Wuhan Textile University
Master of Fine Arts Dissertation

武漢紡織大學

Research on the Application
of Audio-Visual
Interactive Art from
the Perspective of Public Art

Peng Song-xi

Master's thesis

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Research on the Application of Audio-Visual Interactive Art from the Perspective of Public Art

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Profession:　Integrated design
Research Interests:　Public art
Completion Date:　March 2023

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M. F. A. Dissertation

Research on the Application of Audio-Visual Interactive Art from the Perspective of Public Art

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Time:	June 2023

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Abstract

Emerged from art, visual aspects of the experience and the experience of hearing level has been feeling the two important aspects of art, and because there are many visual and auditory on physical activity can corresponding potential of mapping relationship, so people will inevitably be on the way to explore the art of combining both through the medium of artistic pursuit, both at home and abroad early opera, drama, Or film, animation, artistic creation is the pursuit of audiovisual level of art and artistic exploration, along with the social development and the development of science and technology, the traditional form of expression can't satisfy people's aesthetic demand, resulting in multiple media fusion of great interactive art, the current domestic and foreign the great interaction research mainly lies in the visual visualization of sound, from belongs to the field of information visualization, for the creation of the great interaction work confined to the audio data parsing and the shock on the level of perception, from the aspect of public art is such a great interaction is short, there is no deep immersion experience, the purpose of this paper is to through the public artistic vision into great interaction study so as to promote great interactive experience in depth in the field of public art creation.

This paper studies the interaction between music and painting from two aspects: academic research; Through the public art and art visual perception to interact with great art closely linked, the analysis of features of great interaction, the great interaction in public art state of audience awareness can be divided into multiple dimensions parsing, from auditory and visual features to the mutual transformation between the two, and how to convert audiovisual to deeper experience. It studies the common characteristics of aesthetic thought and visual expression in public art and the interaction between music and painting, and studies the possibility of interaction between music and painting in cognitive aesthetics, so as to provide theoretical basis and creation origin for interactive creation of music and painting. Practice design part; Through the analysis of the sensory stimulation degree of the audience in different audio, the influence of the characteristics of different audio on the emotional changes of the audience is extracted, and the perception data of the aesthetic characteristics of the sound in the cognitive differences of different audiences are constructed. To map and analyze the different characteristics of aesthetic elements in the combination of sound data and visual perception, and give play to the advantages of multidisciplinary integration of digital art. The data was visualized by Touch Designer, Blender and other software. Combine various kinds of interactive installation, the expression form carries on the artistic creation exploration

Key words: Public art; audio-visual interactive; data visualization; installation art; new media art; Audiovisual research
Thesis: Professional Applied Research

Contents

1 Introduction

1.1 Research background

Since the emergence of art, the visual level of experience and the auditory level of experience has always been the two important levels of people's perception of art, because there are a variety of potential relationships between vision and hearing physiological activities that can be mapped, so people will inevitably appear on the road of exploring art The artistic pursuit of combining the two through the media, whether it is the early opera, opera, or film, animation, etc., at home and abroad, are the pursuit of artistic creation and artistic exploration of audio-visual level art. With the development of society and science and technology, traditional forms of expression can't meet people's aesthetic needs, and multi-media interactive art of music and painting has emerged, which has great potential in commercial development and cultural communication. Interactive art of sound and painting generates economic benefits by attracting the public to visit through the re-creation of culture, so as to realize a virtuous circle of artworks and social and economic development.

At present, the research on audio-visual interaction at home and abroad mainly lies in the visual visualization of sound, which belongs to the field of information visualization, and the creation of audio-visual interactive works is limited to the analysis of audio data and the shock of perception, and from the level of public art, this kind of audio-visual interaction is ephemeral and lacking in the absence of a deeply immersive experience, this paper aims to improve the creative depth of the interactive experience of music and painting in the field of public art by cutting into the research of audio and painting Interaction from the perspective of public art.

1.2 The purpose and significance of the research project

1.2.1 Research purpose

The purpose of this research project is to deeply explore the artistic characteristics of audio-visual interactive installation art from the perspective of public art, to find a way to create art that can avoid the sense of form, to explore the artistic creation ideas suitable for the creation of audio-visual interactive installation art, and to provide a feasible way for artists and audiences to create interactive artworks. This paper starts from the aspects of public art, the visual perception esthetic characteristics of art, the characteristics of audio-visual interaction, and the way of interaction,

and brings aesthetic experiences and aesthetic emotion into the creation of works in the case of creating art based on data. Referring to excellent cases at home and abroad, summarizing and absorbing the methods for creating works of art suitable for audio-visual interactive installation art, and demonstrating them through actual works, so as to provide certain creative experience for the creation of such works.

1.2.2 Significance of the research project

The development of art has always been closely linked to the development of society, economy, and science and technology. With the development of the media, the art of music and painting, that is, the form of artistic creation that combines vision and hearing, has also kept pace with the times, from the early drama to the later art forms such as animation and film to the avant-garde installation art and other forms of expression, all of which have continued to advance with the development of science and technology. With the development of society, art has also developed from the traditional easel art to a new era, the birth of the slogan "everyone is an artist " marks the rise of this era, the concept of public art came into being, the emergence of a variety of new media, so that artists have to think about the relationship with the public, and the concept of interaction is introduced into the creation of art, and as people have been pursuing the art of music and painting, the brunt of the art of music and painting, the production of sound and painting interactive art.

With the rapid growth of China's social and economic strength and the rapid development of science and technology, people's life and entertainment mode has changed from the material level to the spiritual level, and the interactive art form of music and painting has changed the traditional way of art viewing and experience. With the development of science and technology, traditional music and painting experience methods such as movies, dramas, animations and other ways can't fully meet the audience's artistic experience, when AR, VR, VR, etc. With the gradual development of related technologies and concepts such as the metaverse, audio-visual interactive art has gradually become a mainstream way of artistic expression, due to the emergence of new media, audio-visual interactive art presents a trend of multi-media and multi-disciplinary integration, but most of the domestic audio-visual interactive works have the problem of homogenization due to the characteristics of audio-visual interaction, and when the audience accepts the visual perceptual impact brought by audio-visual interactive installation art, how to achieve a deeper experience and avoid the emergence of homogenization requires us to examine audio-visual interactive art through the concept of public art. In 2020, China introduced a number of policies highly related to the night tour economy, and the interactive art of music and painting has great potential and space in the protection of cultural relics, cultural inheritance, urban tourism economic development, and theatrical performance venues.

The significance of the study is that:

1. To study how to solve the corresponding feelings of visual perception in various media forms in the creation of audio-visual interactive art through public art, so

that it can't only stimulate at the sensory level, but also infects the aesthetic experience, aesthetic emotion and aesthetic experience of different individuals.

2. To study the driving effect of individual data under different aesthetic emotions and different aesthetic perceptions on different artistic elements.

3. Investigate how the visual impact of different artistic elements on visual perception translates into a deeper aesthetic experience.

4. To study the possibility of the application of audio-visual interactive art in various urban spaces and the feasibility mode of audio-visual interactive art creation.

5. To study the effects of different forms of interactive art creation on the economy and culture.

1.3 Research status at home and abroad

1.3.1 Current status of domestic research

The research on audio-visual interactive art in China is still in the early stage, and there are only 9 journal papers indexed on CNKI on the topic of audio-visual interaction, and 1209 journal papers are included in the search on the topic of new media art (including film and other forms of artistic creation).

It can be seen that China is still in the immature exploration stage in terms of audio-visual interaction, and there is almost no relevant research on audio-visual interactive art from the perspective of public art in China, so this topic has certain theoretical and practical significance.

1. Gao Hua of Xi'an Academy of Fine Arts published a paper "Application and Exploration of Sound Installation in Public Art Space", which provides new directions and ideas for public art as an element and provides more possibilities for the design and development of public space. In public art, the sound demanded by the audience is added "according to local conditions ", and the feeling of solid space is combined with the dynamic spatial sound experience to create a unique art space for the public and form a spatial image.

2. Ma Shi Hua of the Central Conservatory of Music in his paper "Research on the Audio-Visual Mutual Control Strategy in the Creation of Interactive Multimedia Works" summarized the audio-visual mutual control strategy in interactive multimedia art for the purpose of research, verified the feasibility of the strategy from multiple stages, supplemented the practical methods, and obtained a complete strategy, which filled the gap in the strategy of interactive multimedia art audio-visual theory.

3. Hong Yu-Zhong of the Central Academy of Fine Arts, in his paper "Research on Synaesthesia Art in Public Space", based on the investigation of the cultural characteristics of the digital age, studied the works that express the image of the city through the sensory transformation system and Synaesthesia theory. He believes that Synaesthesia works that express the image of the city should

not be limited to the works in the exhibition hall, but should also express the existing value of the city, and is committed to sharing Synaesthesia in the urban space.

4. Zhang Ruo-fan of Nanjing University of the Arts published a paper entitled "Research on the Tendency of Dematerialization in Public Art Creation", which examines how modern public art, which is contemporaneous with postmodern art, has gone through the initial stage of material presentation such as murals, sculptures, and installations, and how a large number of public artworks presented in non-material forms such as images, interactions, sound, and lighting expand the connotation and extension of art. Through the special perspective of immateriality, the relationship between public art and contemporary art and the creative methods are analyzed.

5. Wang Na of the China Academy of Fine Arts in her paper "Digital Media Art: Several Ways to Use it in Public Space ". Through the case study of several ways of using digital media art in public space, this paper analyzes its impact in public space, including aesthetic value, spatial planning, the impact of public spiritual life and its changes in urban space, and studies how to popularize public art through technology and bring more aesthetic experience into people's lives.

6. Liang Fu-Rong of Capital Normal University, in her paper "From Mindfulness to Participation: A Brief Discussion on the Application of Interactive Art" published in Tomorrow's Fashion, compares the traditional artworks of mindfulness with the interactive artworks of participation, thus introducing the concept of interactive art, and analyzes the expressions of interactive art, including visual, auditory, tactile, place-making and situational interaction.

7. Zhao Xinge, an associate researcher at the Institute of Fine Arts of the Chinese Academy of Arts, in his paper "The Expansion of Public Art by New Audio-Visual Technology" in the journal "Public Art". The Immersion of the Floating Light Dancing Bird Through the work "Floating Light Playing Oriole" to study the interactive art of music and painting as the most dynamic comprehensive art of contemporary times, the shaping of urban space and the improvement of environmental quality, it is believed that public art can not only use new technologies, new materials, and new means to bring visual, auditory, tactile and other sensory pleasures to the public, but also enhance the cultural taste of the city through the transformation of existing spaces. The use of space displacement, light and shadow separation, color illusion and other means to broaden the cognition and vision of art.

From the perspective of public art, there is still a lot of room for development and development potential of interactive art in China, and the main reason is that the development of science and technology has a long development time from the beginning to maturity, and there is still room for long-term development in the close integration of music and painting art with science and technology. China's demand for the development of cultural strength has also evolved from exploring itself to an im-

portant stage of export, and the country's attention to the development of interactive art of music and painting still has a lot of room for strategic development. Therefore, on multiple levels, the interactive art of music and painting should be combined with science and technology, and its cultural and public art attributes should be deeply explored.

1.3.2 Overview of foreign research

Foreign academic research on the interactive art of sound and painting pays more attention to conceptuality, abstraction, the connection between sound and feeling, and storytelling Ars Electronica in the Netherlands, which served the rising international group of artists and theorists who were working on electronic media and new technologies, and the famous German ZKM Karlsruhe Center for Art and Media Technology in 1997 It is the only art museum in the world that focuses on interactive art. The V2 Dynamic Media Art Lab in the Netherlands provides a platform for artists, craftsmen, scholars, and civil society organizations to collaborate across borders and carry out a number of projects that reflect on the current development of art and technology.

For the commercial application of interactive art of sound and painting, there are a lot of successful cases of the combination of commercial and interactive art in foreign countries, such as artists Ryoji Ikeda, Ryuichi Sakamoto, Oliver Beale, etc., and art teams d'strict, Supermafia, teamlab, etc.

1.4 Research Methodology

(1) Literature retrieval and review method: By reviewing the results of domestic audio-visual interactive installation art creation and public art research, the goal is to intervene in the creation of audio-visual interaction by public art, and to collect and sort out relevant materials on audio-visual interactive installation art and cognitive aesthetics It provides a theoretical basis for the artistic creation and design of this paper. A large number of journal literature and books are used for theoretical reference, comparative analysis and integration, so as to prepare for the later application design research.

16(2) Interdisciplinary interactive installation art is a multidisciplinary art creation field, with the deepening of the thesis and design strategy, the synthesis and application of multidisciplinary concepts can make art creation truly achieve the deep experience state of public art, improve practicability and make the audience more satisfied. Therefore, the study and research of theories in these related disciplines are indispensable. In order to ensure the feasibility of public art intervention in audio-visual interactive installations, taking various existing audio-visual interactive works at home and abroad as an example, through the collection of data on the audience's emotions and aesthetic experience of audio-visual interactive works, the artworks with public art characteristics suitable for the creation of audio-visual interactive installations are summarized. (4) The field research method investigates a number of new media art exhibitions and works in China to investigate the aes-

thetic experience, aesthetic emotion and aesthetic experience of their audiences, and summarizes the advantages and disadvantages of existing domestic interactive works of music and painting, so as to facilitate the data construction of the intervention of public art in the later stage.

