



Research and Application of Virtual Digital Technology in Art Creation

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This study describes virtual digital art, its origins, technological context, artistic context, ideological context, artists, and works and their meanings. The main aim of this study is to reflect and analyse the description of the interrelationship between virtual digital technology and art through the ontological, typological, aesthetic and cultural characteristics of virtual art. Technology and art are the future trends, and Chinese artists have created works related to virtual digital art, which is new experimentation and exploration by artists. From their artworks, we can see that virtual art focuses on the social winter scape of body and media, space and presence, gender and identity, technology and art, democracy and power, and ethics and religion, and reveals interrelationships and overall connections in people (artists and audiences), objects (artworks), and events (art acts and art events). With the advent of the digital age, virtual art as an essential type of contemporary art form has attracted public attention and is multiplying. This paper attempts to explain and explore the connotation and significance of virtual art by sorting out its production and characteristics and analysing individual cases.

Key words: *virtual art; digital art design; technological wave.*



OBJECTIVE

1. To study of the virtual art turn in the context of art
2. To analyse examples of art and design works in virtual digital art
3. To analyse the types, aesthetic and cultural characteristics of virtual art

RESEARCH METHODOLOGY

Based on reading English and Chinese literature, the themes to be studied and the problems to be solved in this paper were distilled. The search and selection of references were carried out in four main ways:

- (1)Reference to relevant theoretical books, including those on technology, trends, culture and artistic background as virtual digital art, as well as to study the current status and analysis of domestic and international research on virtual digital art.
- (2) Reference to relevant Chinese and English journals, papers, conferences, and results.
- (3)To study artworks related to virtual digital art.
- (4)Combining literature reading, virtual artworks and problem thinking, consciously refining and summarising the themes and basic ideas to be studied in this paper; constantly adding appropriate cases in the process of exposition, striving to link theory with practice, finding problems in practice and trying to provide a theoretical basis for solving them.

The following contemporary Chinese virtual digital artists were studied:

1. Jiayu Liu
2. Jieyuan Huang
3. Xin Lin
4. Xiaolei Tian
5. Maokun Pang
6. Yangxiaoxiao Zhou

1. LITERATURE REVIEW

1.1 Technical background

In the mid-to-late twentieth century, digital technology sparked an unprecedented media revolution that ushered in the information age. In 1992, Albert Arnold Gore Jr, then Vice President of the United States, was forward-thinking enough to propose the Information Superhighway Act. The following year, the US government announced the National



Information Infrastructure (NII) programme, which would create an Internet-based (Internet) infrastructure. The National Information Infrastructure (NII) programme was established to create an information superhighway with the Internet as the backbone, providing people with easy access to virtual information resources and a shared digital living environment. The Internet provides a symbiotic environment in which individuals, communities, institutions, communities and society are interconnected, opening up new virtual avenues for artists to create, exhibit, disseminate and experience art. The multidimensional construction of digital networks. It brings a cultural metaphor of 'mirroring', represented by virtual reality. Everything is fundamental in the space of difference between the real and the virtual, sometimes parallel, sometimes overlapping, sometimes mixed, as humans enjoy a "second life" brought about by a "second world". As Bill Gates says in "The Future Goes Purely Digital": "With advances in hardware and software, everything will be digital." He boldly predicted that People often overestimate what has happened in the last two years and underestimate what will happen in 10 years. Regarding the PC, it is impossible to predict what it will look like now. People and even everyday filing tasks will disappear along with the paper medium. Today, technology workers like us still have to draft many things into paper documents, but with the advances in hardware and software, everything will be digital. He believes that in the next ten years, books, music and photographs will all go purely digital, from the author to the reader.

In terms of the development trajectory of Western virtual art, it can be divided into three stages. Phase 1: 1950s-1980s, the nascent period, during which digital technology was in the experimental stage of technology, mainly through two-dimensional digital images generated by computer computing for artistic exploration. Phase 2: 1980-2000, the mature period, the perfection of computer graphics and network technology laid a solid technical foundation for the flourishing of virtual art, which in this period was an artistic exploration with three-dimensional digital images as the main body. Phase 3: The deepening period, with the further refinement of computer graphics and digital media technology, computer graphic image technology was widely used in the fields of network, film, games, animation, advertising, and installation art, Especially with the refinement of virtual reality technology, art truly entered the era of virtual digital interaction.

