



Ceramic Art Creation Design based 3D Digital Renderings

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ABSTRACT

This article focuses on creating and designing ceramic artworks based on 3D digital renderings. In the digital era, using 3D technology for design has become an innovative approach, especially in ceramic art, where the application of 3D digital renderings is gradually becoming popular. This article briefly introduces the importance of 3D digital renderings in ceramic art creation and then elaborates on the design process, including modelling, rendering, post-processing, and other aspects. Finally, the practicality and advantages of 3D digital renderings in ceramic art creation were verified by analysing specific cases.

Received: 11 March 2024

Revised: 29 May 2024

Accepted: 20 June 2024

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Keywords: Digital Technology, Modern Ceramic Art, Application

1. Introduction

With the progress and development of technology, creative art digital technology involved in ceramic art is the requirement of the times, and the inevitable trend of ceramic is human survival, lives creature, from its birth to the present day, has been in use and constantly developed. Can He say that China symbolises pride [1, 2]? With the continuous improvement of people's quality of life and aesthetic ability of continuous distillation, more and more people began to have a keen interest in modern ceramic art [3]; Chinese ceramics, in the eyes of one of the most amiable, loveliest objects in foreign countries the eyes of the ceramic is a symbol of China [4]. "China" is the intent of the porcelain and ceramic industry. Even modern, highly developed European countries and Japan have come to China to find the source of ceramics and explore the cultural essence of ancient Chinese ceramics [5]. However, China's ceramic art, particularly modern pottery, is not very high [6]. With the United States, Japan, and other countries, modern pottery still has a gap; the Chinese culture and the spirit of ceramic art on the world stage have yet to be developed. China's ceramic artists' creative method is one single problem to be solved [7, 8].

From the current development status of the existing domestic point of view, digital technology development time is relatively short; whether theoretical or practical aspects are not perfect, this research area, for now, is still very inadequate, the lack of a complete information system in most only stay using digital technology, such as two-dimensional software, 3D software technologies to affect the design of ceramic products in the pottery creations rarely involved [9]. Although digital technology has been used in the clothing, automotive, electronics, mechanical product design and ceramics industries more widely, the creative design of ceramic art has not been given sufficient attention, and the application level is very low [10, 11]; the current creation of modern ceramic art still mainly manual-based, the means of production is relatively simple [12]. Digital technologies are merely used as operational software and not elevated to a certain level of theory. Thus, the advantages of digital technology in making the most of digital technology to extract value in modern ceramic art creation, improving potters' single authoring mode is meaningful and necessary [13]. In July 2003, "decoration" magazine published "Digital Design and Basic Characteristics" by digital "design" fuzzy definition of "digital media and design" functionality mode, "Digital Media and Design" cultural property " digital media and design "disciplinary nature, covering disciplines and research areas as well as" digital media and design "Intangible tendency of" sustainable development "concept shows how we should make use of high technology to create digitized green, people natural harmony and highly civilized society [14]. "Digital Art" introduces the 20th century to promote artistic creation through two forces: First, the concept of change; the second is an instrument of change, but also illustrates the constitution and the birth and development of computer art software art and so on [15].

2. Definition of the Concept

2.1. Digital Technology

Digital technology is also known as digital technology as its core content is a series of sequential digital information, or that it is not continuous. Digital technology is to produce a computer-generated accompanying science and technology; it mainly refers to the help of certain equipment under a variety of information, including maps, text, sound, images, etc., into a computer can recognize the binary digit "0" and "1" after the operation, processing, storage, transmission, distribution, reduction technology. The computing, storage and other aspects of the use of computers to encode information, compression, decode, etc., are also known as digital technology and digital computer technology. Digital technology is also known as digital control technology. In electronics, is passed, signal processing and processing can be divided into two categories: one signal is an analog signal, characteristic of such signals is, in terms of time or from the size of the signal continuously changing, for transmission, processing and analog signal processing technique called simulation technology; Another characteristic signal is a digital signal, the digital signal is, in terms of the size or time they are discrete, or that are not continuous, this transfer, processing technology and digital signal processing technology called digital.



