

The application of computer aided design in art and design

Yafei Deng

Art Department, Yellow River Conservancy Technical Institute, Kai Feng, Henan, 475000, China

Corresponding author's e-mail: dengyafei@163.com

Received 1 October 2013, www.cmnt.lv

Abstract

The modern art design is the product of the combination of science technology and art, and it is a comprehensive discipline with all kinds of scientific cultural knowledge and art discipline combined closely, also the integration of science technology and art. Using the modern diversified thinking mode to study the application of computer aided art design in the field of art and design. Compared with the traditional methods of art design, computer aided art design has a lot of incomparable superiorities than traditional design methods of artificial, due to the improvement of design software which greatly improves the efficiency and accuracy of the drawing process. All stages of design can use computer software to complete; simple use computer knowledge to design software to complete the art design will come true. With the rapid development of computer technology, the 21st century has entered the era of electronic information, computer technology is widely used in various industries, and computer also played an irreplaceable role in the aspect of art and design. Computer aided design provides art designers an unprecedented form of expression of art. Compared with the traditional single set of art, the expression means of computer aided art design is faster, the performance of content present diversity, which is d

Keywords: data ware house, design process, performance, benchmark

1 Introduction

As the development of enterprise, traditional ERP, which is taking daily operating type handling as purpose, can't directly get the data needed by corporate executives, because data is extracted from different data sources. This phenomenon plays a restraining effect on enterprise management. As a result, enterprise needs an ERP system which is based on Data Warehouse and oriented analytical data to organize and present data as the demand of corporate executives [1]. This thesis introduces a typical case that a company applies the system based on Data Warehouse to the management.

In today's rapid development of modern science and technology, mankind has entered the era of knowledge economy and information network. New design pattern has appeared in our life, art design has become a comprehensive discipline integration of science technology and art. Along with the development of social economy and science technology of various disciplines mutual confluence, cross is its development inevitable trend. Modern art design is the product of the combination of science technology and art, all kinds of scientific and cultural knowledge are closely combined with arts, which have brought the profusion colour multivariate situation of art design field.

Using the modern diversified thinking mode; to study the application of computer aided art design in the field of art design is the important topic of art and design work. Computer is the foundation and the core of modern science technology. The human race have entered the computer age with the rapid development of computer technology. The application of computer aided design in the field of art and design has been more and more widely, such as

environmental art design, landscape design, modelling design, costume design, advertising design, industrial design, web design, film and television animation design, printing design have all be brought in the computer aided design system. Computer with its unique traditional manual and its function、effect and high efficiency that other work cannot match, has brought the art design field a new job type and visual shock. In colleges and universities, the computer aided design course has become a professional basic course for students majoring in arts design, as a new curriculum, how to make the application of computer aided design in art design teaching more effectively has raised the author's thinking.

Computer art design has interactive and the use of network media as the basic characteristics, including computer animation, film and television, advertising, online games, virtual reality, network, multimedia, digital photography, digital music, video and interactive devices and DV (such as digital video) as human creativity. The combination of science and technology industry has become the core of knowledge economy industry in the 21st century. Computer has the most direct contribution on bringing new modelling language and expression according to the characteristics of the computer structure. It is used to complete the design of more rational analysis, information storage, modelling tasks such as performance, which makes the designers more committed into the concept analysis, creative design, etc. The computer can make the design process visualization, the generation process of the image be effectively controlled, and the direct feedback controlled effetely, thereby eliminating the defects of the traditional photography tools. Storing the result of the change at any time in the design, you can go back to any point during the

progress of creation, the design of the creative process is no longer a one-way development, but the introduction of computer multidirectional repeated which do most of the rational works instead of designers. The human brain can't compare with the computer of the computing speed, it will soon transform the designer's creation intention into visual graphics, and the changes of colour, texture, lighting, form are also more convenient. Computer art design pays more attention to the operation of the computer technology, and the design art performance, especially the cultivation of the creative consciousness. The author found in in computer art design class, most of the students addicted to the computer technology, and completely ignore the design art creative class. The computer design software operation of the students are very skilled, but they lack the new form of ideas, and cannot show their ideas, or perhaps they have no ideas and no creative consciousness anymore.

2 The concept of computer aided design and art design

CAD (Computer Aided Design, CAD for short) is based on computer, peripheral equipment and its system software, including 2D graphic design, 3D geometric modelling design, finite element analysis (FEA) and the optimization design, machining programming (NCP), simulation and product data management, etc.