In the face of this new virtual space, which Tean Baudrillard defines as "hyperspace" or "superspace" in the cultural context, the Italian criticism of the superspace has been an essential part of the art world. In response to hyperspace, the Italian critic Oliva proposed the concept of "super art", showing the theoretical thinking and experimental exploration



of the relationship between technology and art in the post-industrial transition to the information age. In 1994, Michael Heim published *The Metaphysics of Virtual Reality* (Heim 1994). *The Metaphysics of Virtual Reality* is a thought-provoking work on virtual reality technology from a philosophical point of view. Heim provides a clear conceptual definition of virtual reality "as an event or entity that is actually, but not real". It also specifies seven characteristics of virtual reality. Heim (1994) explores how virtual reality technologies will affect the human experience, our perceptions, and the real world. While Heidegger arguably feels vague as if there is something more terrifying than an external challenge to our dignity as human beings, Heim makes clear that "the virtual reality is the first technology that is inherently self-critical in a social sense."

Moreover, from the perspective of media determinism, what kind of media there is, what kind of culture and art there is. Digitalisation is unwittingly changing the way humans live and think, the basic shape of culture and the style of the existence of art, as well as the frontiers of research and the way human art history is written. In the foreword to his book *Being Digital* (Negroponte, 2015), American critic Nicholas Negroponte, a professor at the Massachusetts Institute of Technology, declares: "Computers are no longer only about computers; they determine our existence."

He says that (Negroponte, 2015) "in the vastness of the universe, digital existence can make everyone more accessible and give voice to the weak and the lonely". Digital existence allows people to break through the boundaries of space and time and travel through virtual worlds as virtual identities, intertwined and interconnected in a multi-layered web of relationships. This is the way of life in modern human society. It reflects the attitudes of the "digital generation" and the mirror world of decentralised structures in which they live. In a sense, the virtual world is not waiting for people to enter but compellingly enters reality. It is not that people have nowhere to go, but that they are happy to go, that the virtual world frees them from the confines of a single identity and that they become free "digital beings".

1.2 Background of thinking

Since the mid-twentieth century, postmodernism has emerged in culture, art and philosophy, deconstructing and reorganising cultural traditions, artistic styles and philosophical paradigms. Especially after the 1980s, the postmodern trend raised the banner of deconstructionism, breaking modernism's established rules, logic and frameworks,



compromising, mixing and reorganising each other. Traditional narratives were deconstructed and transformed from unilinear to non-linear; traditional meanings were broken down and transformed from universality to difference. Nicholas Negroponte, another academic master of the anthropological theory of the virtual arts, made it clear in his 1995 book *Being Digital* (Negroponte, 2015) that 'computers are no longer just about computers; they determine our existence'. He introduced the concept of 'information DNA', which he argued was replacing the atom as the direct exchange of human life. Negroponte is known as the 'Father of Artificial Intelligence', the 'Master of Holographic Photography', the 'Founder of Tactile Human-Machine Interface' and the 'Founder of the Smart City', and his theories have led the world in new media art and set the theoretical tone for the anthropology of virtual art.

Culture and art have undergone a postmodern turn in research, with boundaries, identities, classical concepts and cultural meanings all facing disruption and restructuring. Looking at the postmodern trend on a philosophical level, Professor Terry Eagleton of the University of Oxford, UK, defines postmodernism as a cultural style in the introduction to his book *The Illusion of Postmodernism* (Eagleton, 2013), which "reflects some aspects of this epochal change with a depthless, centrifugal, groundless, self-reflexive, playful, mimetic, eclectic, pluralist art that blurs the boundaries between 'elegance' and 'sophistication'. This art blurs the boundaries between 'refined' and 'popular' culture and between art and everyday experience.

Postmodernism's art creation and art criticism is mainly aimed at dismantling the single myth propagated by modernism and dismantling its so-called classical art concepts and the hegemony of the art masters. Postmodern art is entirely different from modernism in terms of rules of the game, ways of thinking and aesthetic standards, and is represented by Dadaism, which critiques and deconstructs modernist aesthetics through the 'ready-made'. Marcel Duchamp shook up classic traditional art with the "urinal" and the "Mona Lisa with the beard". The concept of traditional art systems suddenly collapsed, with previously unacceptable street culture and grassroots culture becoming postmodern artistic expressions and themes. Especially since the 1970s, under the impetus of Western cultural critical theory, along with the critical and theoretical works of Marshall McLuhan, Jean Baudrillard, Michel Foucault, Jacques Lacan, Roland Barthes, Michael Heim and Jacques Derrida, postmodern art has taken on a rebellious attitude of anti-logic, anti-rule and anti-tradition, becoming mixed, cross-border and pluralistic in an open attitude. It became hybrid, transgressive and pluralistic. Art was freed from the shackles of aesthetics and



