Analysis of the Impact and Challenge of 3D Printing Technology on Traditional Art Design Industry in the Field Of Computer Electronics

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Abstract. With the continuous progress of computer technology, 3D printing technology (hereinafter referred to as 3DPT) has been widely used in various fields, which has a profound impact on the traditional art design industry. 3DPT is convenient and accurate, which brings new opportunities and challenges to the development of traditional art design industry in China. 3DPT has changed the traditional manufacturing mode, which is very different from the traditional manufacturing mode. Therefore, we need to be precise in the shape and structure of the product, which will not add additional cost. With 3DPT, we can better complete complex processes, which will greatly reduce the cost of time. First, this paper analyzes the influence of 3DPT on the traditional art design industry. Then, based on the computer electronics field, the paper analyzes 3DPT. Finally, this paper takes sculpture as an example to analyze the impact and challenge to the traditional art design industry.

Keywords: Computer Electronics, 3Dpt, Traditional Art Design, Influence

1. Introduction
With the development of science and technology, 3DPT has become a powerful means of modern model, mold and parts manufacturing by combining with NC machining, casting, silica gel mold and other manufacturing means, which improves the product design and manufacturing level of manufacturing industry[1]. 3D printing is called "rapid prototyping" machine graphics data, which can quickly make three-dimensional data maps into solid objects. 3D printing can generate objects of any shape by adding materials directly according to calculation, which simplifies the production process and shortens the development cycle of products. Through the development of a variety of series of 3D printers, we will have more applications in product design, mold manufacturing, casting, medicine and other fields[2]. The application of 3DPT reproduces the designer's design content, which has brought great influence to the development of traditional art design industry.

Realistic sculpture is different from abstract sculpture and decorative sculpture. Realistic sculpture belongs to concrete art in art form, which is a kind of expression technique of sculpture[3]. Through the observation and description of the external images, the artists experience their own feelings and
understanding to reproduce the external images. The characteristics of realistic sculpture are completely three-dimensional, and the audience can see all sides of the sculpture from all angles, which will form the overall sense of artistic image. Therefore, traditional works of art accord with the visual experience of the viewer, which provides aesthetic pleasure for the viewer. The expression technique of realistic sculpture is concrete, which is true and accurate. 3DPT will bring great changes to the manufacturing industry and design, which fundamentally changes the economic basis of commodity production\textsuperscript{[4]}. Through 3DPT, the advantages of mass production no longer exist in many industries, which makes the future manufacturing industry more decentralized and digital. Therefore, 3DPT will have a profound impact on the development of design.

2. The influence of 3DPT on traditional art design industry

2.1. Impact on advertising design industry
Advertising design industry is one of the important traditional art design industries, which is the most common art design in social economy. With the popularization of 3DPT, the signs, plaques, light boxes and exterior decoration in advertising design works will be preempted by 3DPT. Taking the floating font on the billboard as an example, the traditional art design first designs the font, then carves through the laser cutting technology, and finally pastes on the billboard. Therefore, in the process of traditional art production, we will inevitably lead to waste products. If we use 3DPT, we can print the design works directly, which avoids the waste of materials. At the same time, 3DPT can design the interior of fonts, which provides a new idea for the design of advertising industry\textsuperscript{[5]}

2.2. Influence on environmental art design
Environmental art design includes many projects, such as space display, real scene model, decoration construction, sculpture works and so on. Environmental art design works have high accuracy, which has certain timeliness requirements for product production. In the design of the real scene model, the designer needs to quickly produce the corresponding real scene model according to the real scene in a short time, which has a high demand for the design cost. 3DPT simplifies the design difficulty of product forming, which reduces the production cost of design works\textsuperscript{[6]}

2.3. Impact on the field of home design
In the process of traditional home design, designers need to customize parts according to the requirements of customers, which increases the production cost of products. Through 3DPT, designers can directly produce parts accessories or whole home. 3DPT can not only reduce the production cost of customized products, but also provide more design space for the production of products\textsuperscript{[7]}

2.4. Impact on animation design products
Animation design products are mostly printed according to the virtual image, which has a wide range of market demand. According to their personal preferences, anime fans can listen to music directly, and 3D printer can print out the animation entity model or peripheral products, such as animation ornaments, animation accessories, etc. At the same time, we can choose environmental protection materials for printing, which will ensure the safety and environmental protection of products.

2.5. Influence on fashion design products
At present, the application of 3DPT in CAD mainly includes customization of leather products, shoe mold production, clothing accessories and other aspects, which gradually affects people's daily life. By improving the quality of people's daily life, we can make the product service more personalized and precise.

