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The Development History of the Metaverse in China

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Abstract:

This article introduces the development trajectory of the metaverse in China. From the development of traditional media art to new media art, then to interactive media art, followed by the development of artificial intelligence art, and later to the development of different art forms in the metaverse. The various stages of the development of the metaverse in China have been sorted out, and the development of the metaverse has been prospected.

Key words: Development of media art, development of new media art, development of interactive media art, development of artificial intelligence art, development of metaverse

I. Overview

This article introduces the development trajectory of the metaverse in China. From the development of traditional media art to that of new media art, to that of interactive media art, and then to that of artificial intelligence art, the development of different art forms in the metaverse was later sorted out, and the development of the metaverse was prospected.

II. The Development of Media Arts

2.1 The Concept of Media Art

Media art refers to the realization process of artistic creativity presented by traditional media art forms such as print media art, other media art, comprehensive media art, new media art and interactive media art [1] [2].

There are two different interpretations of "Medium". Broadly speaking, "medium" and "Media" are interchangeable. Both originate from the English word "medium" (in the plural form of "media"), meaning it could refer to the general term for mass communication media such as television and online media, as well as the intermediary or medium in communication activities. It not only includes spoken language, writing, printing, newspapers, telegrams, films, television, etc., but also roads, numbers, clothes, buildings, etc. In order to develop and control more information, humans constantly extend their biological organs and try to make the transmission of information easier, enabling it to reach farther and faster, treating the medium of communication as an extension of the human body. In a narrow sense, media refers to the general term for mass communication tools such as television, newspapers, radio, advertising and computer networks, while medium refers to the people or things that have a relationship between the two. Here, our medium refers to the medium in a broad sense.

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People divide the development of media into different stages according to the differences in communication media - traditional newspapers with paper as the medium, radio with radio waves as the medium and television based on television image transmission. They are respectively called the first medium, the second medium and the third medium.

In May 1998, UN Secretary-General Kofi Annan proposed at the UN Information Committee that while strengthening traditional means of text and audio-visual communication, the most advanced fourth medium - the Internet - should be utilized. Since then, the concept of the "fourth medium" has been officially put into use.

Referring to the online medium as the "fourth medium" is to emphasize that, like newspapers, radio, television and other media, it is the fourth medium capable of timely and widely transmitting information. In a broad sense, the "fourth medium" usually refers to the Internet. However, the Internet is not merely a medium for disseminating information; it also has unique advantages in digital, multi-media, real-time and interactive information transmission. Therefore, in a narrow sense, the "fourth medium" refers to the network that disseminates news and information based on the Internet as a transmission platform.

The "Fourth medium" could be divided into two parts. One is the digitalization of traditional media, such as the electronic version of People's Daily. The other is the "new type of media" born due to the convenient conditions provided by the Internet, such as portal websites.

The fifth medium: One term refers to it as mobile networks, and the other refers to it as new media. New media refers to the forms of media that emerge under a new technological support system, such as digital magazines, digital newspapers, digital radio, mobile text messages, mobile TV, online blogs, desktop Windows, etc. That is, compared with the four traditional media of newspapers, radio and television, from a broader perspective, it is a new form of media in contrast to the old media.

The Canadian sociologist Marshall McLuhan classified media into "cold" and "hot" media. This "cold" and "hot" medium refers to different media that could be further classified due to their varying levels of clarity and the different perceptual effects they offer. He said that "hot" media (radio stations, photos, movies) provide participants with relatively rich data and information, and participants have a relatively low level of participation. The information in "cold" media (such as telephones, cartoons, and television) is relatively scarce, and participants need to have a relatively high level of sensory engagement to fill and complete the images.

Art is a social ideology that reflects reality in various forms but then elevates and refines it to be more typical and resonate with some people. It not only includes painting and sculpture, but also music, dance, literature, folk art, drama, film and interactive media art, etc. Art is human beings' understanding or reflection of the world. In terms of its subjectivity, it is both a perceptual understanding of the world's appearance and a rational understanding of its essence through profound thinking. Art is the unity of the two. Art is not merely a term; it is a creative product with its own characteristics. Traditional poetry, novels, music and dance are art; the diversified creations of modernism are art; and the creations of postmodernism are also art. Art is not merely a noun or a creative product, such as the treasures in a museum, nor is it just buying tickets to enter a performance hall to enjoy music and drama. At the same time, it is also a verb, a process, referring to "putting things together", such as performance and performance art, etc. A canvas painted flat in blue and the process of an artist smashing a piano are also called art. This phenomenon of artistic creation involves the essential issues of artistic creation. If we could take art as a way of dealing with people and matters, apply it to our daily life and enjoy it, the quality of our life will surely be more perfect.