In October 1972, the international federation of information processing (IFIP) held "The work conference on the principle of CAD" in the Netherlands, giving the following definition: CAD is a technology, which is combined with computer as a problem-solving group, with close coordination, giving play to their respective directors, to make work better than each one. CAD is engineers and technical persons use computers as tools, to design, draw, and analysis and write technical documents on product and engineering these genetic terms of the design activity. Art design is an independent art discipline, it is different from the pure art, it develop accompanied with the development of social economy and science technology, and it is the cross and integration of science technology and aesthetic art. At the same time artistic design is a comprehensive strong discipline, it involves social, cultural, economic, market, science and technology, and many other factors, its aesthetic standards changes as these many factors change.

3 The application of computer technology in art design

The computer aided design soft wares are used not identical in different art design field. At present, the computer aided design application in the field of art and design focused on the following aspects:

A. Computer aided art design is the perfect combination of science and art.

With the rapid development of computer technology, computer aided art design is more and more widely applied in the field of art and design, such as industry, advertising, web design, animation, clothing, fabric and other art designs

they all design with computer aided design techniques. Computer technology has become an important part of modern art design, and has gradually formed art design application system with computer aided design methods. Computer aided art design method has updated the original representation of art and design. It provides the designers sufficient, efficient and comprehensive technical methods, and cerates the visual effect which traditional design can't compare with, it is the perfect combination of "science" and "art". The impact of computer art design is it not only finishes creation work more effectively, but also brings the art and design new style and language, having a profound impact on art and design work procedures and methods at the same time. Advanced computer technology expresses art design, art design promotes the development of computer technology, technology and art both complement each other and promote each other. Only be proficient in the operation of computer software skills, can performance art design perfectly. Art design needs creativity to be dynamic and creative inspiration comes from life, life is the source of creativity; inspiration is the soul of creativity. If we can inspire the creative inspiration of the life in time, use advanced computer art design technology to perform; the performance is more perfect than using traditional method. Computer technology can help the art designers complete design, calculation, drawing, data storage and handling such heavy jobs. Application of computer design works of art can show the designer through the graphics device, and is allowed to be change, update or create again. In the process of art design, making science and technology subject to the form of art and design, representation is as well as subject to the theme of the art design content, only the perfect combination of the science technology and art design, can fully show this new form and advantages of art design. The application of computer aided design can be seen in Figure 1.



FIGURE 1 Design sketch drawn by the combination of different computer drawing software

B. The use of advanced computer technology makes the art design reification.

After computer aided design technology get in art design field, the key problem is how to use the advanced technology and equipment for mastering art design. As an art designer, in the face of ever-changing computer

hardware and software technology, if you want to be a good designer. It needs not only mastering the computer design software operation skill, but also being familiar with graphic design software function, use the computer and art design graphic design software that can support the computer, applying the new technology, the computer as a new tool designed to make the art design. At the same time, it needs designer familiar with visual art design rule and creative practice, having high design quality and composition of high speed management ability, then design creative consumption by the application of computer technology. With the traditional method to carry on the design, plastic arts because of the restriction of the "hand", sometimes can't fully express the designer's design ideas. If using computer graphic design software to carry on the design, can make the designer's idea generation fully displayed, and make the design works achieve expected effect.

C. Develop the positive role of the combination of manual drawing and computer graphics.

Manual drawing and computer graphics are two different design methods; artificial drawing and computer graphics both have strengths and shortcomings. Complementing each other, carrying on art design combined with each other, giving full play to the respective special skill of artificial drawing and computer drawing, drawing and drawing. As in the design stage, record the creative inspiration and the inspiration of vivid, image into the design works, due to the quick, convenient, can be synchronized with thinking, application of artificial drawing sketches is more convenient. Therefore, in the process of art design pays attention to the combination of manual drawing and computer graphics expression method, can give full play to the manual drawing and computer graphics two advantages.