Figure 1. Application of Digital Technology in Art

2.2. Ceramic Art

"Pottery" Art is a concept of "ceramic art" in short; it refers to the ceramic material mainly carried by Art Deco or artistic endeavour or activity. It includes practical life ceramic ceramics, handmade furnishings for viewing, and ceramics and ceramic artworks of individual artists. The concept of pottery is not broad and narrow; generalized pottery ceramic materials can mean everything to the production of ceramic products, and in general, narrow pottery does not include industrial production machinery and emphasizes products of handicraft. In ceramic art pottery, the ceramic material is used as a binding substance and the spirit of art. The relationship between ceramics and art is mutually defined and described as ceramic art. It includes arts and crafts features of the "traditional pottery" (or "ancient pottery" or "classical pottery"), and a personal artistic creation is characterized by "Modern Ceramics" in two parts. The evolution of art says it does not exist, so there is no superiority or inferiority, and there is a divide between the progress and tradition behind pottery and modern pottery. Every time in history, almost all of the advances in ceramic materials and the creation of innovative instruments accompanied, so ceramic is called an "integrated product of science and art." It is not only material but also spiritual; it also serves human material and spiritual life. "Pottery" also has this quality.



Figure 2. Ceramic Art

3. Application Digital Technologies and the Value Creation of Modern Ceramic Art

3.1. Application Renderings

Production of ceramic works by 3D MAX renderings of ceramic art is a great help; it can not only make the finished effect works in advance to show the home front pottery, but you can always find some shortcomings and deficiencies in the work, then promptly modify. We found the body portion of ceramic works and want different results; we can operate directly by 3D MAX software on the computer, make some local adjustments, and make the work more in line with the original intention of our creation, and we finally get the desired effect. This, in the conventional means of creation, is very difficult; of course, we can simulate in advance glaze and decoration works can be found in advance what kind of work is more suitable for glaze, the glaze is warm, lively glaze or rough glaze, which is in the traditional creative means is not possible, because the traditional ceramic art method is that the author must first work out firing, firing through the observation of the works and examine, find work problems and defects, and problems you want to make up for lack of work, we must re-create, and then repeat the production process works, and then fired, which means creation, that is a waste of time and energy and author of waste materials, waste of money. This is how 3D MAX software makes use of the effects glaze method; we first use the 3D modeling, then glaze testing and adjusting Photoshop model; the figure shows it is through three-dimensional modeling software to simulate the glaze and then use graphic design software color, contrast can be seen, 3D MAX has its color performance, the color expression language is relatively abundant. In addition to simulating the original design, it may also be made of ceramic design ideas; designers modify or redesign the imagination of the original complex process, which is simplified as visual effects.

3.2. Used in the Design of Ceramic Products

Ceramics for daily use renderings in product design, the current is still relatively wide compared to ceramics. China's porcelain industry, as a traditional industry, has many small ceramic enterprises; they have long, new technologies, processes, equipment, and designs with a

strong desire to demand. However, since the relevant technical information delivery did not have enough time, various colleges and, universities, research institutes of technical communication channels were not smooth, which greatly restricted the pace of development of China Ceramics products. Porcelain design remains in its original shape form, the traditional pattern of the complex and rich diversity of glaze and fine technique. This process also requires the opponent to be very high; in fact, the same pattern is often due to the uneven production of different artists. Secondly, in the flower designs on paper, the traditional paper flower design relies on pen and paper, a pigment as a medium of expression, the first painting ceramic flat renderings, and then drawing the shape of the ceramic elevation, flat coat of paint around the background, and then carefully drawing a pattern on the shape. These paintings have stringent requirements, are labour-intensive and difficult to modify. In the unfinished renderings, after moulding, making paper flowers, and after moulding paste, this method is prone to error mapping, so we need to re-evaluate mapping repeatedly between this generation, resulting in a lot of manpower and effort. Our first model built teapot and export, and then through Photoshop colour picker to adjust the teapot glaze, glaze and finally get the desired effect. Another problem is that designers' design accomplishment is not high or their vision is not open; a number of international award-winning excellent designs are indifferent and cannot correctly deal with their selves' national culture or the modern sense of innovation, leading to the design of household ceramic products industry long-term stagnation not before. There are some short-sighted designers' household ceramic products, blind copy, and Chong seriousness, and there is no use of advanced technology to improve manufacturing processes, and the design does not meet the modern market. The final step is to promote its foreign exchange, which has not done enough, or it may locate a high grade in the exchange. Therefore, globalization, national heritage and highlighting the personality are more important to promote the development of ceramic art; ceramic culture can have more vitality; we cannot simply an anachronism; it is timely to adapt to the new environment, adjust their location, update their ideas, but also should be combined with new technologies.

