



The Research and Application of Intelligent Interaction Ceramic Installation Art in Vision, Hearing, and Touch

Jiayin Huang^(✉) and Sone Simatrang

Faculty of Decorative Arts, Silpakorn University, Bangkok 10200, Thailand
jiayin_h@silpakorn.edu

Abstract. With the development of science and technology, more and more new technologies have been applied to art, and various art forms have produced new infusion forms. Interactive ceramic art with the medium of “vision, hearing, and touch” has become a new concept in the contemporary ceramic art industry. With the development and widespread dissemination of ceramic art, ceramic installation art has also increasingly been used in the environment. The focus of this study is how to generate intelligent interaction between people and ceramic installation art in the environment. The experience of “vision, hearing, and touch” is added to the ceramic installation art, and the ceramic installation art reacts to human body language through the induction system. The different body language of the audience is analyzed by the computer control system so that the ceramic installation and people can interact intelligently in a specific environment, and the ceramic installation art can relate to people.

Keywords: Vision · Hearing And Touch · Ceramic Installation · Intelligent Interaction

1 Introduction

Today, ceramic installation art has been widely used in the environment and has a connection with the environment, and the relationship between them affects each other.

The environment is the creator of the space, and the ceramic installation art clarifies the theme of the space and decorates the environment. Under the background of more diverse ways of displaying works of art, it has become a new trend to emphasize the combination of new media in creating ceramic art.

Since the 1980s, the relationship between science and art has begun to converge. Combining a variety of intelligent means such as extensive data analysis and computer algorithms appears in the public eye as a new artistic expression. Nowadays, artificial intelligence art has developed to a mature stage, such as interactive digital media, digital images on display, digital art of artificial intelligence in 3D movies, and the application of artificial intelligence in news media communication.

With intelligent interaction, the artist makes it interactive, technological, and artistic. Putting “visual, hearing, and touch” into the ceramic installation art in the environment can enhance the atmosphere, rendering the environment, and enhance people’s psychological feeling of connecting with the works of art.

2 Analysis of “Visual, Hearing, Touch” Ceramic Installation Art

Due to the multiple crossover modes across disciplines, ceramics have more and more forms nowadays. Ceramic art is separated from traditional ceramic art and appears in various forms of expression. For example, ceramics tend to be three-dimensional shapes of contemporary ceramic sculptures. They have been placed in a specific environmental space like installation art combined with intelligent systems to form a highly interactive ceramic installation art. Because intelligent ceramic installation art belongs to the combination of technology and art, intelligent ceramic installation art and environmental intelligence have not been systematically synchronized in the overall planning yet.

“Intelligent buildings or environmental intelligence are not co-constructed based on overall informatization. A system controls the intelligent integration pattern of environment, architecture, and sculpture” [2]. Therefore, the development of ceramic installation art in outdoor spaces needs to establish an integrated connection with the surrounding environment and architecture.

With the development of the social economy, the way ceramic art is displayed is changing with each passing day. With the advancement of science and technology, the experience of “visual, hearing, and touch” has been applied to a broader range of display fields, enabling the audience to participate. With the advancement of science and technology, the development of ceramic installation art in the direction of artificial intelligence is an inevitable trend. Ceramic art using “visual, hearing, and touch” as a medium can be attributed to one aspect of new media art.

However, ceramics’ art form and function cannot achieve the expected intelligent mode in intelligence. The reasons are mainly in the following two aspects: On the one hand, many practitioners in the ceramic industry dare not try new technologies, thinking that making ceramic into intelligent art ceramic is only a marketing model in the market. On the other hand, the art of intelligent ceramic installations is also limited by cognition. It cannot meet the actual needs of the current society for the smart ceramic industry. However, if the intelligent ceramic installation art is effectively combined with the environment and architecture according to the standards of the artificial intelligence system, the intelligence, informatization, and technological nation of the intelligent ceramic installation art in the environment can be created.

With the rapid development of modern technological society, people’s aesthetic requirements for art gradually increase. There must be not only a beautiful way to display art but also interact with artworks through technology. According to the needs of the public to clarify the design concept and design direction of intelligent ceramics, the construction of ceramic installation art needs to be developed from the perspective of beauty, economy to intelligence and design.



Fig. 1. Mythical beast. <https://xw.qq.com/cmsid/20200225A0BO2B00>

3 The Feasibility of Intelligent Ceramic Installation Art

Ceramics carry thousands of years of Chinese history and culture, and they are presented in various ways in human civilization. Many styles of modern ceramic art were formed in the 1980s. With the advancement of science and technology, general aesthetics has been continuously improved. The inherent materials and forms cannot meet people's needs nowadays. The integration of "visual, hearing, and touch" into ceramic installation art is a new exploration under the development trend of science and technology.