Media art encompasses traditional media art and new media art. Traditional media art includes two-dimensional media art, three-dimensional expression of traditional two-dimensional media art, other media art, comprehensive media art, and new media art and interactive media art [3].

1.2 The Development History of Media Art

2.2.1 The Development History of Traditional print Media Art

2.2.1.1 The Development History of traditional print Media Art

From prehistoric cave paintings to artistic creations using materials such as leather, cloth and paper, the long river of art has gone through primitive art and the Renaissance art of the 14th century, reaching the peak of techniques with strict perspective skills, superb shadow processing techniques and mature texture expression methods. The tradition that had lasted for hundreds of years began to undergo tremendous changes under the influence of various new technologies at the beginning of the 20th century. In the 20th century, various art schools emerged, such as Cubism, Futurism, Russian Constructivism and New Formalism.

At the beginning of the 20th century, in artistic creation, artists were also exploring the medium expression of their works. Cubism transformed the information conveyed by works from two-dimensional to three-dimensional rather than using traditional stereoscopic techniques such as perspective and tone. This exploration of media art has given it a pivotal position in the history of art [4].

2.2.1.2 Three-dimensional Expression of Traditional print Media Art

The development of art in the world mainly uses media such as paper, silk and cloth as carriers for artistic creation. Many masterpieces of artists at home and abroad are also mainly in these forms. The vast majority of artists and enthusiasts have also been concentrating on these media and conducting artistic creations based on them. With the continuous increase of artists' creative points, their artworks have become increasingly diverse. Artists have gradually broken through from print media such as paper and cloth, and are gradually shifting towards three-dimensional artistic creation [5].

2.2.2 The Development History of other media arts

Artistic creation on flat media such as paper and cloth has always held a dominant position in the long river of art. At the end of the 19th century, artworks, in particular, reached the peak of print media art techniques with their strict perspective skills, superb shadow handling techniques and mature texture expression methods.

The transformation of media, however, has brought a broader sky to the development of art. The earliest media could be traced back to the murals painted on rocks with egg whites in ancient times, the art form of collage on planes with various media, and then to three-dimensional art, numerous new art concepts and expression forms characterized by abstraction, speed, and technology.

As artists of various schools explore the diversity of art, they have gradually broken away from traditional flat media arts such as paper, cloth and walls, and begun to explore the artistic expression of other media. The expression of these different media arts has a relatively long history. With the innovation of artists in media, more and more forms of works have been created. This makes art as full of unknown and uncertain factors as politics and economy.

Any medium could serve as a source of artistic creation, including various forms of medium art creation such as land art, balloon art, block art, performance art, glass art, stone art, dough figurine art, egg art, plastic art, thread, silk, tape art, pen art, match art, and miniature screw art, which use land and fields as media. These new forms are no longer confined to our original understanding of art.

The transformation of art is reflected in the transformation of media. Media bring many possibilities to artistic creation and play a crucial role in the development of art. Graphic media art, installation art, etc. all bring about the development of art through changes in materials and media. The enrichment of other media art works has taken an important step forward in the development of art [6].

2.2.3 The Development History of comprehensive Media Art

Comprehensive art employs two or more forms of media art, drawing on the strengths of various arts such as painting, literature, music, and dance. By integrating multiple artistic means and methods, it forms its own unique aesthetic expression form. It integrates the characteristics of time art and space art, audio-visual art and other multi-sensory arts, representational art and expressive art, plastic art and performing art, etc., and has a stronger artistic appeal.

As early as in the long river of artistic creation, there have been artists who, intentionally or unintentionally, have integrated and applied media suitable for their themes. At the beginning of the 20th century, artists discovered and created brand-new artistic concepts and styles - media art - in the process of exploring the human spiritual world.

Artists not only make their works artistic by borrowing traditional media and various media produced by technological development, but also explore the medium expression of their works in their artistic creation.