began to think in sociological and anthropological terms. Joseph Beuys proposed the concepts of "everyone is an artist" and "social sculpture", which marked the beginning of a comprehensive integration of postmodern art into Political, historical and racial elements, popular culture, virtual societies, and interactive experiences became a new way of transforming society, reorganising the spirit and recreating the artistic fabric of postmodern art.

1.3 Artistic background

In the digital age, the virtual space of art has changed dramatically and is entirely different from the traditional symbolic virtual space. Here is how Mirzoeff understands the change in 'virtual space'(Mirzoeff, 1999): "The experience of classical and neoclassical art from the 18th century to today's internet to the future of virtual reality can be included in this history. However, the previous stereotypical experience of the virtual was a passive gaze at something that was not very realistic. Moreover, what computer-generated environments can offer is an interactive virtual landscape, which is still unprecedented."

Virtual art is a form of art that has emerged with the development of digital media and is fundamentally different from traditional art forms. Its emergence changes people's aesthetic habits and influences their behaviour. With the help of interactive media, virtual art enables interaction between artists and audiences through participatory experiences. It reflects the social ecology and the state of human existence in the virtual world. The interactive network has played a fundamental catalytic role in the evolution of virtual art. The creation of virtual art has extended from the artist's individual act to the audience's intervention. This requires the artist not only to create a narrative textual logic but also to design an appropriate environment and space in which the audience can participate, thus allowing them to find themselves and reinvent themselves in the 'context' created by the artist. This is the significance and value of choosing and studying the relationship between art and virtual digital art. As a product of the combination of technology and art, virtual art creates a "human-computer" art space with its unique interactive language.

"Interactivity" is the fundamental characteristic of virtual art, which blurs the relationship between subject and object, transcends multimedia, and realises multiple experiences, a new art form paradigm. The interactivity of virtual art exists in the act of interaction between individuals and individuals, individuals and groups, or between groups. The transfer and transmission of textual information and data end images become the medium



of interaction; virtual communities become the place of interaction, and virtual communities that come and go freely extend the network of potential societies, sharing information and building the ideal relationship of a virtual utopia. The combination of hypertext and multimedia has given rise to a more 'free-flowing' system, which aims to create a system of infinitely many possible ways of combining, arranging and manifesting information that can flow freely in any form. "It must be able to flow from one medium to another; it must be able to say the same thing in different ways; it must be able to touch all the different human sensory experiences. If people do not get it the first time I say it, let us(the machine) act it out for you differently, with cartoons or three-dimensional illustrations. This media flow can be anything from films with textual descriptions attached to them to books that can be read to people in a soft voice."(Negroponte, 2015) This relationship continues to develop in-depth, and the structural hierarchy of the virtual art world continues to diversify. Virtual art moves from the aesthetic to the experiential, from the static to the interactive.

Thus, in its artistic form, virtual art is a full-sensory imaginary art. The "I" of the actual space is dancing in the virtual space, while somewhere in the universe, the "avatar" of the virtual space is dancing in the real space simultaneously. These two spaces are free from space and time constraints and can blur the viewer's senses of sight, hearing, touch and smell. As can be seen, the emergence of interactive communication media has led to a dramatic change in the interrelationship between communication vehicles and participants. Figurative symbols begin to construct the real The boundary between image or analogy and reality has imploded. With it, the previous experience of 'reality' and the basis of reality have disappeared(Best & Kellner, 1991).Virtual art is a technology-based "art of time and space" that offers us a new aesthetic experience of "human-machine coexistence".

2. ANALYSIS AND FINDINGS

Contemporary Chinese artists have incorporated virtual digital art, including Liu Jiayu, Huang Jieyuan, Lin Xin, Tian Xiaolei, Pang Maokun and Zhou Yang Xiaoxiao. The artists' works are studied in depth, and based on their works, the logical framework of their work, the relationship to artistic expression when virtual technology is incorporated into the work, and how the exhibition is presented are analysed. This qualitative analysis summarises the types of art collectors, including painting, video, interactive installations, video, and mixed media. The focus of the analysis is to summarise the boundaries of virtual art. What is its ontology? What is the state of human behaviour about art in the virtual world?

