Exploration of Media Convergence Expression in Biological Art

Yue Liu[1] Li Gu[2]

[1,2] *College of Art & Design, Nanjing Tech University, Nanjing, Jiangsu, China*
[2]*Corresponding author.*

ABSTRACT

Research significance: With the development of technology in the era of media convergence, people have more expectations for the diversity of art. Artists and designers are not limited to seeking innovation in the field of art. They have begun to think about art from the perspective of biological science, seeking the infinite possibilities of art in biological science. This innovative thinking is also a new breakthrough in the development of art, changing the previous design approach from a scientific and rational perspective to thinking about art. Research method: This article uses literature research, example analysis, and summary and induction methods to explore the expression of microbial art in media convergence from the perspective of microbial pattern design in Maryland. At the same time, it also seeks the diversity of biological art expression in media convergence from traditional expression methods. Research conclusion: The application of biological art in new media expression has made some progress, but it is still not very mature. Due to the many classifications of biology, some relatively obscure parts have not been noticed. By understanding the expression of other biological arts in media convergence, the researchers should think about which areas can be further developed.

Keywords: *Biological art, Media convergence, Science.*

1. INTRODUCTION

In the era of media convergence, with the continuous development of the Internet, society is also constantly moving forward. Media convergence can fully utilize the commonality and complementarity of propaganda media such as radio, television, and the internet to comprehensively integrate manpower, content, and publicity, thereby achieving a series of goals such as "resource integration, content compatibility, publicity integration, and public interest integration". In this context, more and more disciplines are integrating with it, especially in the field of art and design, which presents its diversity from more perspectives and presents various different ways of expression. On this basis, artists change the way society thinks about biological art by combining it with media convergence, which is of great significance for expanding artistic thinking patterns. Taking microbial pattern design in Maryland as an example, this article explores more possibilities and development space for biological art in media convergence expression.

2. RESEARCH OVERVIEW

The term "biology" is not unfamiliar to everyone. It generally refers to all living objects in nature. At the same time, there are various types of organisms, and each organism has its own unique characteristics. Therefore, its artistic value is irreplaceable. In this field, it is necessary to explore the special expressions of biology in art, and see more artistic value through biology itself, so that biological art can innovate in the continuous updating and replacement of biology.

2.1 Overview of Biology

Biology refers to living organisms with kinetic energy, and is also a collection of objects. Varieties of organisms not only maintain the sustainable development of nature, but are also the basic conditions for human survival and development. The development of society, the progress of human civilization, and the improvement of personal quality of life all rely on the development and application of biology. People's lives are

inseparable from biology, and the characteristics of biology itself can provide new ideas for design.

2.2 Overview of Biological Art

Biological art is an artistic creation based on biology. Since the development of art and design, many artists have explored and innovated in the field of biological art. They use microorganisms, plants, and other organisms as materials, which is different from traditional materials for artistic creation. Not only that, in the development process of biological art, it also needs to rely on certain scientific and technological support. In the process of understanding biology, the designers cannot break away from the pursuit of innovation blindly in science. There is a must to carry out artistic design on the basis of complying with biological logic and moral standards. In recent years, biological art has received increasing attention from artists, proving that more artists have discovered the plasticity of this aspect, and also indicating that biology has always been an indispensable role in art.

2.3 Overview of Microbial Art

People live in a rapidly developing society, and the development of integrated media has also led to a more diverse range of art forms. The purpose of studying microbial pattern design is also to explore how to use artistic techniques to showcase the artistry of microorganisms such as biological cells to more people by connecting art with biological sciences. Not only that, expressing the characteristics of microorganisms in integrated media is also a relatively new artistic expression method, allowing the audience to have a better understanding of biological composition and the inclusiveness of art when exposed to microbial pattern design. It is not only through the knowledge learned in the biology classroom, but also to understand the artistic concepts expressed by artists through scientific expression techniques. This is also a way for everyone to better understand microorganisms. At the same time, it can also deepen the viewer's thinking about life and biology.

2.4 Biological Art in Media Convergence

In the era of media convergence, biological art continues to develop through the innovation of artists, and the biological images expressed also make people look better. Unlike traditional biological expressions, through the combination of media convergence, it showcases the beauty of biology itself and its creativity and plasticity to the audience.