The Russian artist Vladimir Tatlin referred to the 1920s as the "Age of Materials" and put forward the famous saying "Material is Message". At that time, Tatlin was in the mechanical age. Artists made use of many media of the mechanical age to create a large number of new artworks, broadening the field of art. These new art forms were presented at the World's Fair in New York in 1931, the "International Exhibition of Modern Architecture" in 1932, and the "Mechanical Art Exhibition" held at the Museum of Modern Art in New York in 1934, bringing people new visual shocks. The work and concept have achieved the comprehensive application and artistic expression of various technical approaches such as light, space and speed, representing a significant leap in the combination of traditional media and technology.

After World War II, various electronic technologies emerged rapidly, among which the most significant was the computer technology invented on the eve of the end of the war, which laid an important foundation for the development of new media art after the war. Shortly afterwards, in Argentina, which was not greatly affected by the war during World War II, intermedia Art activities began. Since then, various comprehensive art forms of traditional and electronic Media have gradually developed [7].

2.2.4 The Development History of New Media Art

2.2.4.1 The Concept of New Media Art

In a narrow sense, New Media Arts mainly take "electronic" and "optical" media as the basic language and digital technology as the core. It is a kind of art with strong interactivity and comprehensiveness. In a broad sense, new media art is a form of artistic creation that, in contrast to traditional artistic expression methods, uses technological products - new media - as technology advances.

It is not a fixed term that constantly changes with the advancement of science and technology and the development of society. It is a brand-new discipline characterized by comprehensiveness and interdisciplinarity that has appeared before us in different forms at different historical periods.

There is another claim that new media art is also digital art. In a sense, the scope of new media art has a certain degree of keeping pace with The Times, mainly referring to those artworks that use the latest scientific and technological achievements such as video, computers, the Internet, and digital technology as creative media. Therefore, new media art has inadvertently permeated every field of modern art.

New media art is the product of the integration of artistic thinking and modern technological means. To create new media art, it is far from enough to rely solely on the training of traditional art; it also requires learning and collaboration among multiple disciplines.

New media art is a rich and diverse form of artistic creation that integrates images, language, text, videos, sounds, installations and so on. In addition, it simultaneously spans the knowledge domains of more disciplines such as art, mathematics, physics, biology, economics, linguistics, informatics, and statistics.

Zhang Ga, the curator of the "Synthetic Era - International New Media Art Exhibition", once said, "New media art is an art form that integrates multiple disciplines. Art combines with the most cutting-edge science of the contemporary era. Digital technology, biotechnology, quantum theory, economics, and linguistics could all serve as media for the realization of art."

Roy Ascott, a pioneer of new media art, once said: "The most distinct essence of new media art is connectivity and interactivity.Whether it is human-computer interaction or human-to-human interaction through media, the distinct features of new media art always reflect bidirectionality or multi-directionality, which is different from the expression of traditional media art and also complements the information digital age. "

New media art is not merely about participants "reading pictures" or simply "combining pictures and text" as in traditional art. The information conveyed in new media art works is multi-angle and three-dimensional. Participants do not passively accept the information conveyed by the art works but actively obtain information through aesthetic experience in the process of participation and experience.

2.2.4.2 The Development History of New Media Art

In the process of exploring the human technological and humanistic world, artists constantly discover and create brand-new artistic concepts and media art styles.

At the end of the 19th century and the beginning of the 20th century, with the invention of photography and communication technologies, the prelude to the power revolution was initiated. In the UK, the first railway was opened between Manchester and Liverpool in 1830. This move, along with the wave of the Industrial Revolution, triggered a worldwide railway construction boom in European countries such as France, Germany and Italy. Railways and the photography and communication technologies that emerged at the same time made humanity initially feel the breath of "modernization". Photography technology enables visual images to be recorded and preserved across time. Communication technology enables text information to be transmitted beyond space. The invention of the telephone, phonograph, film and camera, radio communication technology, as well as the tape recorder and later the typewriter and video tape, these various technologies that emerged in the 19th century, in a sense, had laid the foundation for the formation of the modern media society, and the appearance of these media also opened up new paths for the development of art.

In a media society where styles are increasingly diverse, artists not only create art using tradition and various techniques, but also begin to consider the influence of media on art. Among them, the camera as a medium plays a special role in helping artists grasp the form. Besides enabling artists to accurately record the momentary form, the camera could also use wide-angle and multiple exposure techniques to achieve visual effects that are invisible to the naked eye. Meanwhile, the film of a camera has the feature that it could be replicated in large quantities. The photography technology brought about by the camera is one of the major inventions after the Industrial Revolution. Compared with other inventions of the same period, it has had a greater impact on human visual activities and further expanded the human visual world.