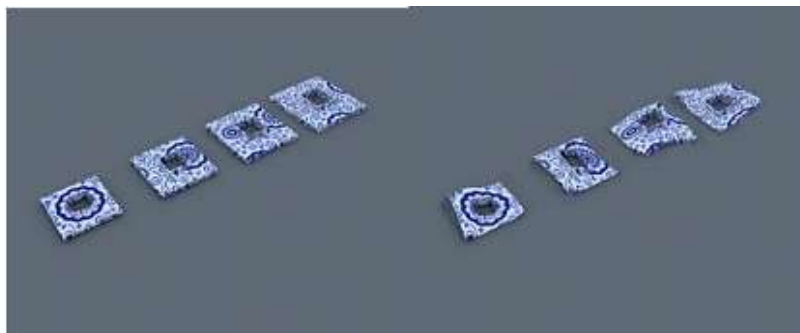


Figure 3. 3D modeling by 3D MAX

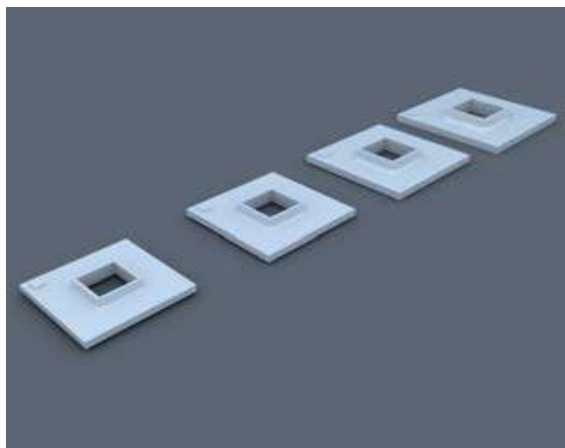


Figure 4. Ceramic product design

3.3. In Environmental Ceramic Design

Renderings used in a ceramics design environment role is enormous; as a good environment pottery designer effect diagram is used to express their artistic ideas to make the program an important means of continuous improvement, but also contractors and owners, customer communication language engineering design intent at this point other art design category above, the environment and environment art pottery, interior design renderings and other requirements are the same. The role of digital renderings in Environmental Ceramic Design is very obvious. Use of digital renderings of the environment throughout the design and decoration construction of ceramics is an important element, as compared with hand-painted renderings, and computer renderings. It is easy to accept because of the performance of the computer more intuitive, more real, and painted some conceptual design, design concept, the performance is not very straightforward. The following shows the famous potter Mr. Huang Huanyi's environmental pottery works "Ang" renderings.

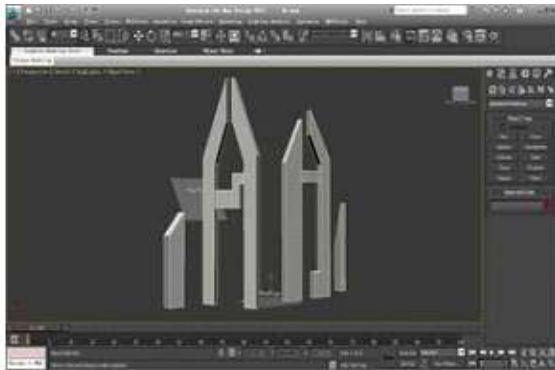


Figure 5. Modeling



Figure 6. Renderings



Figure 7. Virtual Figure

Environmental factors pottery designs consider a lot of it has to do with a particular environmental space to create, which is a new component of modern environmental art. In addition to environmental protection, ceramics consider their visual effects and adapt to the environment. Since intuitive renderings can visually express design intent, design intent in the most direct way to convey to the viewer and designers for the design of ceramic works in terms of the environment is to have a complete system design. We should live by the evidence and reasonable analysis, draft a program to determine the design ideas, deepen the design, which will turn into a design rendering, the design show, and the production of finished products of several major components. Practice the art of applying ceramic material to beautify the public

environment in contemporary seen much, if any, is the beauty of the performance characteristics of ceramic materials, often sculptural reproduction or murals.