3.1 Case Study 1

In China, the earliest devices to apply ceramics to the environment should be the mythical beasts on the eaves of ancient buildings (Fig. 1). They not only decorate the building but also emphasize the meaning that people give the beast itself and the emotional sustenance for the building. Hegel believes: "Sculpture is like architecture. Architecture shapes images through spatial forms, while sculpture presents inseparable integrity in front of the audience through physical images that express spiritual individuality" [3]. Therefore, as a form of sculpture, ceramic art decorates and beautifies buildings and environments and embodies the spirituality it conveys to the audience.

3.2 Case Study 2

The beginning of contemporary ceramic installation art originates from the American artist Marshall Duchamp's "Fountain" exhibited in 1917 (Fig. 2). Marcel Duchamp (1887–1968) named a store-bought men's urinal "The Fountain" and anonymously sent it to the American Independent Artists Exhibition and asked to be exhibited as a work of art. It is the first marked installation work in the history of world art, and it can also be said to be the first ceramic ready-made product to be used as installation art. Global art authorities have rated his urinals as the most influential work of art in art history. Duchamp led painting to the free realm of art: his thought was to ultimately betray the ancient Greek-style "artistic" thought and bring art into a proper form, realistic place, and border situation. Wittgenstein put forward the "craft and experience" [5]. Therefore, ceramic art can find a breakthrough in technology and form a work of art combining technology and art.



Fig. 2. Fountain. http://art.china.cn/education/2011-10/28/content_4581145.htm



Fig. 3. Wang Ranran.

3.3 Case Study 3

The interaction of art comes from sound, light, and electricity. “The development of sculpture in the future will be more digital, the sculpture creation will be simpler and lighter, and the connection between sculpture and people and the Internet will be more closely, which affects isolated audiences and the entire society” [1]. The intelligent sculpture made by Wang Ranran is about the emotion between art and people (Fig. 3). He put a QR code beside the sculpture so that the viewer could interact with the sculpture by scanning the code.

Results: People are inseparable from intelligence; the interaction of ceramic installation art is feasible. The use of intelligence requires computers to perform complex code operations, infrared sensor technology, and intelligent system control to achieve the effect of interaction.

4 The Relationship between Intelligent Ceramic Installation Art, Environment, and People

The intelligent ceramic installation art brings people brand-new thinking. It exists in the environment with its unique art form, showing the style differently. As an essential part

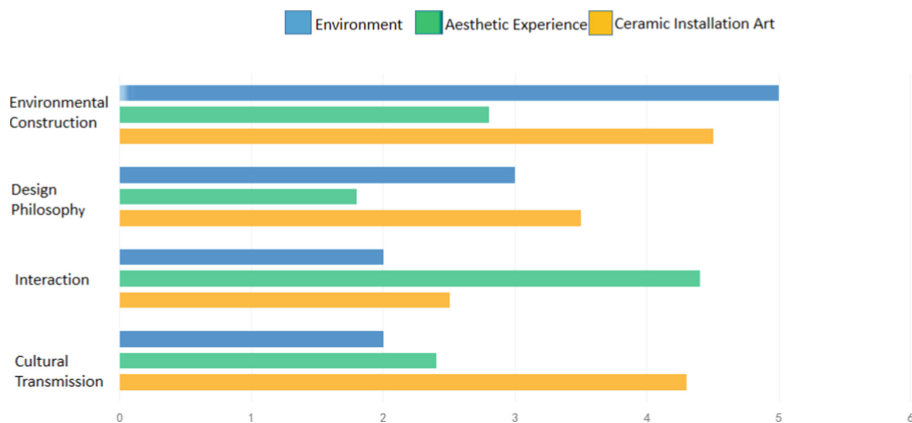


Fig. 4. Feedback data.

of environmental space, intelligent ceramic installation is also endowed with the era of its relationship between the environment and people.

Intelligent ceramic installation art must integrate with the environment and interact with people. In the design of intelligent ceramic installation art, the form of the installation should be considered to play a role in the setting in the environment, and the designer's concept should be displayed through the installation art. The communication between artist and audience is conveyed.

The placement of intelligent ceramic installation art in the environment increases the interest and interactivity of ceramic art through "visual, hearing, and touch". It allows people to interact with ceramic art, bringing interest to people, and optimizes the environmental space. Therefore, there is an inseparable cyclic relationship between the environment, ceramic installation art, and people. All three are indispensable. Otherwise, it will not be able to meet the meaning of the existence of intelligent ceramic installation art.