1.5 Research Framework

The overall research framework of this paper is shown in Figure 1.5. which first analyzes the development history of audio-visual interactive art, and analyzes the stylistic characteristics of audio-visual interaction. Science and technology introduce the common characteristics of audio-visual interaction and public art, and explore the creative characteristics of audio-visual interactive art creation at various levels by classifying audio-visual interactive art in public art, and finally look forward to the future development trend of audio-visual interactive art based on personal works and the cases discussed above.
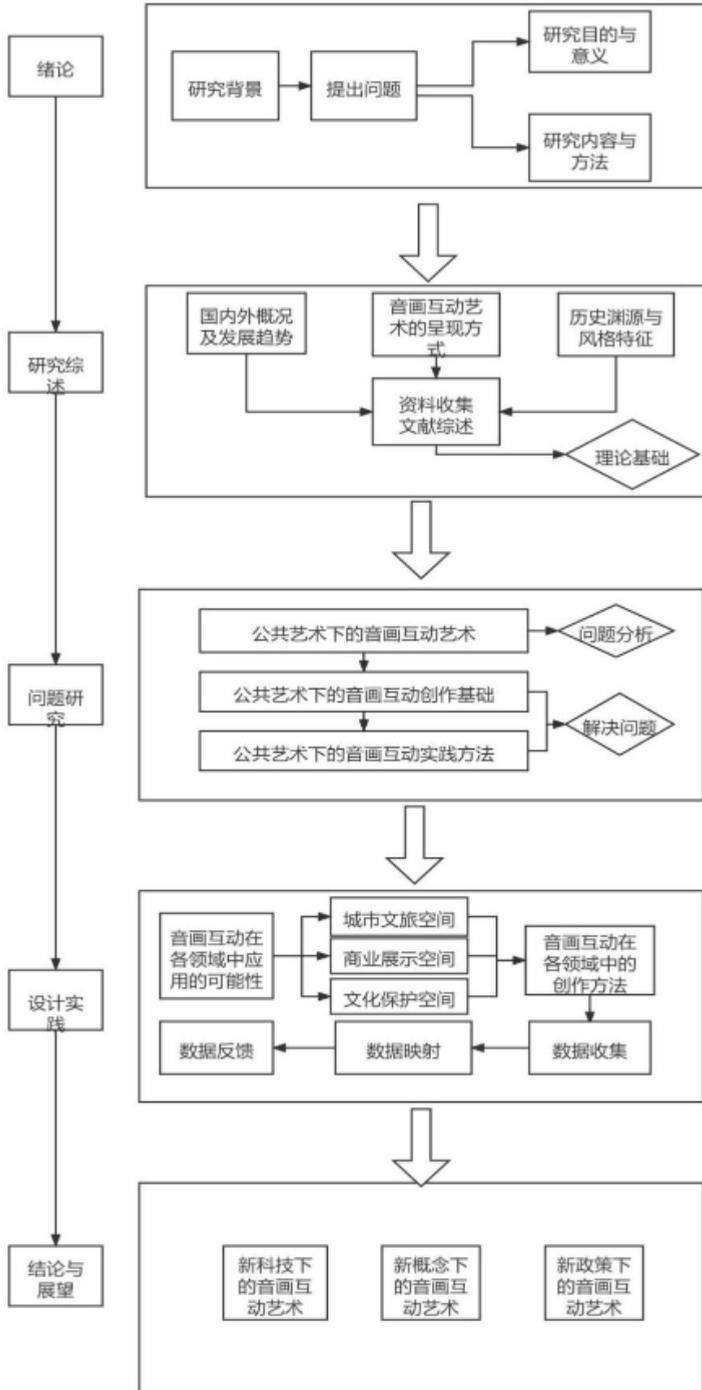
图 1.5 研究框架图   Fig1.5 Research framework

2. The historical origin and stylistic characteristics of interactive art of sound and painting

This chapter begins with the analysis of the historical elements of audio-visual interactive art, analyzes the audio-visual interaction at home and abroad, and finds the historical origin of the development of audio-visual interactive art.

2.1 The development history of audio-visual interaction

The exploration of music and painting art in ancient China is in the form of opera, which originated from primitive song and dance, and integrates various art forms, which is a stage art form with a long history, which can be traced back to the pre-Qin period at the earliest, and then appeared in the Han Dynasty, which is more "music and painting art". The nature of artistic expression, in the shadow puppet play, all kinds of rare and exotic beasts can be on the stage, flying to the sky, supernatural transformation, moving mountains and seas and other ancients for the beautiful and romantic pursuit of immortals can be reflected, with the operation skills of the ancient opera troupe, sound and light effects show beautiful artistic effects.

The art of music and painting abroad can be traced back to the end of the 16th century, when opera emerged in Italy, and on the basis of researching, excavating and recreating ancient Greek tragic poetry, it added creativity, combined poetry, music, and drama to perform on some occasions. The opera is mainly performed by auditory enjoyment, through singing and orchestra, and the picture is composed of the movements of the opera singers, the basic movements, the so-called body language, similar to the drama, except for individual plots to be designed according to the plot, the others are mostly composed of the actors' subconscious movements according to music and emotion.

In the early 19th century, with the development of science and technology, the emergence of cinema symbolized the arrival of the era of foreign music and painting art, and the Lumière brothers of France successfully invented the movable cinema camera and premiered the film "The Gate of the Lumière Factory" on March 22, 1895, and created 12 films in the same year. Deservedly became the father of cinema. From 1908 to 1912, David Griffith created " Parallel Montage " in which the film was completely freed from the shackles of a stage play. The 1927 The King of Jazz Singers marked the dawn of the era of sound cinema and the formal maturity of cinema as an art form. To this day, cinema is still an important part of the art of sound

and painting.12Color Ring and the design of a color piano, which opened up the exploration of sound and color by different artists and scientists, such as Kandinsky reconstructing the score through different rings, Mondrian building the relationship with music through his signature color blocks, and Remington inventing the color organ by combining color and organ. By the eighteenth century, foreign scientists combined science and technology with sound and painting Harlock S. Greenwalt invented the phonograph for visual music; Wilfred used a large color projector to perform in the theater and invented the light art box; By studying the relationship between abstract graphics and music, Oscar Fischinger tries to find out the relationship between graphics and music, such as the latent connection between harmony, melody and their counterpoint images.

2.2 Stylistic characteristics of audio-visual interaction

The characteristics of audio-visual interactive art are analyzed and decomposed into five characteristics through the background of the times and subsequent cases.

2.2.1 Exploring the conceptual depth of creation

The biggest advantage of digital art such as audio and painting interactive art is that for the artist, the cumbersome process of material purchase, work production, on-site installation and so on is removed, which greatly liberates the artist's imagination, and all kinds of imaginative ideas can be completed by relying on new technological means, and in the presence of algorithms, audio and painting interactive works can even have their own vitality and evolve and explore on their own. This kind of artistic creation has long-term vitality and vitality. For the audience, when entering a field where no other information intervenes, the understanding of the work itself has a very strong spontaneity, and because of the sense of separation from the real world, it is easier for the audience to experience the creator's understanding and application of the concept when viewing such works. The conceptuality of the interaction between music and painting can rely on various cultural IPs and various art forms to explore the depth of its own creation. For example, the naked-eye 3D work "Gathering and Dispersing Red Mansions" (Fig. 2.2) in Wang Fu-jing, Beijing, restores people's impression of the Grand View Garden through dramatic expression, imprinting the concept of new national style aesthetics in the hearts of the audience.

图 2.2 聚散红楼　　　　　　　　　　　　　　　　　Fig. 2.2 Gather and disperse the Red Mansion

2.2.2 Improve the Synaesthesia of the experience level

Synaesthesia refers to the characteristics associated between vision and hearing, such as hue, saturation, brightness, lightness, sparseness, and other visual sensations and auditory sound frequency, loudness, tone, timbre and other characteristics can complement each other to achieve synesthesia to a certain extent. Synaesthesia is an important psychological phenomenon, which mainly refers to the production of one feeling in the mind and another feeling at the same time. Aesthetic synesthesia pays more attention to the correspondence between the external structure of the aesthetic object and the emotional spirit. In music, aesthetic Synaesthesia can enable the viewer to intuitively produce auditory perception, and the visual perception experience of color and picture association in the mind.

Mutual transformation of audiovisual language. Auditory imagery can be transformed into a visual image, although the sound is different from the perceptual information carried by the image. However, music has the characteristic of " giving shape to the sound ", reflecting the inner illusion with fluidity. The combination of warm and cold colors in the visual language, and the dense layout of the brush, etc., also have rhythmic changes in music. This synesthesia is based on personal subjective feelings, and the artist leads the audience to a state of sensory immersion and sensory shock through the site-based creation of his works.

Synaesthesia[1] needs to be distinguished from synesthesia, which does not only emphasize the simple combination of visual and auditory, but analyzes the information existing in the sound that can be mapped with vision, finds commonality and combines space to create audio-visual works that immerse the audience in the soul. For example, the work "REDO–iMapp bucharest 2021" (Fig. 2.2) expresses the can-

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1　[1] Wu Yuxuan Research on the visualization design of Chinese classical music [D]. Beijing Jiao Tong University, 2020.DOI:10.26944/d.cnki.gbfju.2020.003737

cellation of a large number of mapping activities during the pandemic, the difficulties of the life of map creators, and the hope that through mapping and projection, people can overcome their difficulties and bring hope and inspiration.

图 2.2 iMapp 布加勒斯特   Fig2.2 iMapp Bucharest 2021

2.2.3 Guide the psychological immersion of the audience

Immersion is the psychological " flow state ", due to the synaesthesia characteristics of the creation of interactive art of sound and painting, in the process of its creation, it often tends to the creation of field space, when the characteristics of immersion and the interactive art of music and painting are combined, the status of the audience has undergone a fundamental change, from the audience passively receiving information to actively participating in the interaction, from self-ontological perception to the perception of events in the environment as a whole. When the artist creates an immersive art field, the audience will be fully engaged in the visual and sensory experience brought by the art because of the influence of the site, ignoring the superfluous information and distractions around them. Interactive art of music and painting is not only concerned with the immersive experience at the material level, but also on the active exploration at the level of consciousness and thinking Be a part of the work. Interactive art of sound and painting has a fluid emotional expression. In music, attention is paid to the formation of a complete structure of emotional expression through the timeline and the rhythm and rhythm of the music. In terms of composition, the interactive art of sound and painting is different from the Western method of fixed-point perspective, and uses more lines to express multi-focus from a top-down angle or adopt a long axis to reflect the flow of spatiality. This unique expressive technique of the musical narrative and the spacetime of painting, based on traditional Chinese painting, brings a fluid emotional experience.

The immersive maze created by the French team Inlo "THIS WAY OUT" (FIG. 2.2) the whole space is structured through abstract language, and in the whole dark space, the audience is guided forward through linear steps, through the repeated appearance of linear steps to make the audience accumulate curiosity and calm in the work, and the destination urges the audience's curiosity through the image of

clouds, until finally out of the labyrinth. The whole work separates the viewer from the real world through dark space and linear guidance, enhancing the audience's sense of immersion.

Figure 2. 2 Go out from here   Fig2.2 THIS WAY OUT

2.2.4 Enhance the interactivity of the audience's interest

In the creation of interactive art of music and painting, the relationship between the creator, the work and the audience has always been the focus of the creators' attention in their creation, and the creators no longer seek to meet the audience's superficial physiological needs as usual, but constantly pursue to satisfy the audience's deep senses and spiritual touch. The potential demand for interactive art requires creators to connect their works with the audience at the beginning of their creative process, leading the audience to become co-participants, so that the works can always resonate with the audience's emotions and life experiences to a certain extent. Interactive creation is becoming more and more interactive in today's information age

It has gradually become a mainstream way of artistic creation, and this trend has made art creators not limited to the original artists, a specific group of people, and creative methods are not limited to traditional artistic expressions such as painting, music, film, sculpture, etc., and the emergence and rapid popularity of self-media have made everyone an artist and a creator.

The Lightwaves (Fig. 2.2) was created by the Polish art collective panGenerator at the largest art festival in Poland "Męskie Granie", and consists of several drum kits, each of which is connected to one group RGBLED light strip, connected to the sphere in the middle, and developed hardware and software for it, the light strip with the audience's tapping continues to merge into the middle of the helium balloon, the speed, intensity depends on the audience's tapping speed, intensity, each audience can freely participate in the whole work, with a high degree of ornamentation and interactivity.

图 2.2 光波   Fig.2.2 The Lightwaves

2.2.5 Bring the diverse citizenship of the audience

In the modern society with the developed network, once a work is circulated by the public, the evaluation of social public opinion makes the meaning of the work can be defined by everyone, and the audience's viewing mode is not only the previous viewing, appreciation, enjoyment of the work and gaining understanding, but also It is the work that can participate in the creator's work and have feedback, which makes the creation of interactive art of music and painting have to pay attention to the participation of the audience in the process of expression. The participation of the audience and the subsequent feedback will prompt the creator to create the work again and again after the exhibition, so that the work has development. In modern society, the emergence of consumerism has made the works of art in the context of the fast era more commercial, and this commercial atmosphere has also made the artists not at the highest level of aesthetics, so that the works of art have more market atmosphere, and the creators are not only limited to the expression of emotions such as joy, anger and sorrow, but also appear works that only highlight the shocking feelings of the audience's audio-visual senses, which makes the opposition between aesthetics and consumerism appear in artistic expression.

Artist Neil Mendoza's "Mechanical masterpiece" (Fig. 2.2) allows the public to participate in the ridicule and ridicule of famous paintings of the 21st century by using machinery and software to form an installation art. For example, use the press inflator to make Rainey · The apple in Magritte's "Children of Men" gets bigger. Use the switch to light the lights in Van Gogh's "Cafe Under the Stars".
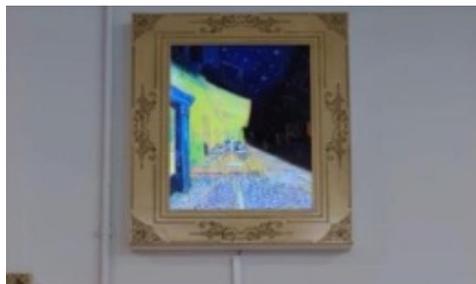

图 2.2 机械杰作   Fig. 2.2 Mechanical masterpiece

3. The creative expression of sound and painting interaction in public art

The audience, scenes, and purposes of interactive art are basically subordinate to public art, and they are all rooted in culture, history, space, and media to create works. Commonality is the basis for the development of both, both of which are inextricably linked to the display of public culture, influencing public life through works of art, and thus constructing the artistic image of public culture. Compared with traditional public art, interactive art has a stronger appeal of appearance, and its expression is more intuitive and appears in all corners of the public scene in a more trivial mode.