The combination of biological art and media was already reflected in Eduardo's creation of "Time Capsule". Today, we can see more ways of expression, such as the microbial pattern design in Maryland ("Figure 1"), which shows people the combination of media convergence technology and biological art to create a new visual language, while applying the core concepts of fermentation to present a perspective of change, opportunity, and time, expressing that microorganisms can serve as people's allies to create stunning patterns and images.

Figure 1 Maryland microbial pattern design. (From Internet)

2.5 The Possibility and Uniqueness of Biological Art Media Convergence Expression

The combination of biological art and media convergence has multiple possibilities for expression. It not only allows organisms to be expressed through artistic means, but also enables artistic works to truly possess life characteristics. At the same time, due to the diversity of organisms, biological art has more possibilities, and the expression of microbial art in media convergence is one of them. And the multiple possibilities of this artistic expression are precisely where its uniqueness lies. Taking microbial pattern design as an example, through media convergence expression, people can come into contact with more unexpected art forms. For example, the "Poetry of a Tongue" by Canadian female artist Grace Eastan is an art piece that combines microorganisms, video images, and feedback sound ("Figure 2"). This work, just like its name, extracts a microorganism from the tongue and conducts cultivation experiments. By observing the different colors produced by this microorganism during the cultivation process, she

creates such a work. She uses sound feedback to express visual feedback, and displays the colors at different stages in different sounds. And she uses microorganisms and media to create a piece of music that is different from before. The artistic expression of this style is something that other types of art cannot achieve. Designing expression based on the fermentation characteristics of microorganisms themselves is the greatest uniqueness of biological art in media convergence expression.

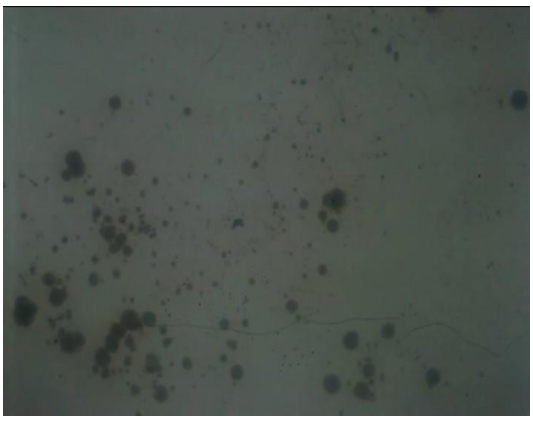

Figure 2 "Poetry of a Tongue". (From [11])

3. THE APPLICATION OF MICROBIAL PATTERN DESIGN IN MEDIA CONVERGENCE EXPRESSION

3.1 Overview of Microbial Pattern Design

In biological art, the form of artistic creation mainly based on microorganisms is a common type in microbial art, and microbial pattern design ("Figure 3") is a design creation based on the form of microorganisms, which is also a relatively novel type in microbial art. Designers can conduct divergent designs based on their own understanding of biology, as well as their thoughts and emotions. This design can provide audiences with a new artistic experience from a certain perspective, allowing them to rethink the combination of biology and art.

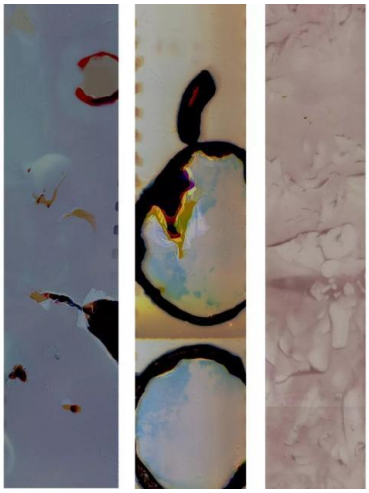

Figure 3 Maryland microbial pattern design. (From Internet)

3.2 Media Characteristics of Microbial Art in Application

In recent years, we have entered the era of media convergence, and everything is developing rapidly. The same is true for art. In recent years, the development of art aims to improve people's aesthetics, expand their imagination, and some art also has warning significance, which can contribute to social development. Microbial art has certain significance in it — changing people's stereotypes about microorganisms, experiencing the charm of microbial art, learning and participating in it through appreciation.

In addition, the combination of microbial art and media convergence not only has significance for the audience, but also has dissemination significance for the artists who created it. Artists convey their thoughts, emotions, and states to the public through this combination, hoping to resonate with the public. As shown in the work "Seaweed Cycle" ("Figure 4"), the microbial characteristics of seaweed are combined with 3D printing technology. The main theme of the exhibition is not about the economic growth of efficient productivity, but more about reflecting on the limitations of existing social models [3]. This work also demonstrates the artist's profound thinking on social issues and reflects the depth of artistic connotation.