The letterpress printing technology invented in the early 15th century made the reproduction of characters possible, and books, as a special medium, enabled the wide dissemination of characters. The subsequent emergence of copperplate printing technology and lithography in the 19th century made it possible to print images and posters. Compared with the first two media, the invention of photography technology made reproductions begin to become works of art, and the camera medium started to enter the field of artistic creation. In a sense, photography is the earliest technology-driven art form invented by humans that combines technology and art, and it could also be called the earliest "new media art".

Later, Ivan Sutherland, the father of computer graphics and virtual reality, was the first to propose the concept of virtual reality technology[2]. The concept of this originated from the idea of The Ultimate Display proposed by Suzeran in a paper in 1965. He believed that the computer monitor could be used as a window to the virtual world, through which people could see a virtual world. The challenging task is how to make that virtual world look more real, act in it realistically, sound real, and feel just like the real world. Su Zelan's idea is to use computers to build a virtual physical world with which audiences could interact.

In 1964, Suzeran left MIT and went to Harvard University to continue his research on virtual reality technology. In 1966, he and his student Bob Sproull developed the world's first Head-Mounted Display (HMD) for Boeing.

In the 1960s, as Pontus Herten, the curator of the exhibition "Machines - The End of the Mechanical Age", pointed out, we had already entered the tail end of the mechanical age. Canadian sociologist Marshall McLuhan published "Understanding Media: An Extension of Man", in which he announced the arrival of the "electric media Era". At the same time, he also pointed out that electrical media centered on radio and television would soon replace movable type media, and asserted that the "era of image culture" triggered by television was approaching. The visual characteristics of television enable it to directly affect the senses of viewers, giving them a sense that they are surrounded and touched by information. He proposed the viewpoint of "The Media is Message", where information has a direct effect around people like the skin of the body.

The media that emerged in the second half of the 1960s and relied mainly on electronic engineering technology were rapidly popularized after the 1970s. Various information and electronic media flooded into people's lives like a wave.

Since the 1980s, virtual reality technology has made considerable progress. In the early 1980s, Jaron Lanier, the founder of VPL in the United States, explicitly put forward the term VR(Virtual Reality). In 1984, scientists at NASA's Amis Research Center in the United States designed portable small stereoscopic glasses. Meanwhile, Tom Zimmerman invented the "Data Glove" which could precisely track and feedback hand movements.

The exploration of virtual reality has linked human information with that of computers and enabled interaction between the real world and the virtual world. From then on, the expression of art began not only on the path of interaction between works and people, but also on a new journey, that is, art appeared in the dialogue between humans and computers, and the interaction between human-machine dynamics and the real and virtual Spaces emerged.

It is well known that science in the 20th century had a more significant influence on art than in any previous era. In the 1940s and 1950s, the wave of technological revolution in the West rose once again. It was more powerful than the previous steam and electric technologies and marked another significant milestone in the history of human technological revolution. Significant changes have taken place in fields such as atomic energy, bioengineering, and electronic computers, advancing the pace of human progress and marking a major leap in history. The most significant aspect of this revolution is that it has had an impact on human life and ways of thinking. At the same time, it had an impact on the creation of artists and laid a solid foundation for the emergence and development of new media art.

[2] Virtual reality technology: Generally refers to an interactive virtual environment that integrates vision, hearing and touch, generated by using comprehensive technologies such as computer modeling technology, space, sound and visual tracking technology. In such a virtual space, users could interact with computers through devices such as data helmet displays, data gloves, and data clothing, and obtain an experience extremely similar to the real world.

Among them, the emergence of art forms such as computer graphics art, video art, network art, virtual reality art, and interactive art is more attributed to the fact that computer technology has provided artists with a broader creative space, which is beyond the reach and cannot be achieved by manual techniques. The artistic world created by new media artists has opened a new chapter in artistic creation [8].

2.2.5 The Development History of Interactive Media Art

2.2.5.1 The concept of Interactive Media Art

Interactive media art refers to the interwoven and mutually influential art forms presented on various media. It is a new media art centered on interactive concepts and interactive technologies.