3.1 Social performance of audio-visual interaction

With the social and economic development and the introduction of science and technology, China's audio-visual interactive art has flourished in many fields: (1) Due to the needs of urban cultural construction for the night tour economy, various cities have promoted China's spiritual culture and urban culture through urban light and shadow shows, scenic spot night tour experiences, etc. The state has issued documents related to the night tourism economy, prompting tourism cities to conduct in-depth exploration of the night tourism experience. (2) In terms of tourism culture, a number of museums combine their own cultural characteristics, holographic projection and other technologies, so that the public can understand the cultural connotation of the museum while watching. (3) Domestic avant-garde artists have carried out a number of art festivals and art forums in combination with a variety of media, such as the Shanghai Point of Light Art Festival, which has just ended for 5 sessions, and the Yangtze River Forum on Digital Light and Shadow Art held in Wuhan at the same time, which has a good interpretation of the interactive art of music and painting from the technical and academic levels. The improvement of people's living standards also plays an important role in the development of audio and painting interactive art, the popularity of live house, virtual idols, VR, AR, MR and other experience places, these scenes of audio and painting interactive art are involved and even play an important role, which makes the sound and painting interactive art flourish.

The rapid development of the economy has made the marketization of works of art, which is embodied in the consumerization and entertainment of artistic creation, and the interactive art of music and painting is strictly a form of art produced by market demand, and the production and communication media of works are closely related to the prosperity of popular culture and the commercialization of works of art. To a certain extent, the trend of entertainment in works of art is irreversible, and we

should also advocate that works of art become an entertaining thing, but we should not overemphasize its entertainment value. Only by combining the educational function of art with consumer culture can we truly realize the importance of consumer culture to the development of fine arts.

3.2 Scientific and technological performance of sound and picture interaction

The creation of interactive art of music and painting has the characteristics of the times, that is, it is closely integrated with science. At present, the most closely combined technology with the interactive art of music and painting, namely ar, VR, and mr, these three technologies have updated the traditional visual creation mode, and the development of "3R" technology has reconstructed art from the visual style and the concept of works, breaking the traditional logic of artistic creation "Technology" is the creation of art that can be done virtually outside of reality. VR technology, virtual reality technology, through a variety of technical means to work together to create a completely virtual world, isolate people from the real world, and simulate auditory, visual, tactile and other experiences for the experiencer. It enables the experiencer to fully immerse himself in the virtual world. AR technology: that is, augmented reality technology perfectly superimposes the information of the real world with the information of the virtual world, and maps the virtual information to the real world through technical means to the virtual information that is difficult to experience in the past some of the visual, auditory, olfactory, tactile and other information in life, so that this information is perceived by people and achieves a sensory experience beyond reality. AR technology can superimpose the virtual environment and the real environment into a picture or space in real time, so as to break through the limitations of real space. MR technology: Mixed reality technology is the combination of the virtual world and the real world to produce a new visual environment, real objects and data information coexist and interact in real time, generate new visual elements in real time and can interact with the real world, its biggest feature is that the content can be generated in real time.

3.3 Public expression of sound and picture interaction

3.3.1 The experiential nature of audio and picture interaction

As artworks become more and more entertaining, the audience's aesthetic needs are becoming more and more extensive, and the audience's pursuit of audio-visual experience is also increasing. Due to the intervention of new media and new technologies and traditional art, the audio-visual experience mode of the previous audio-visual experience has been transformed from a single sense, and other sensory experiences have become multi-sensory simultaneous linkage experience, which roots the concept of immersion in it, so that the audience can obtain a deeper experience. This immersive, deep-seated experience allows the audience to resonate visually and audibly, making it easier to achieve a spiritual experience, guiding the

audience to experience the emotions and artistic feelings brought by the work.

The visual or auditory sensory experience brought about by the interactive art of sound and painting in the experience is first, and this experience is brought about by the visual color, the intimate relationship and the frequency and height of the music; secondly, the two are interconnected and act together on the audience's sensory experience, and guide the audience's senses through the work to drive the emotion; finally, when the audio-visual experience accumulates to a certain extent, the work drives the audience's psychological and emotional explosion to achieve an immersive experience.

3.3.2 Artistic and technical synergy of sound and painting interaction

With the development of the trend of multidisciplinary integration, the creation of artists is no longer a matter of the artist alone, especially the audio-visual interactive artwork with a strong digital work, the artist needs to work with engineering, science and other multidisciplinary talents to create works of art, which is caused by the trend, but also the inherent demand of the development of artistic creation to the information age, for the audio-visual interactive art, the composition of a work is not only composed of artistic elements, the collection of information, the number The transformation of data, the realization of technology and other issues need to be dealt with separately, which requires artists to form a team to create art. This fully reflects the characteristics of the synergy between art and technology in the interactive art of sound and painting, and the technology and art promote each other, and the concept of art is constantly innovating while the technology is rapidly updated.

4. As a form of interactive art expression of sound and painting as public art

Starting from the form of artistic expression, when the technological development accumulates to a certain extent, the renewal of artistic concepts will produce more forms of artistic expression; When people's living standards develop, art appreciation will gradually move from the niche to the masses. Under the influence of various factors such as the development of new media and the improvement of people's living standards, audio-visual interactive art has an inseparable relationship with public art. As a result, sound visualization projection art that is biased towards live performances, human-computer interaction art that is biased towards experimental art, soundscape field visualization art that creates an immersive feeling through space, and the concept of cultural and creative collaborative culture that plays a huge role in the protection and promotion of traditional culture have emerged.

4.1 Sound visualization projection art

Due to the social development makes the application of sound visualization projection art in life very popular, such as the livehouse Performance that young people like more now, the stage art of major TV stations, and the larger commercial booths at home and abroad are all presented in this way, and this kind of work is often based on the symbiotic relationship between music rhythm and two-dimensional image, and arouses the resonance of the audience through the rhythm of sound and picture. It has a very strong sense of atmosphere and rhythm.

Because the form of expression is more direct, it is easy to mobilize the audience's senses and drive a strong on-site atmosphere, which is in line with the needs of current consumer culture, so it is very closely integrated with commerce. Its creators are often independent musicians, and artists need to form a team to carry out commercial artistic creation activities through performances.

When sound visual projection art appears as a work of art, it often needs to be combined with the interaction of the audience to realize the complete realization of the work, and the audience can experience the ideological connotation of the creator through the process of participating in the work. For example, the new media program "Poems Written to the City" (Figure 4.1) of the 2021 CCTV Qi xi Gala integrates dynamic capture technology with living dance movement language to present a new visual expression for the audience. In terms of visual form, the shadow composed of words is used to present the body language of a man and a woman dancing in real time, and the story of a man and woman who meet, fall in love, and love each other for a lifetime is shown

through chapters, thus highlighting the sense of form of the program. There will be " exploration ", " encounter ". These two words are extracted, and the other words are used as the background, and they are spelled with this as the center, and this is the center. After real-time recognition on the spot, the screen will show the shadow of the people and props formed by the lyrics, and based on the emotions conveyed by the singer, combined with the body language of the dancers, dance, which makes the original very vivid scene more vivid, but also adds a bit of freehand communication, through the most intuitive text symbols, while conveying the idea of the work.

图 4.1 写给城市的诗   Fig4.1A poem for the city

4.2 Audio: human-computer interactive art

The expression of audio human-computer interactive art generally requires a physical carrier, and the sound and picture are displayed through the interaction between the audience and the physical carrier, and this kind of work is more suitable for experimental installation art, and the concept of human-computer interaction is realized through the multi-segment combination of mechanical devices, sound and light, and other ways.

The main body of creation is often the art studio, the art laboratory, the specific way of its creation includes but is not limited to the concrete expression of the sound characteristics of specific musical instruments, the concrete expression of abstract sounds, etc., through the audience triggers special conditions to make the artwork start to operate, in order to consider the interaction of the audience to achieve the integrity of the work, with a strong experimentation, often need to be connected through various devices, emphasizing the concept of the work. This conceptual accumulation laid the foundation for the commercialization of subsequent works. For example, German artist Tim Jockel 's audiovisual digital dance work "HYPRA" (Fig.4.2). A powertrain that combines elements of music, dance and digital art. The energetic dancing of the dancers is Accompanied by flickering visual lighting effects, creating a sense of being on an accelerating journey. Here, the artist has designed a multifunctional, fully man-made mechanism that further explores the connection between dance and digital art.

The work is accompanied by dynamic dance music, the dancers swing their flexible limbs, and the screen behind them stretches out various groups with the music and the gestures of the dancers. The performance is quite regular and rhythmic, as if the dancer is the one who controls everything, showing the unique charm of dance. This kind of digital art, which extends through dance movements, allows the audience to empathize with the infinite power of art through the changes in body shape on the surface accompanied by dynamic hip-hop music, the dancers swing their arms and rotate their flexible limbs, flexing and stretching, turning, looping, oscillating and wavy twists, and the screen behind them also stretches out various fireworks with the music and the dancers' gestures. This kind of regular and rhythmic performance is as if the dancer is the one who controls everything, showing the unique charm of hip hop dance. This kind of digital art, which extends through dance movements, allows us to feel the infinite power of art through the changes in body shape on the surface.

Figure 4.2 Mycelium   Fig4.2 HYPRA

4.3 Visualization art of soundscape field

The visual art of soundscape field mainly lies in the artistic expression of the field space, which has something in common with the sound visualization projection art in the way it is realized, but it requires the artist to create a special field to bring an immersive feeling to the audience, and in the field created by the artist, the audience is separated from the real world in space, so that they can deeply feel the artistic experience brought by the soundscape art In terms of sound, the visual art of soundscape often uses non-perceptual sound, which emphasizes more rational expression of space, and uses sound as a cultural tool, so that the artistic expression itself has a richer connotation and a wider extension.

This kind of art creation tends to be immersive art, which requires a space and time to realize the " scene ". The concept of time is the most basic way for human beings to feel existence, and it is embodied in the artwork that the artist measures his own philosophical thinking through time to create art. At the visual level, in traditional easel art, artists often express their own thinking as a static picture, and extend the length

of expression time through the content of the still picture, which is obscure and deep, and it is difficult to arouse people's resonance; The music mobilizes the tension of the picture, and captures the existence of time through audio-visual interaction, so that the audience can feel the spiritual connotation of the work through the passage of time. Space in the scene is an extension of the " existence " of human behavior, and it is also one of the ways in which people perceive external things On the one hand, it is presented as the venue required for interactive behavior to occur in the physical scene, and on the other hand, it becomes a part of the work in the form of a concept, and exists in the information scene, and this spatial isolation makes the audience present a multi-dimensional experience when experiencing, even beyond the scope of time. (1) For example[2], teamLab and the Shanghai Symphony Orchestra performed "Flowers in Spring" (Fig. 4.3), with the theme of " Four Seasons ". In order to create the source and superimpose many artistic elements, seven creative spaces are used as the carrier, integrating cello, violin, aluminum, flute and other different musical styles, as well as different instrument combinations. In different spaces of digital artworks, the distance and limitations created by the frame between the performer and the audience are broken. Performers step off the stage and become an extension of artistic expression, and they convey their understanding and feelings about art through music.

In this musical performance, there is also a mysterious mobile player. The enigmatic virtuoso constantly travels in several different places, with no fixed route or repertoire, where each audience member can meet him and enjoy his solo performance together. The whole performance, through the majestic symphony and dark immersive space, brings the audience into an independent field, bringing the audience an immersive interactive experience of music and painting.

图 4.3《春循百花》   Fig.4 《STROLL·the Blossom》

2   [1] Zhang Yuqing Research on the Scene of New Media Interactive Art [D]. Hangzhou Normal University, 2019

4.4 Culturally guided conceptual art

Culture-guided conceptual art is currently the art form of the state for the protection of various museum culture and intangible cultural heritage, through the sound and painting interactive installation art, the masses are no longer limited by the traditional pictures and texts when watching, and the traditional culture of our country can be experienced vividly and interestingly. It gives full play to the cultural guidance of public art, condenses national self-confidence, strengthens cultural self-confidence, innovates Chinese cultural elements, and shows the good cultural literacy of the Chinese nation. For the protection and inheritance of traditional cultural relics, interactive art of music and painting also has a unique role, such as for traditional cultural relics Knowledge learning can not only restore the original appearance of traditional cultural relics through AR and VR imaging to publicize and display cultural relics, but also deconstruct cultural relics through interactive projection and other methods, so that the audience can have a deeper understanding of the connotation of cultural relics, and bring economic benefits, and promote a virtuous circle of culture and economy.

In the cultural exhibition space, the construction of virtual exhibition halls has promoted the progress of traditional museums, and major museums in China have successively launched their own virtual exhibition halls, opening up a new way for the audience to view the exhibition. For example, in Chongqing Li jia Wisdom Park Hall A, "Painting a Thousand Miles of Rivers and Mountains- The Forbidden City Immersive Art Exhibition" (Fig. 4.4), through mechanical devices, three-dimensional projections, mechanical devices and other comprehensive means, brought a deep interactive experience of music and painting IP has been completely developed and created. The first act, "Rhythm of Rivers and Mountains", is a sculpture projection device that symbolizes landscape painting, and projects the elements of the pictures of thousands of miles of rivers and mountains on the rock sculptures through projection, creating people's feelings in the paintings; the second act, "Rivers and Mountains of the Fog", presents the mirror image of the foggy city of Chongqing to the audience with the composition and elements of the thousands of miles of rivers and mountains through the combination of models and projections, so that the audience can feel the customs and customs of the foggy capital; in the third act, "Wandering Rivers and Mountains", the landscape elements of the thousands of miles of rivers and mountains are projected into the immersive space through particle effects Give the audience an in-depth experience of the integration of technology and traditional art. The work not only publicizes the traditional cultural relics "A Thousand Miles of Rivers and Mountains", but also combines the local cultural characteristics of Chongqing and promotes the customs and urban features of Chongqing.

图4.4 《画游千里江山 - 故宫沉浸艺术展》
Fig4.4 (Painting Thousands of Miles - Immersive Art Exhibition in the Forbidden City)

5. Case study of music and painting interaction at home and abroad

This chapter analyzes the interactive cases at home and abroad, according to the cases of artists, studios, laboratories, and at all levels, aiming to analyze the most prominent interactive artworks of music and painting at home and abroad, so as to analyze the application scenarios and development trends of interactive art of music and painting.