5 Data Analysis of Intelligent Ceramic Installation Art

Combined with the survey data, the researchers will test the intelligent ceramic installation art and then analyze all the data collected as fundamental knowledge. By constructing an intelligent data analysis model, the ceramic installation can generate autonomous feedback and intelligent recognition through infrared sensing technology and a computer-aided system of the surrounding natural environment.

The actual feedback of the intelligent ceramic installation art is according to the intelligent system. Combined with text data analysis, it provides data support for intelligent ceramic installation art in the environment.

The researchers conduct field investigation and research on intelligent ceramic installation art about the relationship between environment and people, then apply the collected design elements to conceptual design to get more feedback on environmentally installation art (Figs. 4 and 5).



Fig. 5. Study method.

6 Application of Intelligent System in Ceramic Installation Art

6.1 Intelligent Interactive Technology

Since the 21st century, the value of artworks is no longer limited to static viewing; new presentations are emerging rapidly. Intelligent ceramic interactive installations have injected new life into traditional ceramic art.

In the design and research of ceramic installation art, researchers use infrared sensing devices to sense the ceramic installation's external environment with the extensive use of computer control systems, infrared sensor technology, and other technologies to achieve a new display and interactive effects. When the intelligent ceramic installation art senses changes in the external environment, the computer performs complex code operations, and the eyes' image on the surface of the installation starts to flicker. The sensing device can also control the system through infrared and sound, presenting different peacock dance music for any age. Visitors can interact with intelligent ceramic devices from any angle, and all viewers can participate in meeting people's interactive needs.

6.2 Design of Smart Ceramic Device

The design of this ceramic installation is inspired by the peacock dance of the Dai ethnic minority in Yunnan (Fig. 6). Among the design elements, the researcher extracted the peacock's eyes from the traditional Dai shelf peacock dance as the visual identification of the ceramic installation art.

The ceramic installation art uses geometric shapes as the ceramic works of shape. It uses undulating cylinders to represent the rhythm of the peacock dance music. William Hogarth said: "One might believe that the most beautiful effect is produced by the symmetrical arrangement of the various parts of the object [4]." Therefore, the ceramic



Fig. 6. Intelligent ceramic installation art.

installation art emphasizes the simple shape placed in the environment. It will not affect the beauty of the peacock's eyes on the ceramic art's body because of the complexity of the geomantic shape.

A sensor device is placed in the ceramic installation art in intelligent design through the infrared sensor set in the eyeball of the peacock's eye, connected to the computer control system to achieve intelligent interaction with people, making the peacock's eyes come alive. Thus, people can interact with ceramic artwork vividly.

The application of intelligent systems in the landscape of ceramic installation art can make it more interactive. The infrared sensor senses when the player walks toward the intelligent ceramic installation, and the eyes will flash. When the visitor inadvertently touches the intelligent ceramic installation art, the installation will play the music of the peacock dance. With the peacock dance music playing and the flashing of the peacock's eyes, visitors can interact with the ceramic installation to achieve an interactive experience of "visual, hearing, and touch".

7 Research Motivation and Significance

This research combines artificial intelligence with interactive ceramic art using a computer control system and infrared sensing system. The researchers use an artificial intelligence algorithm to present different characteristics of ceramic installations, which enriches people's aesthetic expectations while optimizing the environment. At the same time, the application of intelligent ceramic interactive devices will also inspire new creative ideas for artists.

8 Conclusion

- (1) If traditional ceramics are transformed and upgraded into intelligent ceramics, the intelligent system must be skillfully integrated. The art of intelligent ceramic installation needs to consider the setting of intelligent technology in the ceramic installation system so that the intelligent system of ceramic installation art can interact with people.

- (2) Among the ceramic installation art, the appearance of intelligent ceramic installation art should meet the aesthetic standards of the public and complement the surrounding environment.
- (3) It is concluded that with the development of the social economy and the continuous improvement of scientific and technological levels, the development of ceramic art requires new opportunities brought by science and technology, which brings interactivity and interest to people.

References

1. Peng Lan. Introduction to Internet Communication [M]. (2001), Beijing People's University of China Press.
2. Ranran Wang, Veerawat Sirivesmas, Analysis of Intelligent Sculpture in Urban Environmental Information, 2022 3rd International Workshop on Electronic Communication and Artificial Intelligence (IWECAL).
3. Translated by Kou Pengcheng, Aesthetics [M]. (2016), Friedrich Hegel, Jiangsu People's Publishing House, P268
4. William Hogarth, (2017) The analysis of Beauty; translated by Yang Chengyan Shanghai People's Art Press.
5. Wittgenstein, Philosophical Investigations, (Oxford,1953), tr, by E. Anscombe. Quotations appear in the preceding selection, 195–199-Editor's note.

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