The various combinations of microbial art in media convergence allow people to see the diversity of artistic expression, and also understand the thinking and improvement directions of many art designers on the social situation. Its media characteristics allow people to feel the difference

from other art directions, and its unique characteristics can also inspire viewers.

Figure 4 "Seaweed Cycle" 3D printer. (From [3])

3.3 Extended Application of Microbial Art in Media Convergence

In recent years, although microbial art has gained some attention in the field of art and design, and more and more artists are creating for microbial art, for the public, microbial art, including biological art, is still a relatively vague concept. In the public's understanding, biology and art cannot be well combined, or it is difficult to imagine what sparks will be generated when the two are combined. The microbial pattern design in Maryland not only integrates biology and art, but also combines microorganisms and media convergence. This design achieves a more intuitive display of biological art that is different from what they perceive to the public. Based on this, the designers can consider how the application of microbial art in media convergence can be further extended.

The thinking about microbial art can actually start from the most fundamental direction of microbial fermentation ("Figure 5"). Returning to the fundamental science of microbial culture, the designers can think about artistic innovation by observing the fermentation process of specific microorganisms over a certain period of time.

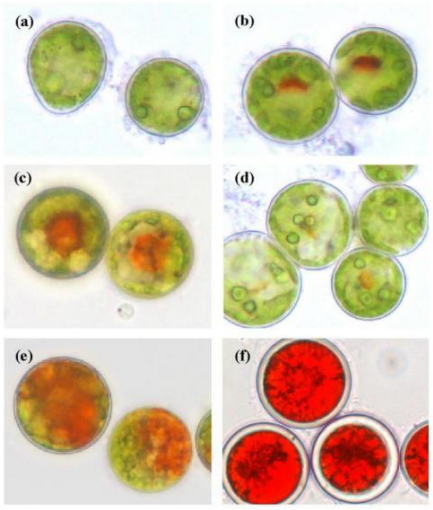

Figure 5 Fermentation process of haematococcus pluvialis. (From [10])

The microbial fermentation process shown in the "Figure 5" shows a comparison between the first three days without the addition of salicylic acid and the three days after the addition of salicylic acid. By observing the microbial fermentation process displayed under the microscope, the designers can consider whether artistic expression can be integrated into the microbial fermentation process, and how these six changes can be expressed through media convergence. In such a process, the designers can consider placing microorganisms in sterilized acrylic plates for cultivation, and let them determine the specific shape of the acrylic plate, which can be made into specific font or graphic styles. During the cultivation process, they can observe the morphological changes and record the photos for a long time. Finally, they can express the display effect through technical means. In addition to showcasing the original fermentation process, interactive applications can also be added to allow the audience to try what changes would occur if other media microorganisms were added to the fermentation. In this experience, the viewers can feel the charm of microbial art and change their inherent impression of microorganisms.

4. THE SIGNIFICANCE AND DEVELOPMENT PROSPECTS OF BIOLOGICAL ART IN MEDIA CONVERGENCE EXPRESSION

Biological art not only includes microbial art, but also includes gene art, tissue culture art, and so on. The development of different directions in

media convergence has provided more possibilities for the development of biological art.

4.1 The Significance of Biological Art in Media Convergence Expression

In recent years, the combination of art and various disciplines has developed, and biological art is one of them. Its development has also allowed more people to see the inclusiveness and extensibility of art and science, and understand that artists are not limited to the single field of art, but have made more bold attempts. Anikayi's biological media work "Force Majeure" ("Figure 6") uses mold as a medium, uses agar to cultivate microbial bacteria, and creates an effect where the entire room is covered with bacteria in an uncomplicated sealed room. A refrigeration device is placed inside the room. This is a breakthrough in the mainstream visual art of biological art and also showcases the alternative beauty of mold.