5.1 Ryoji Ikeda and Ryuichi Sakamoto

5.1.1 Ryoji Ikeda

Ryoji Ikeda is a leading figure in Japanese electronic music, and he began his work as a musician and later added research from various disciplines to explain his compositions from 1995 Since then, he has transformed from a musician to a sound artist, experimenting with various forms of music composition, especially sound installations, immersive live performances. His works often change in the form of new media such as dots, lines, and planes with the rhythm of sound, sine waveform and other elements, and express irrational concepts through rational methods, so as to explore the relationship between music and human perception. Ryoji Ikeda 's masterpiece "Test Pattern" (fig. 5.1), a masterpiece of his artistic creation, is a reflection of his artistic philosophy. The two-dimensional image between the barcode and the black and white keys of the piano is mapped in the entire projection space, and the image, sound, and environment are transformed from data into a recognizable state for human beings, even if human exploration of their own perception is also an expansion of mental space. Ryoji Ikeda creates a spiritual space that is separated from the real space based on the exhibition space, allowing the audience to perceive the environment and world created by the artist through the audio-visual sense.

图 5.1 测试模式   Fig 5.1 test pattern

5.1.2 Ryuichi Sakamoto

Unlike Ryoji Ikeda, Ryuichi Sakamoto is a traditional pianist, but he is open to the intervention of technology in the arts, and his philosophy is to record the beauty of nature through technology, merging art and nature, and pursuing timeless sounds. He integrates natural things and human life into his understanding of life and death through his own artistic examination and processing. It is engraved on the new media medium, so as to arouse the audience's thinking about things.

In his work Life, Life- Flow- Invisible, Inaudible (fig. 5.1), nine water tanks are suspended above a dark space, each placed between loudspeakers, and the inside of the water tanks is artificially smog through ultrasound Projected in a water tank. The sound and images in the device are stored on a computer's hard drive, and the audio and video files in the data are randomly retrieved through a computer program. The abstract sound is mixed with irrational images of nature, which are perceived by the viewer. The viewer enters the space and is immersed in this large-scale installation, experiencing a compassionate but not pathetic sense of life.


图 5.1 生命 流动 不可 ，不可闻   Fig 5.1 Life - flow - invisible, inaudible

5.2 TeamLab TETRO Art Team case study

5.2.1 TeamLab Art Team

Teamlab is a new media art team founded in Tokyo, Japan, whose members include artists, programmers, engineers, and Cg animators, mathematicians, architects, and other professions aim to explore the artistic concept interpretation of the natural world in various disciplines such as design, science, and technology to create immersive art spaces. It is a private public gas company without any foreign debt or external investment, and its main profit is generated through commercial commissions or joint project development. The financiers of commercial projects include international art museums, art galleries, museums, commercial companies, television stations, real estate developers, government departments, etc.6 Obtain a large amount of income in the form of tickets, copyright licensing, cultural and creative products, and art sales through commercial exhibitions, commercial planning and other related ancillary services. Unlike commissioned commercial projects, TeamLab' s art commercial projects are more focused on artistic creation. Through the collaboration of the two projects, TeamLab invests part of the profits of commercial projects into art projects, and then transforms the artworks into commercial digital products, through this collaboration, forming its highly innovative art + technology + business profit model. Teamlab's representative work[3], "Breathing Light Forest" (Fig. 5.2.1), consists of a large number of lamp groups to form a huge Shen

In the immersion space, the lights will be affected by the participating individuals to emit light and sound, and then the lights emitting the lights will radially affect the other lights and smoothly extend out, until they intersect with other individuals, so as to express the beauty of light continuity, and the color of the lights will change according to the theme of the exhibition.

The work "Flowers Blooming on People" (Fig. 5.2) places the viewer in a black space, when the viewer enters the space and stays in the work, the life of the flower will be expressed, and the flower will start to grow from the feet of the person to the body, and when the audience stops again and the audience will increase again, there will be flowers spreading to each other, and the flowers will be born, growing, touching the buds, and opening, and when the audience is moving, it will show the process of the passing of the flowers As the viewer moves, the flowers gradually wither until they wither. Combined with the change of sound, the audience can experience the beauty of silence brought about by the growth and passing of life in the whole philosophical field.

These two works have distinct personalities that fully reflect their creative characteristics, depicted in real time through computers, and build a philosophical artistic bridge between man and nature through technology.

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3   [1] Liu Bin Research on the expression and profit model of new media installations [D]. Beijing Institute of Fashion Technology, 2019

图 5.2 (a) 呼吸灯森林图 (b) 绽放于人身上的花朵
Fig 5.2 (a) Breathing lamp forest (b) Blooming flowers on the human body

5.2.2 TETRO Art Team

Based on artistic and innovative creative methods, TETRO team creates an artistic framework that meets the needs of customers, develops digital visual works for customers, and helps customers promote various commercial activities, so as to bring economic benefits to customers. For example , the artwork "160" (Fig. 5.2), created by the TETRO team to commemorate 50 years of diplomatic relations between Singapore and France, uses 160 in a span of 60 meters The audience changes the color of the light matrix through the touch of the tablet computer, and the sound interacts in real time, generating a new dynamic feeling, thus changing the audience's perception of space. In the dome in the lobby of the French hotel, TETRO has created a 360° immersive light show with ten video projectors , showing a futuristic poetic space such as space travel and deep-sea adventures through multiple themes, through light, geometric changes to match the viewer's perspective, The depth of the dome creates a malleable space in which the viewer is fully immersed in the experience of the work through sound and sight.

These two works highlight the creative tendencies of the commercialization team in the face of different customer needs. For government clients, TETRO often uses geometric shapes to divide the space. In the face of commercial needs, TETRO mainly uses concrete forms to express narratives, strengthening the audience's immersion and sense of experience in the commercial space.
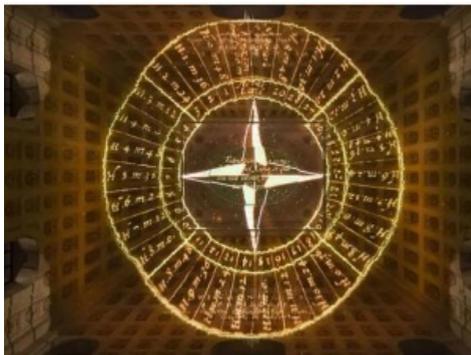
Figure 5.2 /160   Fig. 5.2 / 160

5.3 Case study of "Pegasus Hutuo" and "Bosom Friend Cruise".

5.3.1 Pegasus Hutuo

"Pegasus Hutuo" (Fig. 5.3) is currently the largest immersive panoramic theater in China, with live actors and horses with no physical set of the whole screen projection, the professional equestrian performance into the entire live theater for performance has a very high ornamental value, in terms of color, the main creative team makes extensive use of the traditional colors of Han culture, reinterpreting the visual impact of traditional colors in the interactive art of music and painting; In terms of composition, a large number of scattered compositions and mural elements of Chinese painting are used to restore the historical scenes in the theater to eliminate the separation between the audience's space and psychology, break through the audience's audio-visual cognition, and truly integrate into the performance Guan Yu & Chitu & " Xiang Yu & Wu Hu" are two well-known traditional IPs In terms of sound design, the whole theater is dominated by snare drums and battlefield killing sound effects, which bring a strong auditory shock to the audience through drum beats and shouts; in terms of detailed design, the main creative team has dismantled a lot of traditional cultural elements through the drawing of a large number of manuscripts, and achieved a high degree of artistic processing, thus showing a very sophisticated animation production and special effects production.

This work embodies the great role of interactive art in cultural inheritance. Relying on traditional culture, the interactive art of sound and painting has a large number of artistic materials and artistic emotions, which can bring a lasting experience through its unique audio-visual shock, thereby promoting traditional culture and guiding the audience to vent artistic emotions, thereby realizing the cultural value and commercial value of the work, and promoting the local economic development.

图 5.3 潴沱   Fig 5.3 Pegasus Hu Tuo

5.3.2 "Bosom Friend Cruise"

"Zhi Yin Cruise" (Figure 5.3) is the first drift experience theater on the Yangtze River, with Jiang Cheng culture as the background combined with specific 20-30 The story of Wuhan was created. The theater is set on the pier and on the cruise ship, and from the beginning of the passage into the theater, the audience has a strong sense of space and time. The plot begins in front of the audience stopping in front of the cruise ship, attracting the audience's perspective through the spotlight, focusing the audience's attention on the plot set by the director, and cooperating with professional actors to make the audience immersed in the plot at the beginning, and when the audience enters the internal space, the whole theater is divided into a number of small spaces, and the audience can move around in the theater freely, and the dominance of the plot experience is handed over from the director to the audience, and the audience finds the artistic fit point of the plot and their own emotional resonance by themselves.

This interactive experience runs through the experience of the entire Zhi Yin cruise ship, and in order to create a complete space atmosphere in order to cooperate with this experience, such as the furnishings in the entire venue, the old objects

and stories with the characteristics of old Wuhan are collected and organized, and reproduced into the scene through technical reconstruction, and the small stories are cleverly connected, so as to create a new viewing experience.

As a cultural tourism project, the Bosom Friend cruise ship is also a key node connecting the water surface with the land, extending the art space to the commercial space on the land, connecting the landmark commercial blocks with a strong Wuhan atmosphere, such as Wuhan Port Wharf, Ji Qing Street, Zhongshan Avenue, etc., combing the cultural context of the entire city.

图5.3 知音号邮轮

Fig 5.3 Zhi Yin cruise ship

5.4 Digital fun, low-tech art lab

5.4.1 Digital fun innovative media studio

Digital fun, located in Shanghai, is a commercial company of tea-community, the largest community of software touchdesigner in China , and has written the book "TouchDesigner-" at the educational level The new interactive design and development platform vigorously promoted this new media art software, opened the light point art festival, gathered the excellent music and painting interactive art works in China, promoted the popularity of new media art among college students, from the perspective of the open source community, it is very helpful to the college students, and has jointly realized the development strategy of integrating production, education and research with many universities;

The interactive projection exhibition "All Beings as Images" (5.4) in the Da Xiong Hall of the Tian Wang Pagoda in Qu Zhou City expresses Buddhist elements through various forms from the beginning of entering the venue, such as displaying classic Buddhist scriptures, Buddhist ritual instruments, and Buddhist artworks through digital collections, displaying the universal values of Buddhist scriptures through screen projection, combining traditional Buddhism with digital media art, and skillfully integrating Buddhist stories and meanings into the sound and light media, so that the audience is not limited to the experience of the effect of the work when watching. Rather, it is to be able to perceive the teachings of Buddhism on a deeper level.


图 5.4 众生为像

Fig5.4 All sentient beings are like

5.4.2 Low-tech labs

The low-tech laboratory is an art laboratory founded by artist Zheng Da under the concept of " low-tech art ", that is, to create through science and technology that matches the sample instead of pursuing new technology, and the convenience and effect brought by high technology. After repeated experiments, we have found a harmonious state for " people, samples, and technology ", and this way of creation does not make art superficial because of the development of technology, but thinks about the relationship between machines and people at a deeper level. The works of the Low Tech Lab are more about using technology as a tool to continuously enhance the conceptual expression of the work and create new sensory experiences.

For example, the work "Data Pool" (Fig. 5.4). The three independent elements of wind, water and light are combined through data and machinery, the data is transformed into a natural state through machinery, the data is felt by the audience through sound and light, the artistic perception is expressed through machinery, and the new media art language under the development of science and technology is deconstructed through science and art. When the human body touches the switch of the machine, the LED light group on the machine will flash according to the frequency of the human body, and this flicker will also reflect the local meteorological data in combination with the sound, so as to show the machine's thinking about people and the environment
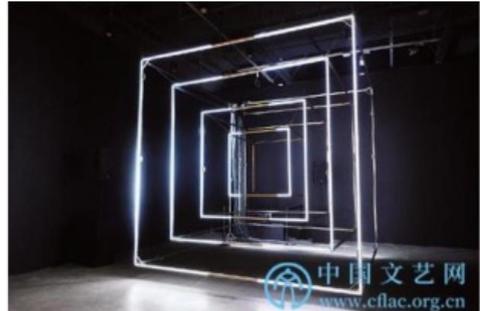
图 5.4 机器的自在之语   Fig 5.4 The Free language of the machine

5.5 Case analysis summary

The above analysis of the case is multi-layered, involving artists, art teams, large-scale theater productions, and artists' studios.

Through these aspects, we can find that the interactive art of sound and painting has a very strong tendency towards public art in its creation, and it can arouse the psychological level by mobilizing the audience's attention and realizing the distinction of spatial levels.

In terms of artistic tendency, non-commercial creations are mostly geometric

structures and pay attention to abstract language expression. On the other hand, commercial artistic creation is mainly based on the pursuit of audio-visual shocking effects, focusing on the needs of customers' commercial publicity, and emphasizing the feelings and interactions of works for the audience.

Individual artists are more concerned with conveying their own feelings about the world to the audience in the creation of interactive art of music and painting, so the creation of art is more about placing the audience in an independent and reflective field, and individual artists do not pursue simple audio-visual shock, but explore the relationship between people, space, pictures and sounds.

Because of its commercial needs, the art team has more civic and commercial colors in its creation, focusing on the interaction of the audience in its creation, paying attention to the audience's feelings when participating, and often using a lot of new media to intervene in the creation process to pursue the shocking feeling of audio-visual sense.

The creation of works of art in the creation of theater is more dependent on cultural heritage, and the created works are also more cultural, which requires creators to deeply explore the connotation of traditional culture according to the local traditional culture to recreate the plot, and interpret art through new technologies, so as to give full play to the public nature of art to guide the audience to experience the cultural feelings brought by the works, and bring unique artistic value to the development of traditional culture.

From the studio level, the creation pursues more experimentation with art technology, and the exploration of philosophical meaning and the rapid renewal of technology in artworks, and promotes the development and commercialization of art from top to bottom through the accumulation of technical experiments in art.

6. The specific practice of interactive works of sound and painting

6.1 Design ideas of works

6.1.1 Design description of the work

The work wants to express the relationship between the individual and the group through the interactive art of music and painting, and if its disappearance does not affect the individual, then it is safe.

In order to survive, individuals have to carry out various activities, and the nature of the activities is determined by the group. In this process, the existence and size of the group, and the degree of influence of each person on the group are determined by the life weight and capacity of the individual.

Individuals are influenced and constrained by the group when the group is large, and individuals make different choices and behaviors when each individual's life weight and ability are different.

The overall purpose is to immerse the audience in the field of the work through three chapters to immerse themselves in the relationship between the microcosm and the macrocosm, and to show the philosophical feelings of life in the process of evolution from small to large.