Environmental Ceramic creative design cannot deviate from the presence of certain environmental factors. So, on this level, the author is not only Tao, an artist, but also a designer. Usually, people think artists should emphasize individuality, while the designer should consider the public. The environmental ceramic idea is carried out in a particular environment; environmental potters' task is to blend in with their works of art to become the landscape to the landscaping views. How do you know work cannot integrate with the environment? We must commence the environment pottery works in advance to determine the three-dimensional rendering, modelling work, and colour, and the overall effect cannot be integrated into the environment, by contrast, after analyzing renderings to carry out construction or the like after the physical well then found the problem is difficult to fix.

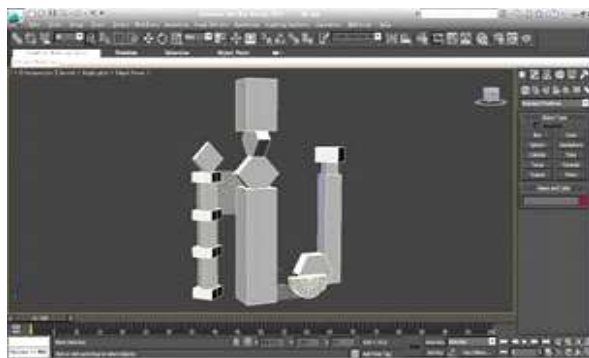


Figure 8. Modeling Diagrams



Figure 9. Renderings

4. Digital Software In Modern Ceramic Art Deco Aspects

4.1. Analysis Using Photoshop Software Ceramic Art Decoration

Image processing is Photoshop's strength; we will use examples to prove it to modern ceramic art's convenience and advantages. It works by obtaining a digital image scanning or digital photography mode, then going to the software for processing and handling. If the paper flower design content is an image, then the software can process the image; its powerful features can be said to comply with all the requirements to meet the creative and design, such as the image to zoom, rotate, skew, mirror, perspective, etc. operation, the color image processing (in whole or partial treatment), with its layers menu mode. Opacity images can be synthesized to produce a reality that cannot have an image to the strange, perfect visual effect. The design process can often produce unexpected pictures of the innovative design of ceramic flower paper, which plays a significant role in promoting it. These features of pottery decorated with traditional means have a big advantage compared to. As shown by the effect of the newspaper ad, you want to decorate pottery works, but it works on the font using the traditional hand-drawn creation means; since the work is my own creation, my detailed account of the creation of works, from began writing, to hand-painted decorative patterns, the firing, spent a total of two weeks ago. From the results, we can see it is not very satisfactory. However, there is a large effect but not enough detail in place, and it is slightly rough; it also proved a problem from the side; no matter how fine the hand-painted patterns, they still cannot achieve the kind of realistic shocking effect. We look at this diagram of a famous Japanese potter, modern ceramic works on behalf of Ms. Yoshimi Mishima creation; regardless of the shape of the first, only the appearance of the decorative point of view, we see that this is difficult to do ceramics, degree of realism makes the shock works, regardless of shape or decoration works have shown just right, her means of decoration is through the modern high-tech digital technology, combined with graphic design software produced by modern high-tech printing technology finally completed, using the traditional means of creation, decorative means, difficult to achieve such an effect, even the creators of hand drawing ability is superb, too, is difficult to get such a vivid decorative effect. The traditional means of ceramic art are inflexible and sometimes do not fully interpret the content of the work; the creation of modern pottery

is very unfavorable, and updating tools and instruments is an effective way to solve the bottleneck of modern ceramic art.

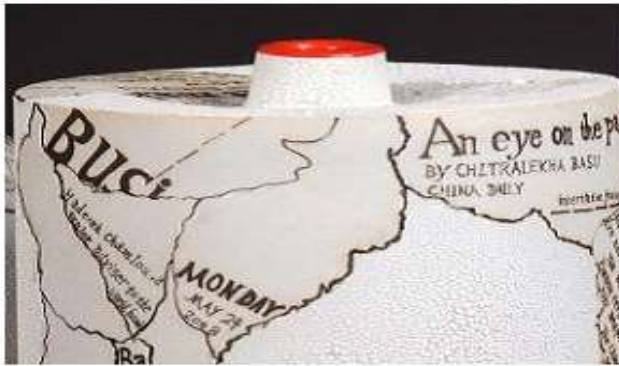


Figure 10. Modern Ceramics “Record Time Bottle”



Figure 11. “Modern Ceramics”

4.2. Analysis Using Photoshop Software Ceramic Art Decoration

Photoshop software filters the menu, and each command combines the channel selection command. Pottery Decal design is also often used; it can simulate painting, ink, relief, woodcuts, watercolours and other commonly used traditional art techniques, the images, graphics, and text re-creation, such as the production of metal, plastic, lacquer and other materials effects. Its pattern generator commands in the Edit menu commands are defined patterns of continuous patterns and make two-way four successive patterns very fast and convenient.



