The Design of Various Arts and Crafts With the Rotating Body as the Base Embryo under the Aid of Computer Technology

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Abstract. At present, with the continuous improvement of people's quality of life, people are gradually realizing the importance of spiritual comfort that spiritual cultural life can bring. The emergence of arts and crafts with rotating bodies as the base embryo helped people find the direction of spiritual entertainment. On this basis, various computer-based assistive technologies have gradually penetrated into every field of people's lives and work\textsuperscript{[1]}. How to use computer-assisted technology to design arts and crafts and manage the corresponding production process has become a topic of common concern for every art enthusiast. This is not just a matter of fact. Some academic personnel in the art world have also successively developed computer-aided design systems for arts and crafts with a rotating body as the shape of the base embryo.

Keywords: Rotating Body, Computer Aided, Base Embryo, Arts and Crafts

1. Introduction
Our common arts and crafts are an organic combination of hands-on skills and art. It can be seen as the actual expression of human artistic thinking. Using rational thinking, it is a product of the combination of aesthetics and spiritual thinking. The combination of practicability and aesthetics also sublimated the meaning of arts and crafts in real life\textsuperscript{[2]}. Moreover, with the improvement and development of current living standards, it has become an indispensable part of people's spiritual culture. If divided according to types, crafts should be divided into artworks of various materials. It has a great relationship with people's production and life. Now, with the widespread application of computer technology in life, the combination of it and the design thinking of artworks will greatly enhance the artistic charm of arts and crafts.

In our daily life and work production process, people often deal with utensils. From the beakers used in chemistry experiments and some daily chemicals in life, as well as people's favorite craft works of art. The appearance design of these products has very powerful use value. Fundamentally speaking, the art of craftsmanship with the rotating body as the base embryo is more in line with people's aesthetics. With the aid of computer technology, the design of various arts and crafts will also become intelligent. Compared with the original manual design method, the computer method is a production mode that is more in line with modern production.
2. The design analysis of the traditional rotating base embryo

2.1. Analysis of design methods of ceramic crafts
In the process of designing ceramic handicrafts, their modeling and decorative design needs to be displayed by hand-drawn design drawings. In fact, the original designs of arts and crafts are all made by hand. However, relying on the original renderings, we can find that the influence of the materials of the crafts is also very huge. This situation will also require designers to spend a lot of time making repeated changes to the manuscript. Moreover, it will also be affected by the molding process of manual skills and related restrictions (see Fig 1).

![Figure 1. Display of arts and crafts with rotating body as base embryo](image)

2.2. Analysis of design methods of glass crafts
For glass crafts, designers first need to understand the real needs of customers and the market. On this basis, designers should also conduct surveys and analysis of the types of handicrafts sold in the market. First, formulate the overall design plan and determine the processing methods and make plane sketches. However, the steps of making glass crafts at that time were very complicated. Moreover, for high-precision artworks, the increase in error will also affect the customer's preference for glass products.

2.3. Analysis of the design methods of sculpture crafts
For sculptures, many young sculptors may use hand sketches to make small models. Then scale up to make normal sculpture products. However, for the older generation of sculptors, they generally imagined a rough sculpture in their hearts. According to these images, they will use skilled sculpture methods to try out reasonable crafts. However, the production of glass products is the same, and the error of manual production is still relatively large.

3. The design method of various arts and crafts with the rotating body as the base embryo with the aid of computer technology

3.1. Should be prepared
The design of each different type of handicraft requires relevant materials and materials in the early stage. These materials include the history of the subject direction and some innovative points. The material includes the customer's ideas and some subject requirements. After finishing the arrangement, designers usually use software to make the main body three-dimensional model or two-dimensional three-view production.
3.2. The normal design and production stage
With the aid of computer technology, three-dimensional models or two-dimensional drawings of handicrafts may be produced\(^3\). Generally speaking, the sketches of daily-use ceramic products belonging to the central rotating body are generally only painted outlines and thick sections. After these things are drawn, the designer can use the rotation tool of the computer drawing to generate the corresponding artwork shape according to the rotation of the central axis.

Table 1. The design stage of the handicraft with the rotating body as the base embryo under the aid of computer technology

| Design phase            | Main content                        |
|-------------------------|-------------------------------------|
| Preparatory stage       | Sorting out related materials and materials |
| Normal production stage | Production of 3D models or 2D drawings |
| Optimization after design | Fine processing                     |
| Later in-depth          | Selection of the best plan           |

3.3. Use of optimization methods after design
If we call the normal design and production process the roughing stage, then the optimization after design will be a means of finishing. Unlike mechanical processing, finishing after design refers to the search for flaws in the artwork and the correction of some dimensional errors.

3.4. In-depth stage of the later design
During the preliminary preparation and the implementation of the mid-production stage, the designer may think of many applicable solutions. These programs can be adapted to customer needs and related requirements. Then, the in-depth stage of the later design is the stage of selecting the best solution. There are many conditions for selection. Such as the calculation of cost, the level of quality and some error changes (see Table 1).

4. The main function of the computer-aided system for the design of various arts and crafts with the rotating body as the base embryo

4.1. The ability of intelligent human-computer interaction is necessary
For the crafts design process, the designer's design thinking is the main body that determines the value of the crafts. Computer graphics equipment and corresponding artwork manufacturing equipment must be operated correctly according to the designer's thinking\(^4\). Therefore, on this basis, the ability of intelligent human-computer interaction is very necessary. Only in this way can we ensure the correct handover of computer equipment and human design thinking.

4.2. Ability to transfer from 2D drawings to 3D models
In many cases, the organizer of the artwork design can understand the initial two-dimensional sketches. However, some people who are not involved in the design process may not always be able to understand the expression of two-dimensional drawings. Therefore, computer-assisted systems need to have the ability to transfer two-dimensional drawings to three-dimensional models. This ability can help the smooth progress of the art design process.

4.3. The ability to recommend intelligent design solutions
The emergence of every kind of art design scheme with a rotating body as the base embryo takes a lot of time for the designer to complete. If we add the ability of program recommendation to the computer-assisted system through programming, I think this will also speed up the process of artwork design.

5. The specific advantages of computer technology-assisted design of various arts and crafts in which the rotating body is the base embryo
5.1. **It can stimulate the interest and enthusiasm of different people's designs**

In many cases, the complex art design methods make many people lose their interest in art design and their positive heart in an instant\[^5\]. However, with the realization of computer-aided design functions, many people can try to make virtual artworks. This can stimulate people's interest and enthusiasm in design from the side.

5.2. **It can greatly reduce the size error of artwork**

In fact, every priceless piece of art has different characteristics. However, after a lot of research by scholars, they found that the uniform characteristics of famous works of art are that the error is very small. In other words, to some extent, the high-precision production of these artworks is also the reason for their increased value. Now, the computer can replace the manual grasp of the size design, then we can completely think that the computer's artwork design can increase the value of the artwork.

6. **Conclusion**

Indeed, the appearance of various arts and crafts currently based on rotating bodies is in line with the aesthetic viewpoints of many modern people. Moreover, with the help of the computer-aided design system, the art design process will be appropriately optimized accordingly\[^6\]. From this point of view, the emergence of computer-aided design is of great help to the design of handicrafts based on rotating bodies.

**References**

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