The work uses a gravity-sensing device to drive the visual image, and when the seed symbolizing the weight of life is thrown into the device, the image will change, and the seeds of different weights will drive different visual images, from the individual to the group, from the bloom to the gradual extinction, this disappearance is cyclical, symbolizing the evolutionary law of life itself.

6.1.2 Design framework of the work

Visual level: Select the type of organic form with strong malleability, supplemented by geometric shapes and particle effects to build the whole work, and express the natural evolution process of life from individuals to groups through the dynamic of visual images and digital art generation, The main natural elements selected are as follows (Figure 6.1) Auditory level: Through the sound collection of natural sounds, The sound characteristics are analyzed, and each sound characteristic is adapted to the driving of the visual image, and the patterns, colors, and dynamics are adapted, and the audio materials are extracted as follows. (Figure 6.2) Interaction mode: The interaction mode is mainly carried out in the way of weight sensing and gesture

recognition to the audio-visual sense, the image is driven by the seed of indefinite weight, and the gesture recognition is to manipulate the dynamic. (Figure 6.3).
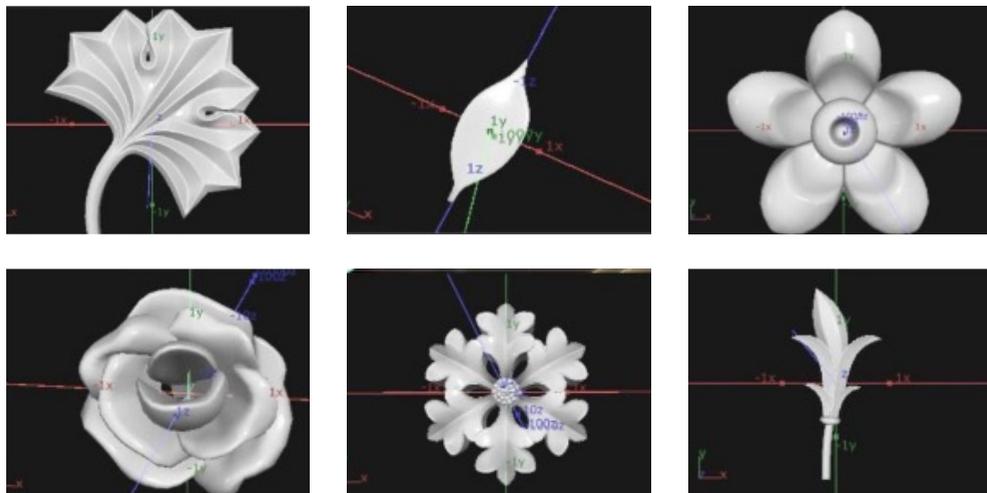

图 6.1 部分元素选择（笔者自建）   Fig. 6 Partial Element selection (built by the author)
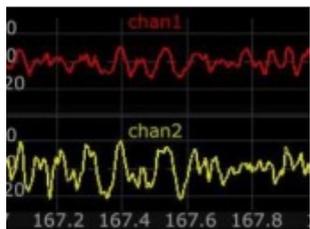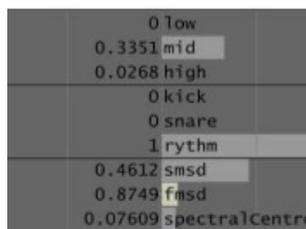
图 6.2 音频分析（笔者自建）   Fig. 6.2 Audio analysis (built by the author)
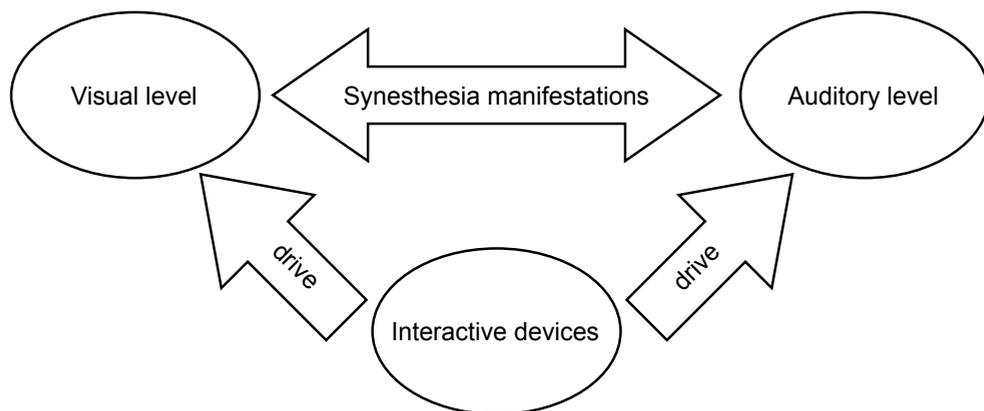

图 6.3 设计框架以及交互逻辑   Fig.6.3 Framework and interactive logic

6.1.3 Specific rules for the design of the work

Through the early data collection of natural forms, the work corresponds to the various visual relationships between the loudness, frequency, timbre and image of each scale, forming a rule that can be digitally generated. This is how the rules are set. (See Figure 6.4).

Sound elements	How sound affects an image
Vocal dynamics	The image varies in depth
Sound rhythm	The image changes densely
Sound frequency	Image generation speed
Loudness of sound	Image generation range

图6.4 声音元素与图像生成方式对应规则   Fig.6.4 Sound elements and image generation corresponding rules

6.2 The specific creative process of the work

6.2.1 Collect and organize plant image elements

After collecting plant images, they are organized, the plant images are analyzed to obtain creative materials, and the elements are stripped from the two-dimensional image data of plants, such as the appearance of plants, plant curves, and the conventional density of plants, and the plane characteristics of two-dimensional image data can become the basic elements of creating specific three-dimensional models The artistic features contained in two-dimensional images such as creatures can be combined with audio rhythm, frequency and other elements to create an audio-visual experience of sound and picture interaction.

6.2.2 Establish interactive virtual effects of sound and painting

The production of interactive virtual effects of music and painting combines a variety of 3D software and visual production software, here the author selects two more familiar software, blender and touchdesigner. In addition to the inherent appearance of plants, plant curvature, derivative images, colors and other artistic characteristics contained in the plant images themselves, certain dynamic processing can also be added, and dynamic artistic processing methods such as blurring, twisting, and several parting are carried out on the model, and finally the most suitable shape is selected. Due to the characteristics of interactive art of sound and painting, it can be reproduced and generated infinitely, and the works are made more perfect through the digital generation of the works themselves.

6.2.3 Audio-visual combination of the work

The combination of the audio-visual and auditory senses of the work mainly depends on the curvilinear nature of the organic form, first of all, from the color vision, the work refers to a large number of natural colors, whether it is a virtual image effect or the color selection of the installation, all of which are based on the highly saturated colors in nature. In order to highlight the pure and bright colors, the overall audio collection is mainly based on quiet natural white noise, and the audio is processed to reduce the abrupt and loud parts of the audio, so that the visual and auditory sense of the work is more in line with the psychological expectations of the work. In terms of the visual sense of the work, the work slows down the speed of image generation and disappearance, deliberately slows down the rhythm of the whole work, cuts off the audience's perception of time and space, and emphasizes the sense of harmony and order.

6.2.4 Hardware connection and site layout

The site layout is mainly composed of the following three parts: first, weight sensing device; second, projection wall and projector equipment; third, posture recognition hardware. Through the computer program to simulate the three-dimensional movement process of plant images in the interactive program of sound and painting, and to render it in real time through interactive images and use the projector to play, so that the audience can clearly understand the idea of the work, feel the emotional value brought by the work, is that the audience can feel the growth and death of life in the change and rhythm of the visual image, combined with music and posture recognition to achieve the purpose of outputting the idea of the work.

The two interactive methods are adopted in order to better cooperate with the audio-visual subject to complete the guidance of the audience's emotions and cognition. As the main device to trigger the work, the weight-sensing device runs through the chapter switching of the entire work, and divides the work into multiple chapters through different weights. Posture recognition is to add a certain amount of interest to the audience's experience, and through the delay processing of action recognition, the audience can better feel the natural evolution process of life.

6.3 The production process of the work and the creative impression

6.3.1 Production process

The work is divided into three chapters.

The first chapter of the work takes the cross-sectional morphology of organic life as the starting point, and the main elements are plant cells, single-celled organisms, etc., and the morphology and color generation of images are driven by data. Expressing the infinite evolution of organic life in its internal structure, the artistic characteristics of rhythm, color aberration, color distribution, flow and other artistic

characteristics contained in the two-dimensional image of organic life, a series of dynamic processing of visual images are carried out after the model and image processing are roughly completed, such as feedback loop, dynamic blur, flow and other dynamic artistic features. (Fig. 6.5) The second chapter of the work takes the organic growth of individual life as the starting point, first models the organic forms collected in the early stage, imports them into TouchDesigner, creates particle effects through each grid point, and then dynamically expresses the particle effects and maps the audio The individual pictures highlight the single theme of organic life, and with the transformation of various forms, the audience can experience the transformation process of life. (Fig. 6.6) The third chapter of the work takes the growth trend of organic life and the state of derivatives as the starting point, and expresses the growth trend of individual life and the overall relationship between the environment through the derived state of life and the group.

The overall visual use of dots and lines to form the picture, through the organic flow of linear images to create visual integrity, and then with the derived concrete plant images to decorate the picture, constitute the visual experience of the whole work. (Figure 6.7) After the production of the three digital image effects is completed, the collected audio files are imported and analyzed. Due to the impression of the theme of the work, it is necessary to process the audio that is too fast and loud to make the audio part of the whole work flat, and then adapt the processed audio data to various elements of the model, particles and other parts of the work, such as the slow change of the overall audio driving model, the audio part with rhythmic transformation driving the transformation of the picture, and so on. Finally, in the physical output part, you need to interact with the Arduino development board (Figure 6.8), Leapmotion (Figure 6.9), TouchDesigner (Figure 6.9). 6.10) Combine to construct the physical control of the entire work, and finally output it to a projection device and place it in the venue (Fig.6.11).
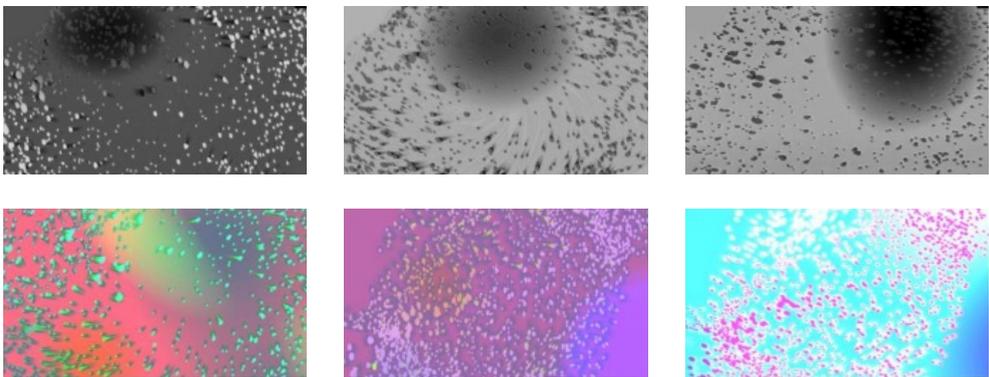
图 6.5 章节一视频效果   Fig 6.5 Chapter one video effect
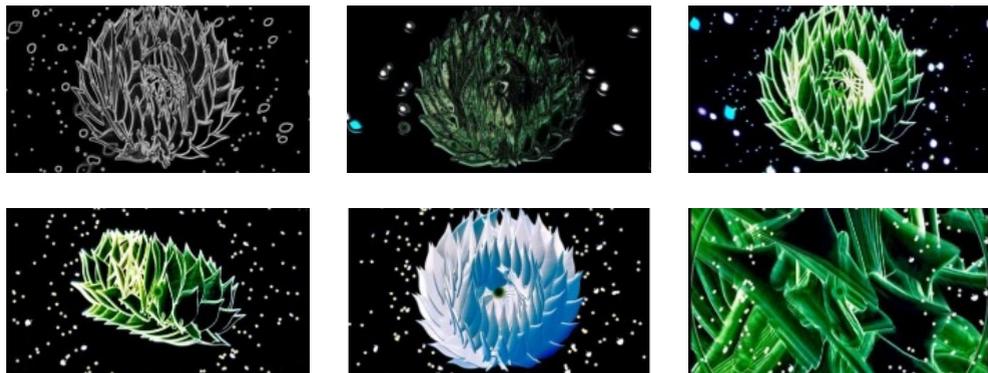
图 6.6 章节二视频效果   Fig6.6 Chapter two video effect
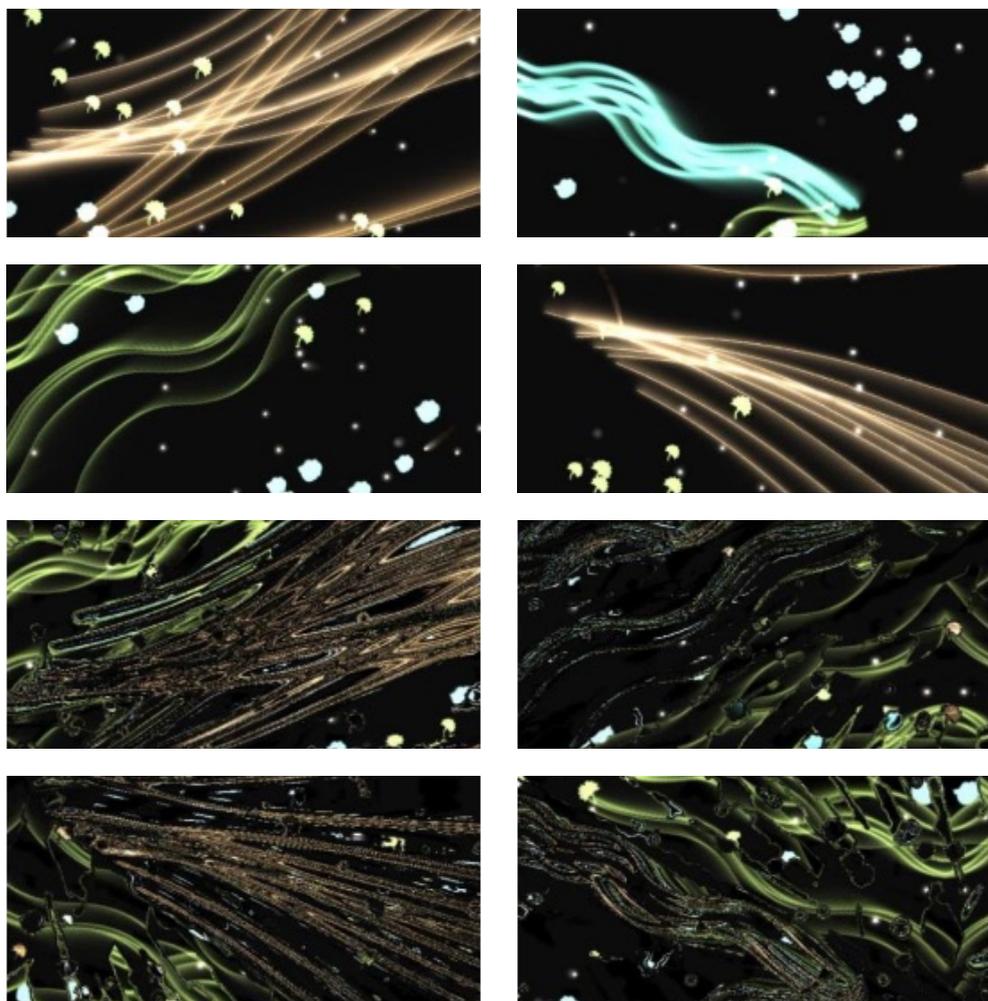

