2023

The Wave of Digital Revolution: New Trends in the Emergence, Participation, and Presentation of Metaverse Art

Zijian Zhang

The Wave of Digital Revolution:
New Trends in the Emergence, Participation, and Presentation of Metaverse Art

by

Zijian Zhang

A thesis/ project submitted in conformity
with the requirements for the
Master's Degree in Contemporary Art
Sotheby's Institute of Art

2022

12,326 words

Abstract Page

In early 2021, Roblox, known as the first stock in the metaverse, was officially listed on the New York Stock Exchange. In the same year, the famous American social media giant Facebook changed its name to "Meta" and focused on developing the meta-universe. At the same time, Microsoft, Nvidia, Qualcomm, Byte Jump, Baidu, Tencent and other technology giants laid out metaverse-related industries. Since then, the metaverse has become a new windfall. So what exactly is the metaverse? Meta-universe is a big concept, which is based on digital space to achieve a high degree of integration of the physical world, virtual world and human society, including all virtual worlds, augmented reality and the Internet, the core of which is a virtualization and digitization of the real world, the universe. As an excellent template for "total art", metaverse undoubtedly cannot only rely on the technical support of Internet giants, but also needs to create a systematic and complete creator ecology, for this reason, metaverse and the art field naturally fuse with each other, and metaverse art sprouts and develops.

For the metaverse, the intervention of artists and artworks injects new vitality into the metaverse. The artistic creation of artists can give the virtual world of the metaverse diversified and stylized forms of expression, preventing the metaverse from being reduced to a cold technical achievement or an empty virtual space. For art, the metaverse provides a broader space for art display, participation and dissemination. The infinite virtual world of metaverse and its viewing method that breaks through the limit of screen

border provide new ideas for the display of art works, and the art works with VR and AR technology as the core will be reborn in the metaverse. The combination of metaverse and art means mutual benefit and win-win. Art brings rich human connotation and emotion to metaverse technology, and art is like the flesh and blood of metaverse, which makes the originally cold technology have a temperature. Art is like the flesh and blood of the metaverse, giving the cold technology a warmth. The technology also provides a new space and platform for art, which is like a skeleton of the body supporting the outline of the whole body.

Table of Contents

ILLUSTRATIONS

Chapter 1 Historical Background, Reality ,and Future Prospects: The Innovation of Viewing and Display Brought by Metaverse Art

1.1 How the metaverse concept was developed

In his anti-utopian science fiction novel Snow Crash, published in 1992, Neal Stephenson describes an infinitely long "street" arranged by VR and AR technologies. Using sophisticated glasses and computer technology, individuals can traverse Long Street as avatars. Users of public terminals can only assume a blurry, black-and-white avatar[1], whereas users of private terminals can acquire a colorful and detailed avatar. Thus, the concept of the "metaverse," which enables people to enter the virtual world of the Internet as virtual doppelgangers via VR and AR technologies and to fully integrate with the wealth and markets of the real world, was developed and gradually gained traction alongside the advancement of science and technology and a vast array of social activities.

Mark Zuckerberg, creator and CEO of Facebook, stated in 2021 that Facebook would be renamed "Meta Platform" to reflect the company's shift in focus to the metaverse, with Meta focusing on a number of future technologies. In the next chapter of the company, we will transform from a social media company to a meta-universe company in the eyes of the public. As the dominant social media firm, Facebook's innovative reform has sparked worldwide interest in the metaverse, and Internet titans like as Microsoft and Google have joined the "arms race" for the future of metaverse

[1] Anderson, Janna, and Lee Rainie. "The metaverse in 2040." *Pew Research Centre* (2022).

technology.

From 1992 to 2021, the metaverse transitioned from a science fiction fantasy concept into reality and began to demonstrate its immense potential to the worldwide audience. From fantasy to reality, the metaverse development process is accompanied by the explosive development of information technology during the fourth industrial revolution and the comprehensive formation of the information society, in which the information-based lifestyle is the predominant aspect of people's daily lives. Online life through smart phones, computers, and other terminal devices has surpassed real life in terms of attractiveness, depth, and significance as a result of the rapid advancement of information technology and the abrupt emergence of a pandemic.

1.2 How do we draw a blueprint for the metaverse?

The context of the information society provides fertile ground for the metaverse to flourish. In the book "The Metaverse" by Matthew Ball, a renowned researcher of the metaverse, Ball depicts the metaverse as: "an individual capable of being experienced by an infinite number of valid users in a "present" experience that relies on data such as identities, histories, rights, objects, communications, and payments that are coherently experienced in time with the real world, vast, information-interoperable, 3D virtual worlds that evolve in real-time." Among the many definitions, the "individual experience of presence" and the "3D virtual world," in combination, constitute the most attractive part of the metaverse. At the same time, it is worth clarifying that the concept of the metaverse is different from the concepts of "Web 3.0" and "blockchain": "Web 3.0" does

not require 3D, real-time algorithms, or synchronized experiences, and the metaverse does not require decentralized experiences. "Web3.0 does not need 3D, real-time algorithms, or synchronized experiences, and the metaverse does not need decentralization, blockchain, or other technologies," [2]Bauer said, adding that the metaverse and Web3.0 need each other but are different. Therefore, in the face of the "convergent metaverse," especially for the general public, the blueprint metaverse provides great imagination in the form of a more intuitive, imaginative, and creative virtual world, which is the core of public appeal, in addition to the relatively cold technology bases of Web 3.0 and blockchain.