Interactive media art is the product of the combination of modern information technologies such as electronic technology, multi-media technology, sensor technology and detection technology with art forms. It is the process in which artists use modern scientific and technological expression methods to present the realization of artistic creativity. It is different from traditional media art and other forms, emphasizing more on its interactive characteristics. As the experiencer feels the joy of participating in the creation of the work, this form of art creation has been extremely popular and developed greatly in recent years.

2.2.5.2 The Development History of Interactive Media Art

In the late 1950s, centered in Europe, comprehensive art experimental groups began to emerge around the world with the aim of exploring the combination of "art and technology". Various activities carried out in the form of groups became a major feature of new media art during this period.

As the concept and practice of interaction in new media art are constantly emerging. Finally, during the Wave Art movement in the 1960s, the young American artist Dick Higgins (1931-1999) put forward the concept of "Intermedia", which triggered a mixture and innovation in performance art, stage art, video art and other fields.

In the 1960s, in the Waves, incidental art and conceptual art, there were already acts of audience participation. It could also be seen that the audience's participation led to new interpretations and performances of the works. Many artists, writers, filmmakers, musicians and dancers all threw themselves into this wave.

In 1963, Ivan Suzeran invented the "Drawing Board", which fulfilled the wish of direct dialogue between humans and machines. This interactive system replaced abstract character commands, allowing users to directly operate on the monitor with a light pen. The design of the "Drawing Board" looks very similar to the interface of today's Adobe software. Users can control the operation of the computer through the option ICONS on the screen. This is the world's first interactive graphical user interface. While scientists are actively developing interactive technologies, artists are also actively utilizing the latest technological achievements to create new types of artworks.

In 1964, The exhibition "The Responsible eye" was successfully held at the Museum of Modern Art in New York, marking the official launch of the "Art and Technology" campaign in the United States. Meanwhile, the most important experimental Art group of the early 20th century, "Experiment of Art and Technology" (EAT for short), was also born.

In 1966, musician John Cage, together with technicians from Bell LABS, founded the Art and Technology Exploration Group with the fundamental concept of "exploring and researching new forms of comprehensive art in an equal relationship".

In the declaration, they wrote: "Artists should obtain the support of technicians as much as possible and to the greatest extent in their artistic creation. In the new creative environment, technicians should discover their role, and the collaboration between artists and technicians should bring revolutionary achievements to modern society. We are convinced that the mutual cooperation between artists and technicians will be of great benefit to society. "

The most significant of EAT 's series of events based on the above ideas was "Nine Evenings: Theater and Engineering" held at an Arsenal in New York in 1966. This exhibition showcases electronic music and works created using technical means such as closed-circuit television and sensor devices, demonstrating the significance of media in artistic creation. Meanwhile, another breakthrough of this exhibition is that it has broken the traditional relationship between the audience and the works in art, emphasizing the importance of audience participation in the artworks. A two-way and interactive relationship has begun to be established among the performers, artists and the audience.

These explorations of art and technology have taken an important step towards the exploration of cross-disciplinary research from a single art field.

Under the background of the information age, various automated devices such as central monitoring rooms, bank automatic service systems, and automated management systems for automobiles and subway stations can be seen everywhere in daily life, indicating that the environment people live in is moving towards automation. The automated environment has changed the traditional situation where humans controlled machines. A large amount of work and machines are carried out under the control of programs. The role of humans is more that of monitors, keeping an eye on the operation of these machines to prevent unexpected situations. A large number of intelligent scientific and technological advancements are posing challenges to humanity itself. Various intelligent technologies are gradually entering human life and competing to play human roles. With the continuous exploration of artistic experiments and technology, artists and scientists are also facing unprecedented tests in the sense of industrial ethics. This is also what we are experiencing now or in the future - on the basis of technological progress, interactive media art will become more intelligent, making human life more comfortable [9].

III. The Development of Artificial Intelligence Art

3.1 The Concept of Artificial Intelligence Art

Artificial intelligence art is an emerging field that combines artificial intelligence, science and technology, and art. In the world, the development of high technology in Japan leads the development of artificial intelligence art. For instance, the works created by the renowned artificial intelligence art team teamlab, such as初音ミク /Hatsune Miku and robot development, are creations or products that combine art with algorithms. The expression methods of artificial intelligence art are diverse and it also has extensive applications in society.