图 6.7 章节三视频效果   Fig 6.7 Chapter three video effect
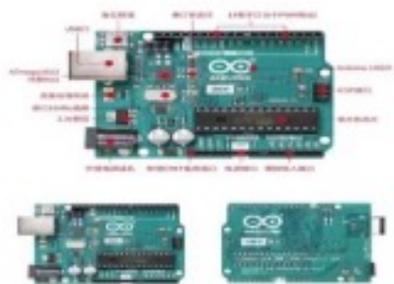
图6.8 开发板及重量传感器 　　　　　　　　Fig. 6.8 Arduino development board and weight sensor

图6.9 体感控制器及 体感摄影　　　Fig 6.9 Leapmotion Motion controller and kinect motion photography

图6.10 工程文件（笔者自建）   Fig 6.10 Touchdesigner Project documents (built by the author)

图 6.11 模拟场景效果（笔者自建）   Fig 6.11 Simulation scene effect (built by the author)

6.3.2 Creative Impressions

Through the deep learning of related software, it is found that for the interactive art of music and painting, digital creation has a strong randomness, and the creation itself can emit a large number of creative effects under the condition of a certain purpose. Although the interaction of sound and painting is more convenient and fast in the context of digital art creation, there are still many problems that need to be solved, such as the current digital art creation software touchdesigner It is a modular programming language, but it is still difficult for art creators to learn a large number of programming languages, and the homogenization problem that is very easy to occur in the creation process of digital art requires a lot of learning and practice costs to supplement and correct.

It is a difficult thing to create a complete interactive art of music and painting, and the new effects that constantly appear in the creative process, and the improvement of the error correction process of the programming language need to rely on one's own personal creative experience. The accumulation of creative experience and aesthetic theory is indispensable in the whole process, so the author realizes his own shortcomings in the creative process and lacks the experience of the above two. But in the same way, in the process of creation, it has also brought a lot of harvest and a sense of achievement, discovering new artistic languages and finding a series of new artistic effects to explore, allowing the author to find the feeling of blending art and life. In the process of constantly adding artistic effects to his works, the author has also accumulated a lot of life knowledge and life experience of communicating with others, which has prompted the author to add more personal understanding of the interactive art of music and painting in the process of continuing to create.

7. Conclusions and prospects

Through the cases in the previous chapters and recent art and analysis, the author analyzes the value of audio-visual interactive art to the development of public art, summarizes the recent development trend of audio-visual interactive art, and makes a prospect for the possibility of combining audio-visual interactive art with new technology and new concepts.

7.1 The value of audio-visual interactive art for the development of public art

7.1.1 Promote the integration of public art and science and technology

The development of interactive art of sound and painting has promoted the deeper combination of science and technology and public art to a certain extent, and traditional public art often requires artists to carry out on-site creation, which lies in the artist's comprehensive control of materials and the artist's personal artistic creation level and aesthetic heritage, due to the public nature of public art, artists often need to serve the society when creating, establish a connection with the public, and create according to the local history and culture, regional characteristics, folk customs and urban planning There are many restrictions on local policies, public needs, public safety, etc. The intervention of interactive art makes public art not limited to its practical basis, broadens the inclusiveness of public art, and enables public art to better face various creative needs when creating, so as to create works that are more in line with public aesthetics.

For example, the interaction of music and painting can be used for data visualization, through the combination of art and various advanced scientific detection instruments, all kinds of data are more intuitive, more efficient processing into visual images and provide a more convenient way for the publicity of scientific research work; And to change the public's way of consumption, so as to achieve the purpose of combining art and science and technology to change people's lives.

he development of science and technology has enhanced the social value of audio and painting interactive art, with the increase in the experience demand of cultural tourism, audio and painting interactive art has been involved in various application scenarios of tourism, the development of science and technology has expanded the scale of audio and painting interactive art, and the application of large-scale projection and other science and technology will extend the use of audio and painting interactive art to large-scale exhibition halls, theaters, and tourist attractions, thus

providing huge benefits for the development of economy and culture. In terms of education, with the development of the concept of new discipline construction in domestic universities, the interactive art of music and painting mainly involves the following two disciplines, one is the interactive art design of music and painting based on the Academy of Fine Arts, and the other is multimedia or computer graphics education with computer science as the background. The former is mainly art students, focusing more on visual expression and software operation, while the latter is mainly based on computer-related programming languages and program design, which advocates cultivating students' technical ability and making students' works more functional and practical. These two types of students have their own characteristics, but each has its own shortcomings and needs to be improved. After learning computer science knowledge, students with science and engineering backgrounds often lack the expressiveness and visual aesthetics of their works when creating interactive art of sound and painting, so this kind of work is closer to the display of a technology. The main problem of science and engineering students in the creation of interactive art is that there are too many technical components, which weakens the importance of the art part. Therefore, this kind of students' audio-visual interactive artworks with pure science and engineering backgrounds are closer to scientific experiments, but the relationship with art itself is relatively distant.

On the other hand, art students are more effective in the early stages of their studies. Due to his cultivation in painting since childhood, his works are significantly stronger than the former in terms of vision and form, but the art class is relatively weak in terms of programming language. Therefore, the works of art students usually look good at first glance, have good visual effects and also have quite active thinking and creativity, but their technical ability can not prompt them to complete a work with complete interaction rules, due to the limitations of art students, lack of program, technical support leads to defects in interactive means and interactive intelligence, which also leads to the works created by simple art students are often too simple, and the degree of completion is not high.

As the state continues to emphasize the demand for compound talents, these two types of talents can be interdisciplinary through public art, because public art has sufficient disciplinary literacy, the creation of sound and painting interaction needs a new type of art creator and a new type of art creation process, artists need a diversified team to realize the creation of artworks, the talents of various disciplines in the team provide technical support for artists, and artists control the aesthetic taste and creative tendency of the whole work. This new and efficient art creation process needs to be supported by a new discipline system, and only the integration of public art and different disciplines can promote the development of public art at a deep level.

7.1.2 Broaden the cultural connotation of public art

Public art is the product of social development, and its creation requires the public's recognition and appreciation of their own culture, and guides the public's aesthetic emotions to vent, which requires artists to have a high cultural literacy and

artistic creation heritage, so as to create works with rich cultural connotations. The criticism of past art forms, the views on the current social development, and the experimental exploration of the rapid development of science and technology media art can all become the source of public art creation, and artists need to take these concepts as the objects of creation, raise questions and guide people to pay attention to the problems, so that art can affect people's life concepts and values.

Audio-visual interactive art also has its unique inclusiveness in cultural creation, various forms of expression in traditional art can be combined with audio-visual interactive art, such as calligraphy, painting, dance, sculpture, etc., audio-visual interaction can not only be abstract non-narrative creation, but also narrative creation, through its rich artistic expression to create a living work of art, through art to tell a good story.

This broadening of cultural connotation is not only reflected in the breadth of creative connotation, but also in the depth of creative connotation, and the interactive art of sound and painting needs to be rooted in the aesthetic and spiritual needs of citizens in the public environment, digging out the core of culture, and creating works of art that truly meet the needs of citizens.

7.2 The development prospect of the in-depth integration of audio-visual interactive art with the current trendy forms of expression

7.2.1 Application prospects of combining with new media and new technologies

Although the technical means are still constantly updated, but the sound and painting interactive art as an art form that relies on the audio-visual feeling to create, the richness of the picture can be continuously improved with the new visual machine, the new visual form, the new audio collection method, the different audio and picture content combinations, will have different effects, which makes the sound and painting interactive art has a strong vitality and development possibility, and this combination of technology is a deep combination, when new technology appears, interactive art of sound and painting can follow up in real time, and constantly bring creative vitality through new technologies and new forms of expression.

In the early exploration of the interaction between music and painting, the interactive art of music and painting was often combined with projection and other methods. With the development of interactive art of sound and painting, many new science and technology have been added to the interactive art of sound and painting on the basis of projection. For example, the development of motion recognition technology, dance and other body language expressions are integrated into the artistic creation of interactive music and painting through he combination of technology, such as the work "Clouds without Phase, Between Sculpture and Life" (Fig. 7.2) for teamlab Custom-developed cloud medium, even if the sculptural appearance is destroyed, it can still repair itself like life, and when the damage reaches a certain point, it will pass

away like life. These cases show that the combination of audio-visual interactive art and new media and new technologies is a big topic, and there is still a long way to go to explore the integration and development of the two.

图 7.2《无相之云，雕塑与生命之间》　　Fig 7.2《The cloud Without phase between sculpture and life》

7.2.2 Application possibilities combined with new concepts such as the metaverse

With the development of science and technology and people's consumption concept, new social concepts have also emerged, audio and painting interactive art is largely driven by digital methods such as data, so for example, a series of conceptual updates brought about by the earlier blockchain technology, blockchain technology can record the circulation process of works, and ensure the information of the owner of the work, and establish the creation and transaction mode of virtual artworks. Now, the advent of the metaverse era has made the process of virtual artworks more complete and the art forms more varied, opening up the core elements of the metaverse such as virtual scenes, virtual objects, and virtual characters, such as online virtual concerts, AI virtual characters, digital paintings, and digital paintings with the continuous expansion of the application scenarios of the metaverse, the combination of audio and painting interactive art and new concepts such as the metaverse will become closer and closer. In today 's rapid development of AI intelligence, natural language processing tools driven by artificial intelligence technology such as ChatGPT can learn and understand human language, narrow the cognitive gap between computers and humans, and intervene in interactive art such as audio and painting by combining computer vision image processing, so that creators can create unique works by training AI. Of course, the current stage of AI intelligence is essentially just a comprehensive computing and processing process of AI for data, images, human preferences, and human needs through computers, and the works created cannot have a strong emotional resonance with the audience, but with the in-depth exploration of AI training, the future development of AI intervention art will continue to develop towards the emotional resonance between the machine and the audience.

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Appendix

The papers I have published during my degree:

[1] 第一作者. Research on the Interaction of New Media[J].3rd International Conference on Art, Design and Cultural Studies (ADCS 2021)

[2] 第二作者 Analysis of the Influence of Persian Miniature Art's Aesthetic Value on Contemporary Murals[J]. I3rd International Conference on Art, Design and Cultural Studies (ADCS 2021)

Acknowledgments

Time flies, in the blink of an eye in Wuhan Textile University has spent seven years, here first of all I want to express my heartfelt thanks to my graduate supervisor Cheng Wei, who followed the teacher to travel through the splendid rivers and mountains of the motherland, to Yunnan where the four seasons are like spring, the wind and snow, to the majestic mountains and beautiful waters of Guizhou, to the beautiful mountains and rivers, to Jiangxi, where the mountains and rivers are beautiful, and the humanities are gathered. I learned a lot from following the teacher to experience the customs of various places, and when I stood on the side and listened to the teacher chatting with the local residents, I benefited a lot from the process, and I always admired the teacher's profound knowledge and kindness to others.

During my studies, my teacher took me to the construction site, took me to do design practice, and also allowed me to earn the first pot of gold in my life through my own ability. From the beginning to the end, I thought that I lacked the creativity and thinking of an art creator and only knew how to operate mechanically software, but my teachers always inspired me, pointed out the direction of my struggle, gave me confidence and determination, and made me never confused in the path planning of personal development. In the creation of my graduation thesis and graduation design, whether it is the research object, research methodology, data collection, or source of inspiration, I cannot leave the careful guidance of my graduate supervisor, and I have constantly given valuable advice to students during the writing process, helping students revise and improve their thesis. As a teacher for one day and a father for life, the teacher-student relationship with the teacher will not fade with graduation, just like a mellow wine, it still needs time to brew. The students are grateful for the meticulous care they received from their teachers. Here, the students wish the teacher good health and all the best.

At the same time, I would also like to thank all the teachers of the Department of Public Art, Seven years have passed in a flash, it is the life and professional guidance of the teachers that has promoted my personal growth, I can still remember discussing sculpture with teachers in the pottery studio, drinking tea and chatting, learning rock color with teachers in the hot summer, learning mural composition under the guidance of teachers, students are dull and playful, and there are still regrets about shortcomings in all aspects, but it is a great blessing to be able to spend this time with all teachers. In the minds of the students, you are all the best teachers.

Finally, I would like to thank my undergraduate and graduate roommates, we are always the happiest time when we meet in the dormitory, stay up late to play games together, chat when we can't sleep, and review before the exam, and thank you for your meticulous care when I am difficult.

A study of the characteristics of immersive installation art

Abstract

Historically, the development of art and the innovation of science and technology always has the close relation, as the third revolution of science and technology makes the arrival of information age, inspire a flood of new media art, and immersive installation art is especially important one annulus, immersive installation art for public art provides more possible, points out the new way for audience perception works, its difference from traditional art unique immersion, interactivity make the creation of artists have more likely.