Mark Zuckerberg published a speech video titled "Connect" for the general public in addition to Meta's sequence of technological changes. In this speech video, Zuckerberg showed us the idealized blueprint of the metaverse and how closely it resembles the daily lives of the general public. The current information society and information-based living scenarios will undergo a drastic upheaval as a result of the metaverse. To make the virtual online world of the metaverse comparable to the real-world experience and to satiate all fantasies about the imaginary world in the virtual space created by 3D, CGI, real-time algorithms, and other technologies, terminal devices that people use will break through the screen limitations of smartphones and computers and rely on VR and AR devices. Each user in Zuckerberg's metaverse is free to design their place, engage in it as their

---

[2] Matthew Ball, The Metaverse: And How It Will Revolutionize Everything", 2022, W. W. Norton & Company, New York, 2022, p. 35

own Avatar, and assemble there with friends from the real world or the metaverse. The metaverse is also related to reality with AR technology and is not just confined to the VR virtual world. The metaverse offers each user an unmatched "feeling of presence" across time and location, enabling them to engage in activities like work, study, sports, and entertainment.

Horkheimer, Adorno, and others were already well aware of the possible effects of television in the 1930s, and they even foresaw the possibility of a "whole work of art"[3] based on television that would unite all the arts: "Because the various parties have not yet agreed, television has not yet been able to integrate radio and film. But sooner or later, television will have such an effect that it will quickly degrade aesthetic standards to the point where, in the future, all the thick drapes covering the works of industrial culture will be removed, and Wagner's vision of a complete work of art—combining all the arts into one—will be parodied in some way." The bounds of art itself are eroding as the digital age progresses, although no work of art has yet been dubbed "complete art." [4]Emerging mass media, such as photography, cinema, and television drama, had "demonstrated the pivotal significance and overwhelming dominance of technology over art" before the advent of the metaverse.

The metaverse serves as a fantastic model for showcasing entirely technological art.

---

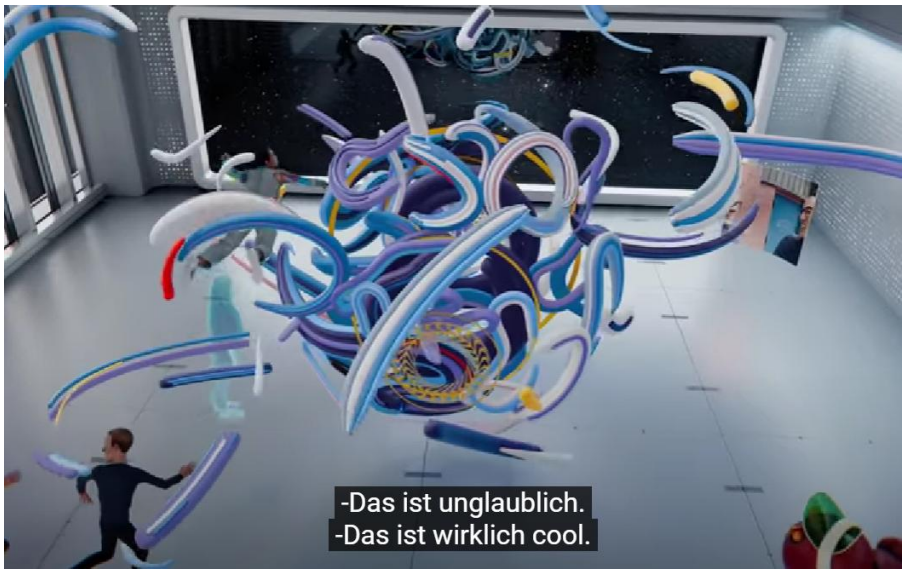
[3] Zen yiguo. "批判理论，文化工业与媒体发展——从法兰克福学派到今日批判理论." *新闻与传播研究* 1 (2016): 26-40.

[4] Horkheimer, Max, and Theodor W Adorno. 1993. Dialectic of Enlightenment. Burns & Oates.

In order to provide people with an intense sensation of presence in the 3D virtual world and to showcase a type of total art, the metaverse's blueprint and vision demonstrate a more intuitive component that is more directly tied to everyday life in the information age. Metaverse must develop a systematic and comprehensive creator ecology and rely on the technical backing of Internet behemoths to provide a more complete and richer experience. Because of this, the metaverse and the art world naturally converge, and metaverse art grows and flourishes.