Artist 1: JiaYu Liu



Figure1a In the flow , 870×300cm Vdideo 2020

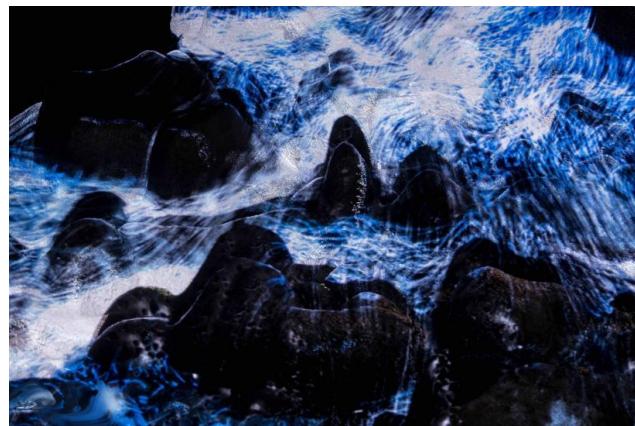


Figure1b In the flow , 870×300cm Vdideo 2020

Liu Jiayu's 'In The Flow' (See Figure1)is a digital video work that experiments with mapping projected works using an on-shelf presentation like a painting.

The work uses a mountain formed naturally by weathering and water erosion hundreds of millions of years ago as the medium of presentation. The realistic water flow data is generated from a 3D scan of the mountain by Houdini, then rendered and visually shaped



using VVVV, and the resulting projection is rendered on the mountain's surface with ink-like floating effects. At the same time, digital natural sounds simulated using the water flow data are combined with sound effects generated during computer rendering to accompany the images.

The work uses technology to overlap history and the future. The scouring and sedimentation of rocks initially formed the karst landscape through the water. Liu Jiayu uses technology to make the virtual water flow into the actual mountain, connecting people to nature. The dynamic water flow interprets the flow of nature, the law of mutual balance and constraint of all things. The work uses new technology to reflect on humanity, using the virtual to enhance Reality. The final projection of the work is mapped onto the surface of the climbing mountain, conveying the human spirit of swimming against the current at a time when the world is affected by the new crown epidemic. American cyberspace philosopher Michael Heim points out in *The Metaphysics of Virtual Reality* (Heim, 1994): "The essence of the virtual Reality may ultimately be not in technology but in art, perhaps the highest level of art. The ultimate promise of Virtual Reality is not to control or escape or entertain or communicate, but to transform, to redeem our knowledge of the real - what the highest art wants to do and what the label virtual Reality suggests, a label that has been attached (despite many objections) to a technological invention that has encompassed a century. Virtual Reality promises not a Hoover with improved performance, a more appealing communication medium, or a friendlier computer interface. He promises the Holy Grail (the Holy Grail is a symbol of spiritual quest and high hope in Christian culture). It can be seen that through the technical surface of virtual reality, the essence of the virtual art within it is vaguely visible.

Artist 2: JieYuan Hang



Figure2 HuangJieyuan TheGarden of Earthly Delights, Human and Geology 1'36"/4K video, colored, sound/ 2021

In Huang Jieyuan's triptych 'TheGarden of Earthly Delights, Human and Geology,' (See Figure2)Jeronimis Bosch depicts the Garden of Eden, Earth, and Hell in an apocalyptic manner, in which the relationship between birds, beasts, and humans is in chaos and danger. The artist attempts to borrow the pictorial context of The Garden of Earthly Delights and uses generative adversarial networks in artificial intelligence to create a digital sci-fi version. In an algorithmic black box, the painting is translated into a digital virtual space in which birds (canaries as well as other birds), humans (code-covered people), and geology (topography extracted from The Garden of Earthly Delights) are rendered as virtual forms. The canary represents a warning of risk and chaos, the code man represents the subjectivity of code in blockchain and artificial intelligence, and the three different types of geology represent the enormous amounts of electricity that the blockchain is based on coming from nature, land, and mineral deposits, and metaphorically the potential ecological risks. In addition, the Genesis scenario depicted on the exterior of the triptych has been transposed into a blockchain creation panel.