The core of this paper is divided into three parts. The first part expounds the current situation of immersive installation art at home and abroad, the research method, background, purpose and significance. The second part, starting from the characteristics of immersive installation art, analyzes the relationship between the author, the work and the audience. The third part takes the case as an example to study the application of immersive installation art and discuss how the immersive installation art can make a choice between commercial and artistic under the background of the era of pan-entertainment. The advantages and disadvantages of the current immersive installation art are summarized and the future development of the immersive installation art is prospected.

Key words: Public art; Immersive installation art; Citizens; Interactive; Idea;

Contents

Introduction

The medium of works of art has developed from the earliest oral media era to the print media era and then from the print media era to the current electronic media era, on the basis of the existing traditional media expression and creation such as canvas painting, paper painting, stone carving, wood carving, metal sculpture, etc., modern art has more forms of expression, the combination of electronic technology and art, 3D On the other hand, the progress of public aesthetics has made the audience develop from the original simple viewing, touch to extensive participation in the creative process of the work, and the interactivity in the modern art work as an important element of consideration, now in a work of art, the auditory, visual, touch, smell and even taste can participate together, and the audience can truly feel the author's thoughts. In the new era, the creators have the courage to try not to be limited to the single form of painting, film, behavior art, installation art, etc., but now the artistic creation and the emergence of interdisciplinary and cross-field trends, no longer the creation of a single artist, but the integration of multiple fields of a team, this kind of multi-field collaborative creation, to the audience often feel multifaceted. Thanks to the addition of scientific means, the expression of the works has completely subverted the previous artistic creation.

1 Introduction

1.1 Background and significance of the study

With the integration of social resources, public art design is no longer a means and tool for enriching the environment in the traditional sense, and public art should contain deeper thinking, and become the existence of people's aesthetic feelings and aesthetic concepts in the process of providing beauty for public space. With the advent of the new media era, public art is not an additive, but a kind of wisdom to solve comprehensive problems, and the future of public art should be an organic combination of art, science and life. The development of new technologies has brought about deconstruction and reconstruction of the breadth and depth of art, so that the edges of art and technology have gradually been diluted. However, with the cross-integration of multiple disciplines, many creators attach too much importance to science and technology in their creation, and ignore the creation of the spiritual core. The update of the information media has made people have a lower sense of identity with authority and more expression of personal personality, which is the embodiment of social progress. How can creators grasp the aesthetic trend of the masses and clarify the laws and possibilities brought by new technologies and new media to artistic creation.

1.2 Research status at home and abroad

Immersive art is involved in painting, sculpture, architecture, drama, photography, video and other artistic fields, although the concept of immersion was not explicitly put forward in art before modern times, immersive art has always been the potential pursuit of artists for the expression of artworks. How to realize the immersive feeling of the work is the core of the development of immersive art at home and abroad.

Cave paintings have been immersive since the early days of human beings, such as Western cave paintings, which create an immersive field on the material level by painting on the rock walls of caves to represent early human hunting, sacrifice and other activities. Before the industrial society, Western religions, through churches, paintings, and religious beliefs, made believers immerse themselves in the environment during worship, ignoring the material life of the flesh to achieve a pious psychological state. At the same time, the predecessor of film art, drama art, abstracts and refines social commonality, and shows public consciousness to the masses through stories, so as to achieve psychological resonance. After entering the industrial society, the emergence of film art made immersive art develop

The exhibition has reached a new stage, through the environment, the foil of various film and television techniques, to create a world that is temporarily detached from reality, so that the audience can passively resonate with the story, so as to achieve an immersive psychological climax experience. Western immersive art mainly focuses on the critique of society and the reflection on the problem of survival. Or simply a breakthrough at the technical level.

The domestic art presents a different situation in the unique ideological and cultural atmosphere, the Taoist unity of nature and man, Taoism and nature, and other ideological concepts, throughout the entire Chinese art and cultural construction, whether it is painting, garden, architecture, all have a freehand romantic atmosphere, attach importance to the unity with nature at the spiritual level. In modern society, the application of immersive works mainly lies in the reinterpretation of ancient works, the protective exhibition of cultural relics, and the combing of urban history and culture.

1.3 Research Methodology

Through case analysis and phenomenological methods, this paper understands the aesthetic and sociological logic behind immersive installation art through case analysis, and studies the audience's experience and feelings when participating in immersive art installations. Through the theory of the relationship between people and objects in phenomenology, the relationship between the atmosphere of the field and people in immersive installation art is studied, and the role of immersive installation art in guiding people to update their aesthetic concepts is explained.

2. Characterization analysis of immersive installations

2.1 Immersion

Immersion is the most significant feature of immersive installation art, and when the concept of immersion is put into the art form and art practice of installation art, the status of the audience undergoes a fundamental change, from the audience's passive reception of information to active participation and interaction, from self-ontological perception to the perception of the environment as a whole, and the perception of events. When the artist creates an immersive art field, the audience will be fully engaged in the visual and sensory experience brought by the art because of the influence of the site, ignoring the superfluous information and distractions around them. Immersive installation art focuses not only on the material level of immersive experience, but also on the level of consciousness and thinking.

For example, Olafur Eliasson's "Weather Plan" uses multiple media to create the intention of the "sun", the bright light of the "sun" weakens the existence of each person into a silhouette, in which the boundaries between people are blurred, art transcends language, transcends matter, and becomes a spiritual projection of reality, so that the viewer becomes a symbol in the environment, and when the viewer enters the work, he has become a part of the work, immersed in the field created by the artist.

2.2 Participatory nature

In the creation of art, the relationship between the creator, the work, and the audience has always been the focus of the creators' attention in their creation, and in today's intelligent society, the creator is no longer as usual, only seeking to meet the shallow physiological needs of the audience, but constantly pursuing to satisfy the audience's deep spiritual touch. In participatory creation, the creator connects the work with the audience at the beginning of the creative process, guiding the audience to become a co-participant in the creation, so that the work can always be integrated with the audience's emotions and life to a certain extent. The participation of audiences with different occupations and different experiences will make the works continue to improve, so that the diversified development of the works has dynamic characteristics that were not available in the past. This is the greatest role of participatory creation, that is, the audience under the guidance of the creator is placed in the same position and participates in the production of the work, so that the work is not limited to the creator's personal aesthetic understanding, but brainstorms and cooperates with the whole society.

Participatory creation has become a mainstream way of artistic creation in to-day's information age, and this trend makes art not only limited to the original artist as a specific group of people, but also traditional artistic expressions such as paint-ing, music, film, sculpture, etc., the emergence of self-media and its rapid popularity, so that everyone can be an artist and a creator. In the process of practice, the work can be synergized with other art forms, and the same work of art can be recreated in different forms, or promoted.

In terms of space, because modern works of art are no longer limited to art muse-ums, exhibition halls, and all public spaces can be carriers of artworks, which makes artworks no longer the unique products of artists in space: in today's great develop-ment of public aesthetics, whether the work can connect the audience's emotions with the creator is an important criterion for judging a work, and the emergence of new media makes the public's judgment of artworks more extensive Artists no longer put themselves on the commanding heights of aesthetics and impose their aesthetic concepts on society, but integrate into society and express their feelings about social existence and social cognition. From the perspective of creation, the development trend of intelligence in modern society makes participatory art creation pay more attention to the relationship between people and society, and people in this place refer not only to artists, but also to the public, and artists are to speak on behalf of the public, and to express the demands and ideas of the target group is participatory creation.

Most of the new media, community art, performance art, behavioral art, interac-tive media art, and the integration of various ways are used in the realization of this kind of creation, and the most important thing in this kind of art is the participation of the audience, and the basis of creation can be events or social phenomena. The development of science and technology makes the trend of multi-field combination of works of art in the process of creation, and this makes the artwork in the participa-tion of science and technology, how to make the artistry of the work always maintain above the science and technology, has become an important issue of multi-field combination of participatory works.

In terms of time, collectivity is no longer a necessary characteristic of a work of art, a work of art with public participation can already be regarded as a work of art in its own creative process, and the creation of art is fundamentally no longer the creation of subject matter, but the creation of its process into the creation of an event.

This kind of artistic creation, which transforms the viewer from a viewer to a par-ticipant, repairs the originally severed relationship between the viewer and the work, allowing the viewer to enter the work instead of stopping. At the same time, it also breaks the boundaries between creators and society, so that the original static art creation itself becomes an open and extensive art creation process, which is also the core of modern art can be closely integrated with all fields of life.

2.3 Civic nature

With the advent of the information age and the influence of intelligent life, people can obtain the knowledge they need anytime and anywhere, which also makes people's aesthetic level greatly improved, and aesthetics is no longer the exclusive preserve of the elitism of the past, and the people's consciousness has a huge impact on the works of art and the form. The cultures of different countries are constantly colliding, which also makes the public's aesthetics continue to converge.

In the modern society with the developed network, once a work is circulated by the public, the evaluation of social public opinion makes the meaning of the work can be defined by everyone, and the audience is not only watching, appreciating, enjoying the work and gaining insight, but can participate in the creator's work and have feedback, which in the process of expression, artistic creation has to pay attention to the participation of the audience. The participation of the audience will prompt the creator to create the work many times after the exhibition, so that the work has development. In modern society, the emergence of consumerism has made the works of art in the context of the fast era more commercial, and this commercial atmosphere has also made the artists not at the highest aesthetic level, so that the works of art have more market atmosphere, and the creators are not only limited to the expression of emotions such as joy, anger and sorrow, but also appear works that are only for the expression of timely pleasure, which makes the opposition between aesthetic and consumerism appear in artistic expression.

2.4 Fantasy

The biggest advantage of digital art is that for the artist, it removes the cumbersome process of material purchase, work production, on-site installation, etc., which greatly liberates the artist's imagination, and all kinds of imaginative ideas only need new technology such as projection technology to complete, and there is no need to consider the implementation of materials science, mechanics, sociology and other implementation issues at the same time in production, and in the presence of algorithms, the work can even have its own vitality and carry out evolutionary exploration on its own. This kind of artistic creation has long-term vitality and vitality. For the audience, when entering a field where no other information intervenes, the understanding of the work itself has a very strong spontaneity and fantasy.

Machine Illusion is an exhibition made with artificial intelligence, the first large-scale solo exhibition of Turkish artist Refik Anadol in New York. More than 3 million images were processed using machine learning algorithms throughout the exhibition into visual content. Each moment represents a choice of different architectural styles and movements, and reveals the hidden connections between these historical moments. When the machine generated the world of 512-dimensional architectural illusion data, it began to explore ways to experience space knowledge. The "machine illusion" challenges the definition of "space", that is an infinite three-dimensional space with relative positions between objects. This work explores the infinite dimensions and space of information in machine thinking.

2.5 Process

The process in immersive installation art comes from the process art in the mid-sixties of the last century, integrating process as an artistic concept into immersive installation art, immersive installation art abandons the permanence of traditional easel art, or in other words, its real permanence becomes permanent in the virtual world in the form of pictures, videos, audio, etc. Sustainability is no longer an important goal of creation. Taking the fluidity of time as the source of creation, and showing the infinite tension of the work in a limited time and space is its artistic characteristic, that is, process. Through the process of this concept of art as a means of creation to counter the consumerism of the materialization of artworks and the formalism that artistic creation only presents results. Through the malleability given by the medium, the artist abstracts and extracts the collective life perception into the field of creation, and through the practice of new media context, using new technological means such as sound and light, the audience can enter the field of immersive installation art, resonate with the work and resonate with the creator emotionally, and constantly extend the various possibilities of the work process in time and space, and concretize the existence of the work in time and space.

For example, Jason de Caires Taylor's "Museum of Underwater Sculpture" places the sculpture on the bottom of the sea, and through the use of materials, seaweed, insects and other underwater creatures form a symbiotic relationship on the sculpture over time, and then through the immersive participation of the audience, together form an immersive installation sculpture. The whole work is procedural throughout, and has a strong malleability in the time dimension.

3. Applied research on immersive installation art

3.1 Analysis of the technical characteristics of immersive installation art

With the maturity of virtual reality technology, immersive art blurs the boundary between virtual and reality through virtual reality technology, and perfectly integrates with installation art. In the past, the one-way information dissemination mode of individual thinking of artists has been transformed into a two-way interactive experience mode between the audience and the works integrated with the artist's creative thoughts. This new art is created for artists who want to enrich the expression of their works with technology, and for their audiences, they want to understand the meaning of their works in a more efficient and faster way, such as human-computer interaction. Nowadays, immersive art is mostly formed in the form of projection (water screen projection, wall projection, screen projection), mechanical devices (robotic arms, lighting devices, pneumatic devices), combined with digital programming software (processing). Touchdesigner), video editing software (PR, Finalcut), 3D modeling software (C4D, 3Dmax, Maya, Zbursh), etc., to work together on artworks.

3.2 Experiential analysis of immersive installation art

Immersive art exhibitions can help audiences explore and integrate their senses through the interaction of materials and multiple senses. First of all, immersive art exhibitions can expand the audience's understanding of matter through materials. Historically, human beings have never stopped exploring materials through art, and primitive people were the first to explore life and non-life through sculpture.

The boundaries of the body expanded the tactile sense of the world, and later explored the mysteries of heat and chemistry through the art of heat treatment, while the Renaissance tracing the original structure of matter through the relationship between materials and light. With the discovery of the essence of light by science and technology, modern painting no longer focuses on imitation, but begins to explore the law of change of light, the origin of nature.

Even today, art is still exploring the original structure of life and matter. Through the condensed display of natural or social change processes, the immersive art exhibition transforms the memories and associations related to materials in the deep brain into the direct perception of the body in the present.

3.3 Analysis of Immersive Installation Art and Commercialization Tendency

With the rapid development of immersive art in China, the immersive industry is becoming more and more mature, and VR, AR, escape rooms, script killing, stage drama, exhibitions, and cultural tourism all have their own unique development characteristics after the introduction of immersive art. As an indispensable part of this, immersive installation art has a unique artistic advantage in China, which is gradually attaching importance to the preservation of traditions. The multidisciplinary nature of the immersive industry itself leads to many industrial projects that do not focus on the shaping of art, but rather the application of successful business templates in the past or the reinterpretation of business concepts. Although immersive installation art tends to be a highly personal and artistic category, in the context of the general context, artists need to face problems such as balancing harmony with commerciality, integrating capital investment, combining artistic creation with sustainable economic development, and maintaining the core of art.