3. 3DPT based on computer electronics
3.1. Powder focus measurement system
The most representative 3D printing equipment are EOS in Germany, optomec in America and arcam in Sweden. At present, there is still a technical gap in the same type of equipment with independent intellectual property rights in China. For laser melting deposition equipment, we should improve the stability of powder feeding process, which depends on the stability of powder feeder and the accuracy of powder feeding head. However, no matter how precise the powder feeding system is, the fluctuation of powder quality and process parameters will affect the quality of printed parts. Therefore, we need to print process monitoring system, which can timely detect and automatic or manual intervention. The process monitoring system is designed based on computer electronics, which can be measured with a powder imaging system, as shown in Figure 1.

![Figure 1. Powder focus measurement system.](image)

3.2. Process monitoring system
With the camera system, we can monitor the size and fluctuation of molten pool in real time, which will produce more stable quality. 3D printing is a multi parameter process that affects the printing quality. Therefore, the printing process monitoring is particularly important. The process monitoring system is shown in Figure 2.

![Figure 2. Process monitoring system.](image)
4. The negative influence of 3D printing on traditional realistic sculpture art

4.1. Impact on the accuracy of traditional realistic sculpture art
3DPT has seriously impacted the accuracy of traditional realistic sculpture. 3DPT is from the computer data, through the machine to complete, this is the way to restore the real 3D model data. The 3D printing process does not require human participation, which is completely digital. However, the traditional real sculpture art is full of human participation, which leads to a big gap in its accuracy. The traditional realistic sculpture art is the cooperation of eyes and hands, which adds subjective consciousness. Therefore, there are different sculptures with different performance techniques and styles. Sculptors need to observe and choose the objects they want to express. Through the use of sketching techniques and their own feelings and understanding, the artist created a subjectively handled object. However, 3D printing does have exactly the same peak.

4.2. Production of impact portrait and wax figure
3DPT will have a certain impact on the production of celebrity portraits and wax figures. Portraying portrait needs authenticity and reducibility. Although portraits and waxwork need some subjective treatment, the ultimate goal is to be like myself. For the demanders, the color relationship of oil painting and the volume structure of sculpture are not the most important. At the same time, 3D printing is much more efficient and realistic than manual printing, which will seriously impact the production of portraits and waxworks.

5. The positive influence of 3D printing on sculpture art

5.1. Shorten the time of sculpture production
In the process of creating sculpture works, artists need to make reasonable choices for various details. According to the objects to be created, the artist will make a comparative analysis of the various sketches. Through continuous improvement, the artist finally determined a relatively excellent sketch. Then, according to the specific size, this is an important operation of shaping, which will have higher requirements for the artist's control ability. Through the production of fine and small sculpture works, we have more stringent requirements on the sculptor's techniques. At the technical level of sculpture creation, 3DPT will become an important tool. Artists can print directly from materials, which can save a lot of time to sketch. In preparing sketches, 3DPT can produce many vivid models, which can be carefully selected by artists. Therefore, 3DPT saves a lot of time for traditional sculpture. The main advantage of 3DPT is that the modeling of the model is more abundant, vivid and accurate. Therefore, through 3DPT, we can zoom in or out in equal proportion, which is a very effective method. 3DPT can replace the traditional sculpture technology.

5.2. Powerful and precise replication
3DPT is conducive to the protection and restoration of cultural relics and related relics. In the early stage, the reproduction of cultural relics can only be achieved by turning over the mold, which will cause certain damage to the cultural relics. At present, through 3DPT, we can print directly, which will solve the problem of cultural relics damage. By combining 3DPT with archaeological technology, we can apply it to other and more extensive places. 3DPT is of great help to the copying of sculpture, and copying is of great help to realistic sculpture. So, sculpture copying can strengthen the understanding of realistic sculpture, which helps to improve people's observation. Through 3DPT, we can accurately copy the classic works, which is of great significance for future generations. 3DPT can make full use of replication technology. The structure of sculpture is often limited, which requires us to observe sculpture comprehensively. With 3DPT, we can help us see more details, which will help us to realistic sculpture.

6. Conclusion
Through the realization of intelligent education, deep learning technology has an irreplaceable important position. Machine learning can effectively help intelligent education, which can play an important role in educational data mining. With the continuous development of machine learning technology, the integration of education will continue to promote educational innovation. At the same time, we need to actively protect personal education data, which can fully protect the privacy of students and teachers.

Acknowledgments
The Influence of Internet Plus 3D Printing Technology on the Traditional Design and Its Business Model., Project source: Guiding innovation fund of Northeast Petroleum University(Project no.: 2018YDW-01).

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