In a very playful way of presenting the exhibition, the artist cleverly stitched the three large displays together and presented them in a closed and semi-enclosed state. When the viewer stands in front of the work, they feel enclosed. In many artists' works, we can see classic

works of art being reworked by borrowing and appropriate. This is, in fact, a second creation of a classic work, confusing the real with the virtual and editing a new story. Multimedia becomes an amalgamation of sound, graphics, images, and data, enabling a free transition from one medium to another. The medium is freely transformed. Moreover, the virtual medium is no longer a message; it is an incarnation of a message, a single message generated from the same data that allows multiple incarnations. "In the digital world, the depth/breadth issue disappears, and the reader and the writer are free to yo-yo between general overviews and specific details. The concept of 'tell me more' is one of the most important components of multimedia and is at the root of 'hypermedia.' (Negroponte, 2015)

Artist 3: Xin Lin

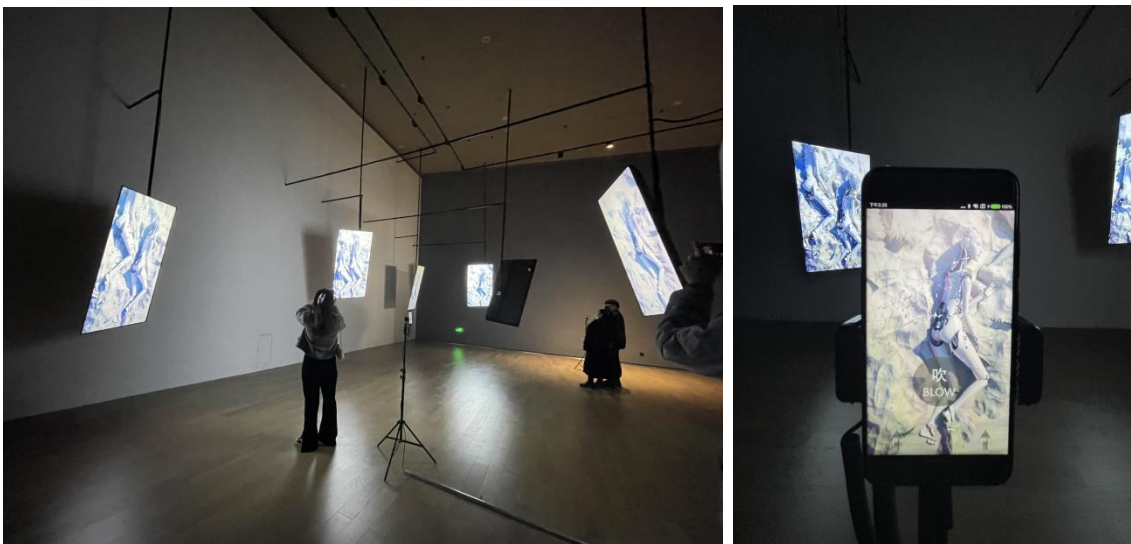


Figure3 Lin Xin Windy Space No.3 Dimensions variable Electronic image interaction device2018

The artist Lin Xin focuses on unique virtual spaces and psychological emotions expressed through digital virtual media. Throughout the exhibition set, several giant displays hang in the air, with video content creating a virtual world in which virtual robots simulate various human behaviors. Surrounding the displays is a mobile phone in the middle, and by blowing on the display, the human-shaped crystals on the screen scatter in the wind, creating a sparkling crystal painting.

Art creation is a close combination of technology, technique, aesthetics, ideas, and medium. The artist sees the world through the lens of the medium and realizes the work through technology and technique. Conversely, the change of medium and the development of technology will also broaden the forms of artistic expression, thus bringing about a breakthrough in the artistic landscape.

Windy Space series (See Figure3) is based on this interpretation, using visuals to emphasize the 'real' touch of the wind in the virtual space and then using the natural wind to interfere with the virtual wind, interlocking and breaking the boundary between reality and the virtual in the interaction.