3.4 Analysis of the development trend of immersive installation art

Of course, how to guide the market to form a virtuous circle is an important theme of immersive art, China's immersive installation art in the protection of cultural relics, the concept of cultural tourism industry, cultural and creative potential is very huge, for the endangered cultural heritage through immersive art reshaping, can provide some new ways for China's cultural construction and economic construction. Under the background that the epidemic has not yet completely ended, China's immersive installation art should be combined with traditional stories, traditional culture, and traditional cultural relics, and the characteristics of immersive installation art should be used to create works that can lead the public's aesthetics and have humanistic feelings and cultural connotations.

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武汉纺织大学

Master's thesis
(Semester 1, 2020-2021)

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Summary

Process art refers to the sum of related artworks that emphasized process in the Western schools in the 60s of the last century. Among the major art schools contending in modern times, the school that separates process as an artistic concept as a creative thinking is processist art, also known as anti-formalist art, in the process of creation, it does not regard permanence as an important purpose of creation, but takes the fluidity of time as the source of creation. How to show the tension of time through the work in a certain period of time is the research significance of processist art, the movement process of the work in a certain time is perceived by the audience, and the work is finally completed through the process of perception. Through the process as a means of creation, it confronts the materialization of artworks and outcome-oriented formalism. Through the malleability given by the material, the artist integrates his personal perception of life into the field of his works, and shows the essence of life through his works, so as to explore the existence and significance of the artistic process.

In the practice of process art in the context of contemporary new media, through new technological means such as sound and light, the audience can enter the field and resonate with the works, so as to explore the various possibilities of process time capacity. It is different from previous process art practices. Process art should not be independent of other art forms, its creative characteristics and creative techniques can be widely used in other art categories, and immersive art based on process art integrates the fluidity of time, the individual expression of the creator, and the concrete extraction of group culture into the works, extending the capacity of process art to the greatest extent in the limited time and space.

Keywords: Process Art: Immersive Art: Temporality: Capacity

Contents

1. The early development and practice of process art

1.1 Background of process art

In the 60s of the 20th century, along with the socio-political and economic transformation of the West, corresponding cultural trends and value systems were produced. Artists have a strong dissatisfaction with the strong individualism and abstract symbols of modernism, thus confronting the artistic concept of modernism

and its cultural values in the established rules, and postmodernism rebels against the formalism and extreme individualism in modernism, and re-establishes the relationship between art and life The most prominent feature of modernism is rebellion and structure, which seeks ways to shape its ideas through various methods, and deconstruction is the most distinctive technique of postmodernism, re-establishing the relationship between man and man, man and nature, which provides a breeding ground for the production of process art. In two major exhibitions in 1969, the name of process art was formalized: one was Harold.

Schiemann's exhibition "When Attitude Becomes Form" for Kunsthalle Bonn was organized by James. Monte & Marcia. Tucker's "Process and Materials" exhibition for the Whitney Museum of Art in New York. Through these two exhibitions, while establishing the creative direction of "anti-form, anti-material, and anti-fantasy", art has gathered a group of like-minded artists and laid the foundation for its development.

1.2 Early practice of process art

The creation of early process artists basically started from the material, and through continuous exploration, the material perfectly expressed the concept of process in time and space. Among them are Eva Hesse, Linda Bengris, Richard Serra, Joseph Beuys. Eva Hesse said that process is the whole meaning of the work, and a large number of her works are made of fluid soft materials, these unstable, organic, and constantly changing materials in time and space fully embody the characteristics of process art, and the final presentation of art is not important, but the process of the formation of the work is important. Richard Serra is also an important practitioner of process art, and his early works are full of elements of process art, such as his early work "Casting" (fig. 1), in which liquid lead is sprinkled in a corner of the exhibition hall, and the process of solidification of liquid lead is the presentation of his creation, which does not need to be expressed by the result.

Joseph Beuys's "7,000 Oak Trees" (fig. 2) presents a participatory process of public participation, which is completed by the artist himself and the public in the scope of five years of practice.

(1)

(2)

1.3 Modern practice of process art

In modern consumerism, the culture of consumption is becoming more and more popular, and the idea is far from spiritual pursuit, and unlike the early process art practice, the artist's practice since the 21st century embodies the reflection on philosophical issues, the spiritual and psychological realm, and expresses it in a certain time and space through various ways.

Artist Liang Shao-ji's "The Degree of Nature" (Fig. 3) records the growth of bamboo in the form of photographs, measures the length of time through the figurative length of life, and embodies the value of process art in the extension of time and space by quantifying time.

(3) The works of the artist Xie De-qing more extreme, by confining themselves to a fixed space and repeating the process that others cannot bear, so that the audience has a deeper thinking about life, measures the length of time through their own behavior, and more strongly intervenes in the audience's emotions, thus achieving a state of empathy and resonance.

2. The application of process art in immersive art

In the creation of art, the relationship between the creator, the work, and the audience has always been the focus of the creators' attention in their creation, and in today's intelligent society, the creator is no longer as usual, only seeking to meet the shallow physiological needs of the audience, but constantly pursuing to satisfy the audience's deep spiritual touch. In participatory creation, the creator connects the work with the audience at the beginning of the creative process, guiding the audience to become a co-participant in the creation, so that the work can always be integrated with the audience's emotions and life to a certain extent. The participation of audiences with different occupations and different experiences will make the works continue to improve, so that the diversified development of the works has dynamic characteristics that were not available in the past. This is the greatest role of participatory creation, that is, the audience under the guidance of the creator is placed in the same position and participates in the production of the work, so that the work is not limited to the creator's personal aesthetic understanding, but brainstorms and cooperates with the whole society.

Participatory creation has become a mainstream way of artistic creation in today's information age, and this trend makes art not only limited to the original artist as a specific group of people, but also traditional artistic expressions such as painting, music, film, sculpture, etc., the emergence of self-media and its rapid popularity, so that everyone can be an artist and a creator. In the process of practice, the work can be synergized with other art forms, and the same work of art can be created or promoted in different forms.

In terms of space, because the works of art in modern society are no longer limited to art museums, exhibition halls, and all public spaces can be the carriers of artworks, which makes artworks no longer the unique products of artists in space: in today's great development of public aesthetics, whether the work can connect the audience's emotions with the creator is an important criterion for judging a work, and the emergence of new media makes the public's judgment of artworks more extensive Artists no longer put themselves on the commanding heights of aesthetics and impose their aesthetic concepts on society, but integrate into society and express their feelings about social existence and social cognition. From the perspective of creation, the development trend of intelligence in modern society makes participatory art creation pay more attention to the relationship between people and society, and the people in this place are not only artists, but also the public, and artists are the voice of the public, and the appeal of the target group is expressed in a way that is participatory creation, and this kind of creation mostly uses new media, community

art, performance art, performance art, interactive media art, and the integration of various ways. The most important thing in this kind of art is the participation of the audience, and the basis of creation can be an event or a social phenomenon. The development of science and technology has made the trend of combining multiple fields in the process of creating works of art, and this makes how to make the artistry of works of art always maintain above science and technology after the participation of science and technology, which has become an important issue concerned by participatory works combining multiple fields. In terms of time, collectivity is no longer a necessary characteristic of a work of art, a work of art with public participation can already be regarded as a work of art in its own creative process, and the creation of art is fundamentally no longer the creation of subject matter, but the creation of its process into the creation of an event.

This kind of artistic creation, which transforms the viewer from a viewer to a participant, repairs the originally severed relationship between the viewer and the work, allowing the viewer to enter the work instead of stopping to watch. At the same time, it also breaks the boundaries between creators and society, so that the original static art creation itself becomes an open and extensive art creation process, which is also the core of modern art can be closely integrated with all fields of life.

Oscillation 2020 is the work of Miguel Chevalier, one of the pioneers of virtual art and digital art.

Combining the essence of art history, his work also blends nature and technique, mobility and network, virtual city and ornate design, using scientific computational methods as a means of artistic expression to create generative and interactive virtual reality installations. The installation is a three-dimensional graphic visualization of music, a wavy image generated in real time according to the frequency and amplitude of the music, and the "sound spectrum" composed of different sounds in these music generates infinite imagination and thus forms a wonderful landscape. The lush virtual scene transports visitors into a natural landscape where fantasy and reality are intertwined, making it difficult for the viewer to distinguish the realfrom the unreal.

Surrounded by music and images, in constant movement and inextricable connections.

Teamlab's work perfectly integrates the concept of process art into their works, and the work "Black Waves" transforms the Japanese ukiyo-e style waves into a three-dimensional space by simulating them in computer space, transforming the works in two-dimensional space into three-dimensional space, in which the audience sees themselves as a part of nature in the process of viewing, and immerses the audience in it through images, eliminating the boundary between reality and virtuality, and becoming the node where the audience becomes the passage of the work.

By integrating process as an artistic concept into immersive installation art, immersive installation art abandons the permanence of traditional easel art, or in other words, its real permanence becomes a permanent existence in the virtual world in the form of pictures, videos, audio, etc. Sustainability is no longer an important goal of creation. Taking the fluidity of time as the source of creation, and showing the

infinite tension of the work in a limited time and space is its artistic characteristic, that is, process. Through the process of this concept of art as a means of creation to counter the consumerism of the materialization of artworks and the formalism that artistic creation only presents results.

Through the extensibility given by the media, the artist abstracts and extracts the collective life perception into the field of creation, and through the practice of new media context, using new technological means such as sound and light, the audience can enter the field of immersive installation art, resonate with the work, and resonate with the creator emotionally, so as to continuously extend the various possibilities of the work process in time and space capacity, and characterize the existence of the work in time and space.

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Research on the application of Taoist aesthetics in the language of contemporary art

Abstract:

Taoism is an important part of China's philosophical thought, and this paper aims to explore how Taoism guides artists in the pan-entertainment social life of modern society with consumerism and hedonism as the core, and how modern artists respond to the cultural taste impact brought by the shallow and empty modern media works in the society with their works. Through the Taoist culture, the idea of moderation, the thought of Taoism and the thought of BaoPu are expounded from three levels.

Key words: The idea of moderation: the unity of man and nature: Modern art: the idea of embracing simplicity

Introduction From ancient times to the present, the Taoist culture with Zhuang Thought as the core has had a long-standing influence on China's ideology and culture, is an important part of China's traditional culture, and is also China's unique cultural heritage. In Taoist philosophy, there is the aesthetic pursuit of "great sound and sound and invisible elephant", the aesthetic orientation of "the unity of nature and man", and the simple and simple beauty of returning to nature and being natural. This has its own unique cultural and aesthetic value today.

1. The Application of the Unity of Heaven and Man in the Language of Modern Art
   As the core idea of Taoism, the "unity of heaven and man" mostly refers to the realm of "heaven and earth coexist with me, and all things are one with me". The unity of heaven and man means that through practice, one can liberate one's own nature, break free from one's own shackles, and thus achieve the state of symbiosis of all things. The development of modern art is more about fighting against desire and human nature, and it is through the artist's creation, the artist's concept is mapped to the audience. Among them, there are many branches of performance art, conceptual art, process art, etc., all of which have such introspective and even ascetic artistic creations. For example, in artist He Yun-chang's performance artwork "Longevity Fruit" (Fig. 1), in the 72-hour period of not eating or drinking, waiting for the immortal fruit under his body to bloom (peanut sprouting), when the work is completed, although the body has experienced the torture of not eating or drinking, which is considered to be suffering by ordinary people, this extreme behavior brings the audience a deep understanding of man and nature, man and life.

The Taoist idea of "the unity of man and nature" can lead artists to create philosophical and aesthetic concepts that reflect deeply on the emerging social issues, and enable the audience to achieve a state of tranquility and inaction through their works.

He Yun-chang's work "The Fruit of Eternal Life" II. The Application of the Idea of the Mean in the Language of Modern Art The Taoist idea of the mean, that is, "the movement of the opposite and the use of the weak in the way of the weak" in Chapter 40 of Lao Tzu, contains a series of contradictions such as rigidity and softness, length and shortness, front and back, presence or not, and severity.

Generally speaking, it means that the extremes of things must be opposed, and when things go to the extreme, they will go to opposition, and we often create on the basis of one characteristic when we create art. But in the rich materials of modern art, the original characteristics can often be accentuated by opposing characteristics. For example, in Shi Jin-song's "Stroller Sickle Version" (Fig. 2), a stainless steel baby cradle article, we have the inherent impression that the stroller should be warm, soft, and represent a safe haven. The stainless steel material and sharp appearance of this work make it difficult to imagine that this is a baby product, but when these elements are presented on the stroller at the same time, it happens to attract people's attention to the soft existence of babies, and it is difficult not to think of the huge pressure brought to young people in the situation of increasing involution among peers. This creative method of highlighting the opposite characteristics through materials has a certain guiding significance in practice, and we can think about how to realize the opposites in the process of artistic creation through the multiple opposites in the idea of the mean, and highlight the effect we want to obtain.

Shi Jin-song's work "Stroller Sickle Edition" 3. The application of the idea of embracing simplicity in the language of modern art: The idea of embracing simplicity originates from "Lao Tzu": "Seeing simplicity and embracing simplicity, less selfishness and less desire".

Pu refers to the original state of innocence, naturalness, and unadornedness. Embracing simplicity means maintaining innocence, not being tempted by external objects, not lingering in material desires, and not being disturbed by natural and social factors. This kind of expression guides artists to create from the charm of things and the essence of things, combining the virtual and the real, giving the work vitality and charm, and too much decoration and too many technical techniques will hurt the charm of the work. Yin Xiu-zhen's work "Washing the River", in order to warn about the pollution of the river, through modern industrial means to extract ten cubic meters of sewage from the polluted river and make it into ice, and then transport it back to the shore with clean water for washing, so that pedestrians and citizens can participate in it, and the artist to complete the work together, the whole work lasts for two days, when the work is finally completed, only a piece of sewage is left on the ground, but the work has aroused strong social repercussions through the media, word of mouth, etc., expressing the environmental protection demands of the artist and the public.

Yin Xiu-zhen's work "Washing the River" IV. Conclusion To sum up, China's traditional culture is broad and profound, and history has left us a rich cultural accumulation, and Taoist aesthetics has a rich creative context and creative connotation in contemporary art creation.

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Authors: **Zi-ye Chen , Song-xi Peng**

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