4 The significance of computer aided art design

The advantages of computer aided art design make a great change of the art design field, art designers do not have to use a single hand-painted representation with laborious like before, only need to through the convenience brought by the computer that can quickly design products, and verify the actual effect of expression products. And computer aided technology also has disadvantages, so the integration of computer aided art design and traditional hand-painted is the best way of the development of art design. View from the perspective of the practice effect of computer aided art, its development prospects, providing of art designer efficient, full, full ranges of new technologies, and the creative of incomparable visual effect that traditional art design cannot match, have achieved the perfect combination of "technology" and "art". Computer's influence on the art design not only performance on making art more effectively, also bring new style to the artistic creation, art and the design form is more and more rich. The development of computer technology provides the new conditions and opportunities for the integrated application of a variety of expression ways,

a new hot spot spring up continuously.

The artistic works using video, animation, interactive integrally to be created have enriched the arts, gradually evolved into a new area. The Internet has promoted the information transmission and provided people with a new kind of transmission media, and also created a new way of communication. Designers can make cross regional synergy creation on the Internet, art design and appreciations are no longer restricted by regional creation. Art design is the core of "people-oriented", which requires the designer should not only have good art strength, but also have good understanding on materials science, psychology, economics and other aspects of content. Computer aided art design, such as web design, requires not only the designer has the fine arts foundation, but also that the designer has the ability to apply the design language for programming, this is the essential skills for the development of dynamic, interactive web. Automatically by computer art design is an important part of the development of computer aided art design trend. The future development trend of art design is to bring people's thoughts, ideas, and creativity and computer intelligent programs together to design and create. Computer is synchronization in coordination with person's creative thinking, computer can design a variety of similar works according to the person's information, for designers to choose, can also expand, extend and improve people's ideas, receiving the improvement, update, and recreate information, design associate to create more excellent works.

A. Computer graphics technology provides designers with a new form of art.

Computer aided design opens up new areas of design, computer graphics technology provides designers with a new form of artistic expression, shorts the distance between the designers' creative and design work, it makes the property of the controllable of design, the method feasibility of design and the production of design work greatly improved. Not only can show the effect of all kinds of hand-painted, but also complete visual the effects through computer that hand-drawn, and the effect is more real and vivid. Because the computer have this kind of efficiency, accuracy characteristics, provides the designer a new art forms and performance space, thus develop the designers the creative potential, enhancing the efficiency of the design of the designers expressive force and work.

B. Computer graphics technology brings profound changes in art and design aesthetic and thinking.

In terms of design aesthetic and design thinking, the effects of the application of computer graphics technology has brought are profound. The development of ideological depends on the material world. In the middle of the 19th century, the emergence of the camera marks a new era of art. Corot is a typical painter did "rediscovery" in photography theme who had absorbed the photography into his traditional painting. His early works show the instant effect of interest were expressed completely in the impressionist works. In the 1860 s, the exposure time of photograph has shrunk to just a few seconds, even 1 second

exposure time, is also a big problem for the scenery. Such as the sway of leaves in the wind affects the light of photos and so on. Which will eventually make photos appear three obvious characteristics: the first one is the virtual shadow caused by objects move while exposure; the second one is feather halo effect due to strong light; the third is the combination of virtual spot and halo, which appears more holistic, make the picture more unified. It is just because of the combination of the two phenomena produced by the photographic techniques produce Corot and other artists a new mode of landscape painting, paving the way for impressionist. The breakthrough of science and technology makes the artist's perception and manifestation of the world further developed, thereby affect the aesthetic development of the whole society, there are too many similar instances. The use of computer graphic design will gradually affect people's cognition of design, and form a new design aesthetic consciousness and a new design way of thinking. The use of the computer drawing software technology broadens the art space, and has more abundant ways. The aesthetic feeling brought by the expression will have a subtle influence on people's aesthetic orientation. Figure 2 shows us the combination of computer drawing software and hand-draw.

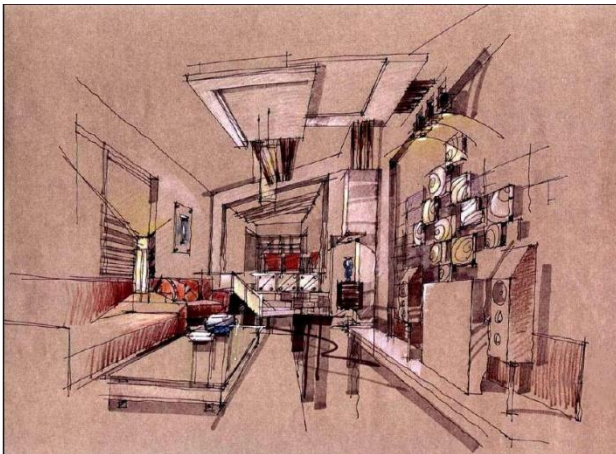


FIGURE 2 Design sketch drawn with mixture using of a variety of hand-draw and computer representation skills