Artist 4: XiaoLei Tian

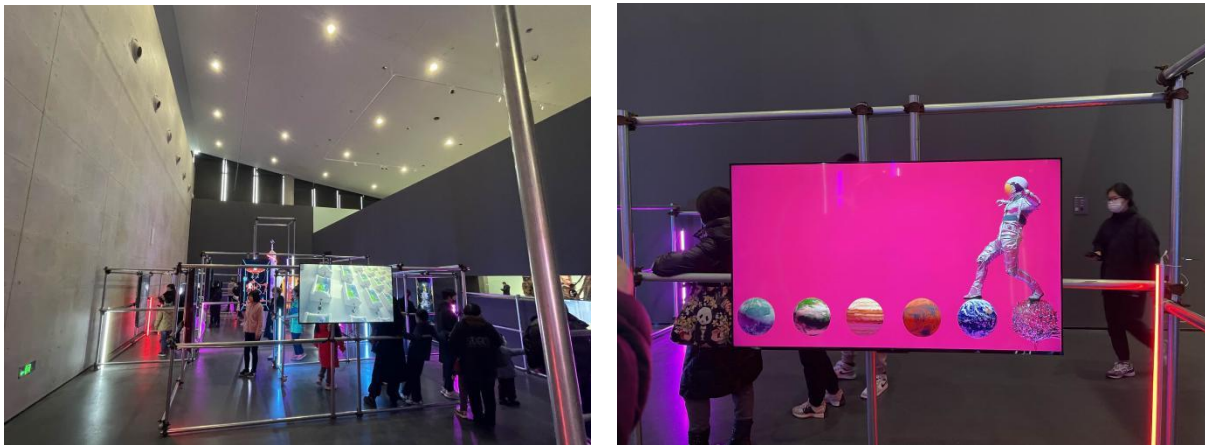


Figure4 TianXiaolei/PostHuman Museum /Dimensions variable/Video installation/2020-2021

Tian Xiaolei is an artist who has been working with digital media for a long time, and this work is a video installation consisting of 25 screens (See Figure 4), sculptures, and a labyrinth known as a "museum," the main body of which is a video about post-humanity created by the artist in the last two years.

In this lost paradise, the author envisages a future in which new species will mix, and the world will mix and iterate at an accelerated pace. Humans hold the torch of science to search and wander through the labyrinth. The wider the torch illuminates, the more they discover the infinite complexity of the labyrinth and the otherwise confident humans may

become parts of a new species before they can reflect. The Rhapsody of observation and the myth of solitude coexist, and paradise is both a vision and a dilemma.

Through the visual impact of the array of forms, the artist uses a very individual image to express the relationship between humans and technology, culminating in a comprehensive system of fictional specimens, creating a 'PostHuman Museum.'

Fredrik Barth argues that "we need certain concepts that allow us to observe and describe shifting events" and promotes a "method of isolating the determinants behind social forms in order to observe how changes in these factors bring about changes in social systems." He is referring here to his theory of social structure generation. He emphasizes that the patterns of behavior that people study may be separate from the constant patterns that the community follows. Patterns of behavior, he says, "must be seen as phenomena resulting from the accidental combination of a variety of processes." (Stewart & Strathern, 2021) Despite the complexity of the process, Barthes argues that at each stage of the analysis, attention should be paid to actions, interactions, and the choices people make in practice.

Artist 5: MaoKun Pang



Figure5 Pang Maokun , 2018,painting,oil on canvas, Second contact Size of picture 160 X 200 cm

Conceptual artists are consciously incorporating the social into their artworks, with Beuys' 'social sculptures' already entering the realm of anthropological research. Virtual artists, on the other hand, go further than 'deep sculpture,' using the internet to create art while simultaneously writing virtual and visual texts in a deep drawing, interpreting the



interpretation of images, or 'thick sculpture.' The deep drawing gives the artwork a broad social perspective and imbues the ethnographic text with a unique artistic interaction, thus assimilating the virtual anthropology of art in the classic sense.

One of the most common methods used by easel artists is the reorganization and juxtaposition of artworks, as in the work of Titian, the master of the Western Renaissance, *Love in Heaven and Love on Earth*, where the artist juxtaposes the earthly beauty with Venus, the goddess of love, contrasting earthly love with the love of God in heaven, symbolizing that earthly love will eventually come to nothing and only God's love is eternal. The British pop artist Hamilton collaged images cut from magazines to create a bourgeois interior scene, creating 'What makes today's homes so unique? What makes today's home unique? A work of art imbued with consumer culture. In the virtual digital age, where images are increasingly fragmented, it is easier for artists to collate and reorganize the mass of images they acquire daily to create new virtual images. The American art historian Panofsky, in his book *A Study in Figuration - Humanistic Themes in Renaissance Art*, elaborates on three levels of image interpretation: firstly, the level of natural subject matter (pre-image-log), i.e., the most basic level of understanding, which is not related to cultural knowledge and is a purely formal perceptual composition of the work; secondly, the level of conventional themes (The third is the level of intrinsic meaning (iconography), which, based on the thematic interpretation of the image, asks further questions in terms of symbolic meaning. (Panofsky, 1962) Why did the artist choose this cultural iconography to depict the Last Supper, i.e., to interpret the interpretation of the image?