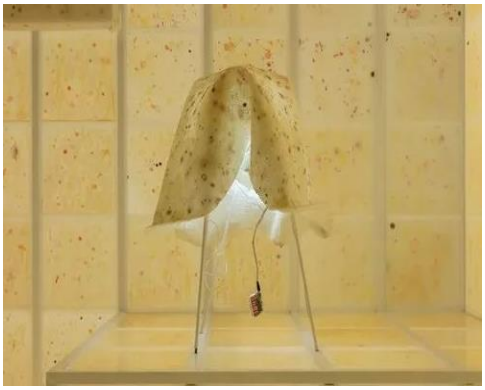

Figure 6 Force Majeure. (From Internet)

Biological art requires a scientific combination with art to meet the environmental requirements of certain organisms in order to express the ideas that artists want to showcase. Through the expression of media convergence, it is possible to quickly spread in such a highly informationized era, allowing people from all walks of life to have the opportunity to be exposed to the field of biological art, and thus feel the diversity of information transmission — conveying scientific information and expressing artist's ideas through artistic forms.

4.2 Development Prospects of Biological Art in Media Convergence Expression

Media convergence also promotes sustainable development in society, and integrating biological art into its sustainable development under ethical and moral conditions is a good direction. Sustainable design thinking can provide a new prospect for art and also promote biotechnology to a certain extent The "Sonnet155" bag series created by Johanna Hehemeyer-Cürten and Beckfeld is made from multi candy peels extracted from fruit debris. The "Sonnet155" bag series embodies sustainable biological art ("Figure 7"), and through biotechnology, these handbags can be biodegradable in water. The expression of this biological art can maintain the ecological cycle system.

The application of biological art in media convergence will also be constantly updated, from the expression of individual organisms to the combination of different organisms, or the combination of genes and microorganisms. Expressing through media convergence means is not only to give viewers a new understanding of biological art, but also to use the rapid dissemination of media convergence to make more people think about the core issue of sustainable development in the future.

Figure 7 "Sonnet155" bag series. (From Internet)

5. CONCLUSION

Art and science have always been inseparable topics. In recent years, the development of biological art has highlighted the connection between art and science, and the development and changes of media convergence have also made the future development of biological art infinite and more uncertain. Microbial technology will play an important and indispensable role in art design, and the development of biological art is also constantly expanding the boundaries of media convergence development. The development of biological art is no longer limited to directly expressing the appearance of organisms, and is beginning to move towards the stage of innovation.

Although the development of biological art in the context of media convergence is not yet very

mature, it has gradually become a complete system in the field of art. The innovation of this article lies in starting from the perspective of media convergence expression, combining the expression of traditional media and biological art, thinking about the ways in which biological art combines with it, and what kind of impact the ideas expressed through this way can have, and considering what kind of development such combination can have.

REFERENCES

[1] Chang Xiyue, A Brief Analysis of Media convergence in the Context of New Media [D]. Dalian Polytechnic University, 2018. (in Chinese)

[2] Wei Ying, Biological Art in China [J]. Art Observation, 2022(04): 26-29. (in Chinese)

[3] Yang Qiaohe, Speculation on the Fiction of Sustainable Design in Biological Art [C]//. The Second International Conference on Bio-inspired Design and Technology 2021, 2021: 162-168.

[4] Zhao Rui, Wang Yiwen, From Biological Art to Visual Communication: Imagination of Visual Communication under Light Media [C]//. The Second International Conference on Bio-inspired Design and Technology 2021, 2021: 169-173.

[5] Huang Chaoying, Aesthetic study of biological art Philosophy [D]. Northwest University, 2021. (in Chinese)

[6] Ni Qianqian, Research on Pattern Design Based on Microbial Morphology [D]. Shanghai Normal University, 2021. (in Chinese)

[7] Luo Shuang, Plants as Collaborators: The Subjective Presentation of Plant Media in Bioart [D]. Central Academy of Fine Arts, 2019. (in Chinese)

[8] Wang Yuanyuan, Design and Development of AR Cell Teaching Resources Based on STEAM Concept [D]. Jiangxi Normal University, 2021. (in Chinese)

[9] Liu Shurui, Wu Xue'e, Wang Yuanpeng, Progress in nanomaterials mediated microbial extracellular electron transfer [J]. CIESC Journal, 2021, 72(07): 3576-3589. (in Chinese)

[10] Gao, Z. Q.Meng, C. X.Zhang, X. W.Induction of salicylic acid (SA) on transcriptional expression of eight carotenoid genes and astaxanthin accumulation in Haematococcus pluvialis. Enzyme and Microbial Technology 2012; 51; 225-230.

[11] Chen Huiming, Xu Weiwei, Zhao Hanzhu, Research on the Application of Biological Media in New Media Art [C]//. The Second International Conference on Bio-inspired Design and Technology 2021, 2021: 178-236. (in Chinese)