Artificial intelligence art refers to the theory and methods of simulating human intellectual capabilities and physical structures with computer languages, extending and expanding human intellectual capabilities, and reflecting reality based on the application of other systems and then elevating and refining social ideology from reality. Artistic creation and expression that attempts to understand the essence of intelligence and create intelligent systems in a way similar to human intelligence by means of machines, networks, multi-media technologies, etc. It combines science and technology with art. Artificial intelligence includes Natural language processing, machine language, and Big data, such as simulation recognition, artificial intelligence retrieval, speech translation, or programming creation through the use of computer algorithms. Create unmanned aircraft, unmanned vehicles, intelligent robots, etc. [10], and present them in the form of artistic creation.

Artificial intelligence art mainly falls into two categories: strong artificial intelligence art and weak artificial intelligence art. Currently, almost all the art we create is weak artificial intelligence art. The "weakness" mainly stems from the fact that the artificial intelligence works or products we create currently lack autonomous consciousness and cannot truly achieve "intelligence" in the real sense. Strong artificial intelligence is different. It possesses multiple autonomous capabilities. Strong artificial intelligence could also be subdivided into humanoid artificial intelligence and non-humanoid artificial intelligence. When the way artificial intelligence thinks and acts is very similar to or the same as that of humans, this kind of artificial intelligence is called humanoid artificial intelligence. When artificial intelligence art possesses a unique and self-centered way of reasoning, and this way is different from the human way of thinking, such artificial intelligence is called non-humanoid artificial intelligence. The former has a strong sense of autonomy. It could act according to the pre-set procedures or decide on tasks and methods by itself under specific conditions based on the situation. Art encompasses painting, sculpture, music, dance, folk art, new media art, etc., achieving the integration and unity of artificial intelligence and art. Artificial intelligence art requires considering many factors such as hardware, software, statistical databases and even the external environment as technical support, and also needs professional knowledge of art as a foundation. Artificial intelligence art tends to be idealized. For instance, artists explore how to express a concept or an idea through their artworks. Artificial intelligence artworks could also be applied in life and business. Artificial intelligence art and art design both have certain influences on human beings in life and business. Artificial intelligence art design refers to the creative activities of human beings consciously using artistic creativity on the basis of computer algorithm artificial intelligence art. Art design is more inclined to serve life. The application of artificial intelligence art and artificial intelligence art design in life and society has made the definition of their own concepts increasingly indistinct.

Artificial intelligence art encompasses artistic creation and expression carried out on web pages, Weibo, wechat official accounts, etc. Set up artworks in advance in public Spaces using computer programs. Immersive art experience Spaces in virtual reality art and robot art such as 3D virtual anchors, etc. Due to the development of technology, programmers and art creators have more and more novel ways of expression. The most significant change is that the way works or environments convey information has shifted from the singularity of information transmission to the bidirectionality of information transmission. Information is conveyed to the experiencer, and the experiencer could feed back their own information to the work or space.

3.2 The Development History of Artificial Intelligence Art

The development of artificial intelligence art is mainly reflected in the dual path of integrating technological innovation and artistic creation. Its core lies in simulating human creativity through algorithms and exploring the collaborative model between machines and humans in the field of art.

Generative artificial intelligence (such as Midjourney and GauGAN2) could automatically generate images, videos and other content, greatly enhancing creative efficiency. For instance, digital media artists could quickly generate concept design sketches with the help of AI tools, while film and television creators could produce sci-fi scene videos based on text descriptions, achieving cross-media creation from text to images.

The combination of AI with technologies such as virtual reality (VR) and augmented reality (AR) has given rise to new forms like interactive art and illusion machines. For instance, the installation art "The Kinetic Energy of a Dog" by Japanese artist Takayuki Fujita, through the struggling movements of a robot dog, prompts the audience to reflect on the "essence of life", blurring the boundary between machines and life.

As the creative capabilities of AI improve, the art world has begun to explore fundamental questions such as "What is art?" and "the definition of creativity". For instance, the "Elevating Vision and Creating a Realm" exhibition at the Minsheng Modern Art Museum in Shanghai has redefined the creative boundaries of human-machine collaboration through AI-generated symphonic suites and historical memory reconstructs.

Current technology could already assist in completing complex design tasks, but original thinking still needs to be led by humans. In the future, a "human-machine co-creation" model may emerge: AI provides an inspiration library and execution assistance, while humans are responsible for integrating creativity and aesthetic judgment.