In the series "Copy 2020", Pang Maokun attempts to prophetically create an illusion of the future, where artificial intelligence becomes a copy of human intelligence and, at the same time, revolutionizes and refreshes the existing reality and human trajectory. This is an intuitive reflection based on the innovation and crisis of technology in human society, which unfolds in the trajectory of art history and points to the future.

In the Folding series *Second Contact* (See Figure 5), the artist implants future robot-related technology in a classical context, folding the past, the present, and the future. In art, a future reality is projected, where artificial intelligence becomes a copy of human intelligence and simultaneously revolutionizes and refreshes the existing reality and human trajectory. With many changes in the copying, Pang Maokun draws the eyes, mouth, fingers, or other parts of the person's body in the painting as a machine. By reconstructing

and juxtaposing virtual images, he creates 'copies' of Western classics, focusing on history, today and the future, and where humanity should go from here.

Artist 6: YangXiaoXiao Zhou

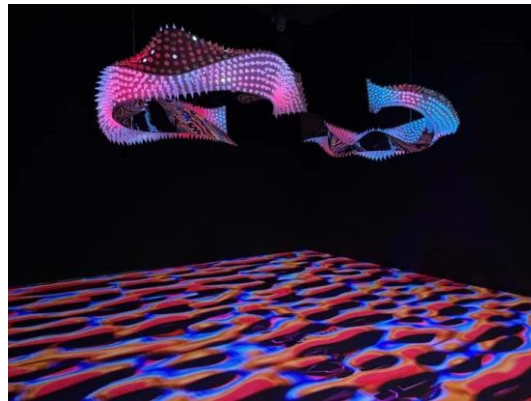


Figure6 The Continuation of Life Yangxiaoxiao Zhou 300x150cm Interactive installation, video projection 2023

The shape of this work, The Continuity of Life (See Figure 6), was created using the computer software Rhinoceros. Through parametric computer modeling, this irregular surface shape is created in the computer. It is difficult to construct such a shaped surface with human hands; it comes from the digital algorithm of the computer and the virtual digital world. The author transposes the forms of the virtual world into real life. In a real space, the work interacts with people, changing with the music and the sound of their voices in light and shadow. The virtual images are also projected in space as dynamic visual elements, allowing the viewer to experience the dimension of time in real space. As William James said, "Part of what we perceive comes from the objective things in front of us, and the other (perhaps larger) part always comes from our own minds."(Seckel, 2006)The author has created an immersive field in which images of flowing water, light, and shadow interact with and gaze at people, reflecting the ultimate question of human existence behind the dazzling technological landscape of the work and inspiring people to understand the relationship between reality and the virtual, the body and the media and the universe and existence.



3. CONCLUSION

In a broad sense, virtual art belongs to the category of pan-digital art, which is based on computer technology, with graphics and imaging as the core, using digital media as the communication medium, with "immersion" and "illusion" as the clue, to reflect the virtual artist aesthetic experience, survival experience, and social experience as the content of a particular cultural and conceptual art. It is a cultural and conceptual art that reflects the virtual artist's aesthetic, existential, and social experiences.

In a narrow sense, virtual art should have the following three attributes.

(1) Based on digital media

Digital media-based refers to virtual art as a form of art that uses digital media such as the internet or mobile networks as a carrier. In this sense, the creation of virtual art must be and can only be in digital form, i.e., artworks created through digital technology devices such as computers. From the point of view of media determinism, what kind of medium is there, and what kind of art form is there? The creation of virtual art is based on digital media and uses the network platform to spread geometrically, which is the essential characteristic that distinguishes it from traditional art styles. In other words, virtual art does not refer to all art forms seen on the internet. For example, traditional Chinese oil prints and sculptures that are digitally photographed and uploaded onto the internet for viewing cannot be called 'virtual art' because the work itself is not based on digital media but is disseminated through the internet media. It is only disseminated through online media. For example, a sculpture that is digitally recreated using technologies such as 3D scanning, digital modeling, or virtual reality and presented on the internet is a virtual artwork because the means of realization is digital, the act of experiencing it is interactive, and it has the essential attributes of the essence of virtual art.