Figure 12. Photoshop software design

Let's analyze the process of making ceramics Photoshop Motif in the figure below; we use Photoshop software first Motif pattern and design is good; of course, before the software operation, we must first remove the sketch is good, is the traditional pattern Motif hand-painted, drawing pattern is often very time-consuming, by Photoshop software, by using the brush tool we can accurately and quickly to Motif pattern drawing is completed. The following is a completely physically fired ceramic Motif. Modern Motif production by screen printing technology to produce the drain enamel, making a Motif, first making different colours of the plate, followed by glazing, a sense of relief, and finally, burning the finished pattern have projections. Ceramic art itself is free art; potters use any effective means of their creative works to achieve ideas and express their individuality. However, in domestic modern ceramic arts, a lot of new tools are not accepted, and potters are still through traditional creative means to complete their work; I think that we, in the modern ceramic art creation, should learn to use "in the law is unable to unlimited as limited" creative attitude, to achieve the highest level of artistic creation! Now we use Photoshop software that can produce an exquisite picture effect; the Brush tool can simulate the traditional hand-drawn look, teach traditional ceramic decorative techniques and decoration color Design Theory in Photoshop, Photoshop decorative design formed in one language, and through our three-dimensional computer simulation technology, it can reflect what we want color effects, and there is a real three-dimensional visual effect so that the audience feels more directly affect our decorative ceramic color design.

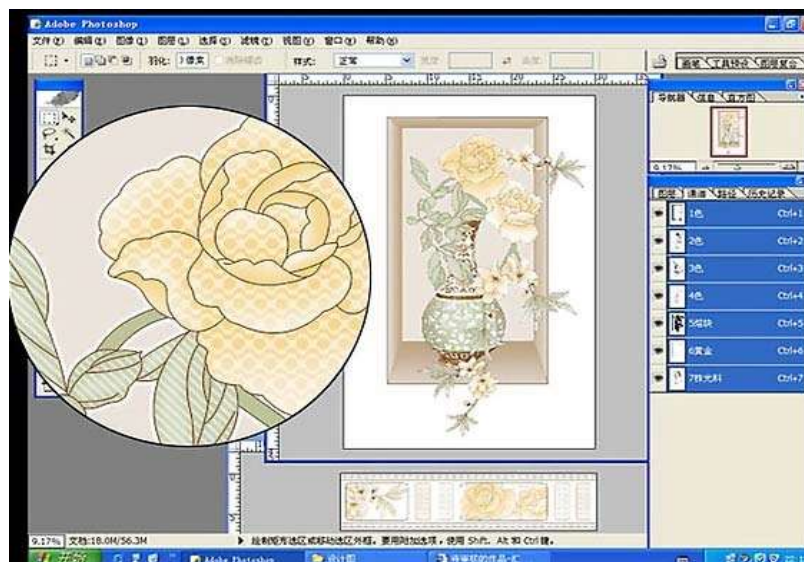


Figure 13. Photoshop production of the ceramic flower piece

5. Conclusions

As an assistive technology tool, modern digital technology has infiltrated almost every industry in the design of digital technology into modern ceramic art in the field of ceramic art creation; thinking forms a tremendous impact. It provides various services to make ceramic art creation, which is undergoing a big change from the authoring tool to creative ideas. Whether we accept or reject digital technology in modern ceramic art is an inevitable trend and requirement of the times. Traditional creative form and content did not cover today's new era of style. Through the elaboration of digital technology, combined with the advantages of digital technology, the Internet has a lot of creative resources; CAD software to optimize the traditional creative means of ceramic art simplifies the use of materials and equipment; traditional and modern complementing each other to make room for a more flexible and creative, open; virtual reality technology, preview the effect is real; the creation of the series is more convenient; efficiency than ever before, greatly shorten the cycle of creation; facilitate the easy creation mode means, processes and procedures easier; feedback more quickly. Adopting new technologies and adapting to new requirements makes modern ceramic art both inherited characteristics of traditional culture and an important means of new methods and ideas in a new art environment. In a specific sense, digital technology provides us with new creative tools and thinking.

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