IV. The Development History of the Metaverse

4.1 The Concept of the Metaverse

The Metaverse is a virtual world that is linked and created through technological means, reflecting and interacting with the real world, and is a digital living space with a new social system.

The term "metaverse" originated in the 1992 science fiction work "Snow Crash", in which the concepts of "Metaverse" and "Avatar" were mentioned. People could have their own virtual avatars in the "Metaverse", and this virtual world is called the "metaverse". Here, people use digital avatars to control and compete with each other to enhance their status. Even today, what is described is still an advanced future world. Regarding the "metaverse", the more widely recognized source of the idea is Professor Vernor Vinge, an American mathematician and computer expert. In his 1981 novel "True Names", he creatively conceived a virtual world that could be entered through brain-computer interfaces and sensory experiences could be obtained.

4.2 The Development History of the Metaverse

The development trajectory of the metaverse in China. From traditional media art to new media art, traditional media art encompasses the development of print media art, the three-dimensional expression of traditional print media art, other media art, and comprehensive media art, followed by the development of new media art and interactive media art, then the development of artificial intelligence art, and finally the development of different technologies and art forms in the metaverse.

4.3 Prospects for the Metaverse

One of the core foundations of the metaverse is virtual reality (VR) and augmented reality (AR). At present, VR and AR technologies have achieved certain application results in fields such as gaming, entertainment, and education. However, to realize a complete and immersive metaverse experience, the technology still needs further development.

At present, the headsets and controllers of virtual reality technology still face some limitations, such as low resolution and large latency, which may affect the user's sense of immersion. With the improvement of display technology and computing power, future VR devices may be lighter and cheaper, while offering higher image quality and lower latency, making the virtual world experience more realistic and natural. In addition, the development of AR technology will also provide new interaction methods for the metaverse. For instance, through augmented reality glasses, users could seamlessly integrate the virtual and real worlds in their daily lives.

Apart from visual experience, another major challenge of the metaverse is the optimization of spatial interaction. The future metaverse will simulate a real virtual space through higher-precision motion capture technology, haptic feedback technology, etc. In the virtual world, users could not only see themselves but also interact with objects in the virtual environment through sensors, and even feel "tactile" feedback, thereby greatly enhancing the sense of immersion.

With the continuous advancement of artificial intelligence technology, virtual characters and environments in the metaverse will become more intelligent. Through AI, virtual characters (NPCS) can respond in real time based on users' behaviors, simulating a more natural interactive experience. In addition, AI could also exist as an intelligent assistant in the metaverse, providing various services such as virtual shopping and social interaction.

At present, one of the most important application scenarios of the metaverse is the entertainment industry, especially in the fields of games and virtual social interaction. As more and more game companies invest in the construction of the metaverse, activities such as games, concerts and art exhibitions in the virtual world are gradually becoming mainstream. For instance, many music stars have begun to hold online concerts on virtual platforms, attracting a large number of audiences. In the future, with the advancement of technology and the expansion of the user base, the entertainment experience in the metaverse will be further enriched and become a part of People's Daily lives.

Apart from entertainment, the application of the metaverse in the business field also shows great potential. Many brands and retailers have already opened virtual stores in the virtual world to sell digital goods or provide virtual services. With the expansion of the virtual goods market, digital assets (such as virtual clothing, real estate, artworks, etc.) will become a new growth point for the economy. Especially with the support of technologies such as NFTS (Non-fungible Tokens), the buying, selling and trading of virtual items have become more convenient and secure.

The metaverse will also bring revolutionary changes to the field of education. Through virtual classrooms, virtual laboratories, virtual internships, etc., the metaverse will provide students and scholars with a more immersive and interactive learning environment. For instance, students could take remote history classes through the metaverse and conduct on-site investigations in virtual ancient cities. Medical students could perform simulated surgeries through virtual operating rooms. In the future, educational scenarios in the metaverse will significantly reduce the limitations of region and time, making learning more equal on a global scale [11].

V. Conclusion

This article introduces the development trajectory of the metaverse in China. From the development of traditional media art to new media art, to interactive media art, and then to artificial intelligence art, later on, the development of different art forms in the metaverse was sorted out, and the development of the metaverse was prospected. This further summarized and concluded the theoretical and practical parts of the combination of art and technology in the history of Chinese art.

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