C. Computer aided art design should have connotation perfect fusion of science and technology and art.

Computer aided art design uses the way of combining science technology and art to create new art visual modes. This new mode is the technology mode that has been artistic, also it can be said the technical art form, accurately, and actually, a perfect fusion form of science technology and art connotation. In our country since the 1970 s, the computer has gradually become the main tool of design performance; it has led to a design revolution, and created a new form of visual art. With the emergence and constantly update of a variety of drawing software, the designer can performance their own design ideas follow their inclinations by computer. As Susan Lundgren said, "All forms of creation is a kind of technology, so the

general process of the art development has closely related with practical skills like architecture, ceramics, textile, sculpture and witchcraft activities that civilized people are usually difficult to understand its importance. Technologies are means of creating forms and feeling symbols. Technical process is the application of human skills to achieve the above." It can be seen from this passage that Susan Lundgren found the importance of technology in art. But only pay attention to technology in the design of computer aided art is not enough, as a kind of visual art form, it should have more artistic connotation. Art aesthetic factors as important factors, are stored in a certain aesthetic form of the art form, it arises and stimulates people's emotions through the beauty form of art, then makes people resonate with art products. All this is built on the basis of science and technology, based on the fusion of computer technology and art connotation. So, it can be said that science and technology affect and promote the generation and development of the arts in a certain extent; the development of artistic also promotes and influences the progress and development of science, these two are interacted with each other, none is dispensable. Therefore, only the perfect fusion of science technology and art connotation, can promote the sustainable development of the computer aided art design.

5 Conclusions

Computer aided art design is not universal, but the change computer aided design has brought is huge, its positive role is revolutionary too, but regard traditional hand-painted as it will be replaced by computer on the final verdict is not rational. If art designer all take computers as the only form of art and design performance, the hand will be abandoned by people. People who have hand-painted experience know, hand-painted has completely different experience from computer drawing, hand-painted can bring the real experience, which is able to carver completely into the artistic conception of product design, so in the process of drawing the inspiration of art designer may be further inspired, and hand-painted brings spiritual satisfaction which can't be replaced by computer drawing. Computer can replace people's minds, more exquisite is no substitute for people to express emotion, and perhaps only by drawing by themselves can they get their own ideas into the concept of product itself. Art designers often say that creation should give consideration to both material and spiritual these two aspects, the computer can only do material things, but can't meet the needs of people in spirit, through the computer can well display the expressing effect of product, it can't express product brings to the people inside. So computer aided art design will only bring people visual impact, but cannot bring spiritual shock. So on the basis of the introduction of computer aided technology the original hand-painted should be retained, computer drawing and drawing should be perfect combined and express according to the requirements is the most effective way.

In the field of art and design, perfect and visual senses, diversified representation, the novelty innovative ideas and amazing design effect has become the essential conditions of good art works, and all these cannot be match by the traditional design methods. As a result, after people finding that the computer can not only make up for the various

defects of traditional art design methods and tools, but also give innovation to make unexpected effects on artistic work, starting and emphases on computer applications in the field of art and design. To learn to skilled application of computer aided design in art design has become a necessary skill.

References

- [1] Han Z 2009 Research on the application of hand-painted combined with computer in interior design *Friends of the fine arts* (3)
- [2] Fu Z 2003 The basis of computer art design *Beijing: Tsinghua University press*
- [3] Xu Q 2013 New methods and think of art design *Journal of Nanjing University of Science and Technology* 12: 39-41
- [4] Gu Juyi 2005 Computer art design [M] *Beijing: China Academy of Art*
- [5] Lundgren S 1986 Emotion and form [M] *Beijing: China Social Sciences Press*
- [6] Xu H 2006 Design aesthetic [M] *Beijing: Tsinghua University press*

Authors



Deng Yafei, 1982.12.10, KaiFeng, Henan, China.

Current position, grades: assistant of Yellow River Conservancy Technical Institute KaiFeng Henan China.

University studies: Hubei Institute of Fine Arts.

Scientific interest: art design teaching.

Publications: 12papers.