(2) Interactability

Interactivity refers to the essential property of virtual art that allows the audience to participate and interact. Not all artworks created based on digital media are interactive; some are static simulations that do not interact with the audience. Such artworks can only be described as having a specific virtual component but cannot be defined as virtual art in the strictest sense. The interactive nature of virtual art means that it provides a channel for the user to participate, and the user can choose or change the temporal logic, visual style, and experience of the virtual artwork according to their needs. In other words, virtual artwork is a joint effort between the artist, the programmer, and the audience. Therefore,



whether or not the behavioral intervention of the audience is allowed is another essential attribute to discerning virtual art. Roy Ascott, a British pioneer of new media art and anthropologist of virtual art, talks about this in his book *Art, Technology, Consciousness: Mind@large* (Ascott, 2000): "In contrast to the traditional sense in which art focused on appearance and what it represented, today's art is concerned with the process of interaction, transformation, and emergence The power of the discourse of interactive art is that the artist leaves the creation of content to the user of the work and instead works to create situations, multiple situations, looking for those that best lead to the emergence of new meanings, new images, new structures from the interaction of the viewer." Roy Ascott has long been committed to the academic study of Technoetics.

The interactive properties of virtual art blur the physical entities that audiences can touch in their everyday lives, mainly diluting the sense of self-identification with the natural world and allowing people to engage in a more open and daring gesture of interactivity in virtual spaces. Moreover, the interactivity of virtual art exists both in the interaction between real and virtual communities and in the exchange and transmission of information, which can be transmitted to them from a distance through digital networks. In this way, a new symbiotic relationship is constructed with them. This relationship continues developing as the interaction progresses, moving from simulating the 'things' of people's behavior and feelings to the 'things' of shared experiences, transforming the interaction into a social activity emphasizing control and feedback.

(3) Virtual images

In the network environment, all graphic images generated by computers become manipulable. At this point, images have been transformed into words of dialogue between people and people and between people and machines.

There are three types of image phenomena: virtual images (computer graphics, digital games, virtual reality images.); visual images (analog images presented by photography, video, film, and television); and manufactured images (images drawn by humans, mainly paintings, animations, cartoons.). They surround us and constitute the cultural domination of images today. The world of images is a name given to the mode of production, dissemination, reception, and consumption of culture in post-modern society. The way culture works and the shape of cultural life is now constituted mainly by presenting and viewing images. This is inseparable from a century in which pictorial symbols and



information have proliferated dramatically in our cultural life, a human scene that some have even described as an image explosion.

Martin Heidegger predicted that the world would be the age of the image. That is, it would be grasped in pictorial terms. Feuerbach commented in the preface to the second edition of *The Essence of Christianity* (Feuerbach, 2008) that our age was "more about images than about things, more about reproductions than about originals, more about representations than about facts, more about phenomena than about being," complaining that society was mainly concerned with the "image explosion." "He complains that one of society's main activities is the production and consumption of images and that the infinite power of the image shapes our claims to reality. From the print medium to the digital medium, the image has become a common way of perceiving things and knowing things; images have entered the personal, family, and social life and are relevant to everyone's spiritual world and material life. This era of visual prominence has been called the 'age of the image', where the world is perceived and understood through reading pictures. As Lin Ping argues, the virtual is "the ability, the process and the result of the activity of constructing a 'non-real real world'..."

It is, therefore, easy to see this trend towards 'fusion' in the practice of many artists - the search for a fusion of languages and forms that transcend the boundaries of different fields and categories, and in particular, the use of a multidimensional artistic language to express their cultural sensibilities. "The word 'fusion' encompasses exploration and innovation, the fusion of urban planning and design with natural ecology and the aesthetics of life, the fusion of traditional creative ideas, creativity, and methods, as well as the fusion of fascinating and popular ideas developed in many contemporary cultures. In my opinion, this is a new feature of today's visual arts and a very important artistic expression for the future. As teamLab founder Toshiyuki Inoko says: "We do not consider technology the most crucial element in our work. What we are interested in is how art can be broadened through the use of digital technology. Connecting technology to art can make people's lives more positive. Technology is humanitarian. The very concept of digitization is to expand human expression.

In short, digital media-based, interactive, and virtual images form the three cornerstones of virtual art. Virtual media defines the digital nature of virtual art; interaction defines the openness and real-time participation of virtual art. In contrast, virtual images emphasize



the mediated nature of virtual art and the cultural landscape of 'everything is a figure of speech.'

4. ACKNOWLEDGEMENT

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