6]. At the same time, the computer system can also provide modification suggestions by comparing the obtained numerical ratio with the golden section ratio. In graphic design, the standard auxiliary line can be used to analyze the graph according to whether the dividing line exists or not. The analysis process between the dynamic rectangular template and the normal rational number image is obviously different, in which the dynamic template analysis is much more complicated, and there are a lot of subjective factors in the judgment based on the naked eye. At this time, the use of computer aided technology can greatly improve the efficiency of judgment. During judgment, auxiliary line templates provided in the computer system, such as grid auxiliary lines, can be used for reference, analysis and judgment to reduce the influence of subjective factors. Therefore, computer aided technology plays a vital role in the visual aesthetics of graphic design.

5. Conclusion
To sum up, in the visual aesthetics of graphic design, the stability of pictures and visual sense can be improved by using computer-aided technology. Therefore, the development trend of graphic design in the future will increase the use of computer-aided technology, improve the quality of graphic design works.

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