The metaverse gains new life through the intervention of artists and works of art. The metaverse's virtual world can be given diversified and stylized expressions through artistic creation by artists, preventing it from being a cold technical achievement or an empty virtual space and instead filling it with warm and artistically designed content that fully satiate users' curiosity about the virtual world and even push the boundaries of the public's imagination. This encourages the metaverse to grow. It is a virtual environment that follows the metaverse's design guidelines. It is conceivable that the space for users' self-expression in the metaverse cannot be fully realized without the involvement of artists because each user can have his or her own digital space, image, and object, and each space, image, and object in the metaverse should have its own unique appearance. The full utilization of the user's self-display area in the metaverse requires the engagement of artists, and outstanding artistic design will add color to the metaverse's eventual success. The "real-time algorithm" metaverse, which also includes the virtual world, cannot entirely be separated from the real world; rather, it constantly uses

augmented reality (AR) technology as its central component to communicate reality and virtual in users' sensory experiences. In this scenario, intuitive, powerful, and organic art design will act as a link between the real world and the metaverse's virtual world, which is based on AR technology. Like the cosmic space created by the Los Angeles artist featured at the start of Zuckerberg's "Connections" speech and the AR street artist who hid artworks in Soho for the public to find, the intuitive, robust, and natural art design will become the lubricant between the real world and the virtual world of the meta-universe based on AR technology in this process. The artworks beyond the screen frame, in reality, and created by 3D digital technology will become the bridge. The work of art will serve as a link between the physical world and the metaverse.



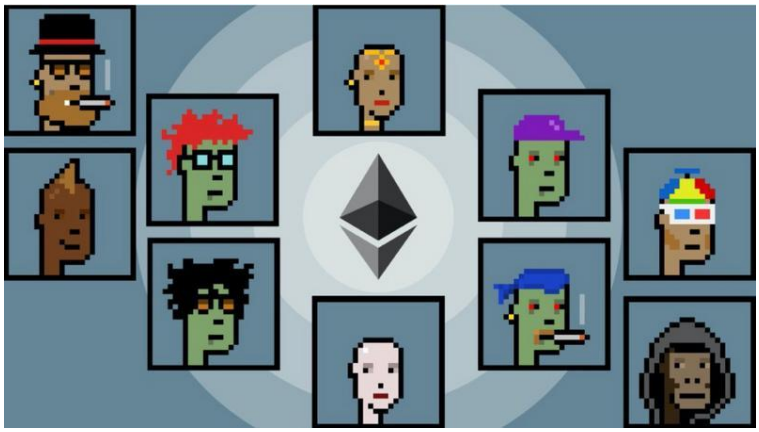
Mark Zuckerberg, Connect, 2021
Video screenshot:
https://www.youtube.com/watch?v=Uvufun6xer8&ab_channel=Meta

For art, the metaverse provides a broader space for art display, participation, and dissemination. The infinite virtual world of the metaverse and its viewing method that

breaks the limit of the screen border provide new ideas for the display of artworks, and artworks with VR and AR technology as the core will be reborn in the metaverse. With advanced access devices and virtual doubles, users of the metaverse can break the boundaries of space and time and freely stroll through the real and virtual worlds, which provides a new ground for the audience participation activities emphasized in many contemporary artworks. In addition, based on blockchain technology, NFT crypto art as a new way of art dissemination will play a decisive role in the metaverse art field, defending both the rights of artists and artworks, escorting the creation, display, collection and sale of digital art and even artworks of all art disciplines, "freeing art from intermediary authorities such as galleries and art museums liberate art from the hands of intermediary authorities such as galleries and art museums, and put all the rights of art creation, appreciation and collection into the hands of every metaverse user."

The combination of metaverse and art means mutual benefit and win-win, and because of this, the emergence of metaverse art is natural. As the metaverse continues to develop from empty space to reality, metaverse art is also developing in the process of maturing related technologies, and the metaverse art field itself is constantly exploring and experimenting. On the one hand, VR and AR technologies have brought new ways of displaying and viewing art, and digital technologies such as CG, 3D, and real-time algorithms have greatly enhanced the expressive power of metaverse art creation, making virtual scenes, objects, and characters created by metaverse art have a viewing experience comparable to or even beyond reality. On the other hand, with NFT crypto art as the

cornerstone, meta-universe art has gradually emerged, and there is no shortage of commercial success stories in the market. 2014 saw the birth of an open-source P2P platform called Counterparty based on Bitcoin blockchain technology, and in 2016, emojis joined the blockchain space. In 2016, emojis joined the blockchain space, with the famous "Rare Pepes" emoji from Matt Furie's comic book Boy's Club opening up the blockchain-based digital art market. 2017 saw Ethereum begin to claim its own interest in the " Pepe or Peperium" series of emojis, and since then, the door to NFT has been opened. That same year, John Watkinson and Matt Hall designed software that could generate thousands of different character images, which became the precursor to "CryptoPunks", which redefined the concept of digital art ownership.[5]

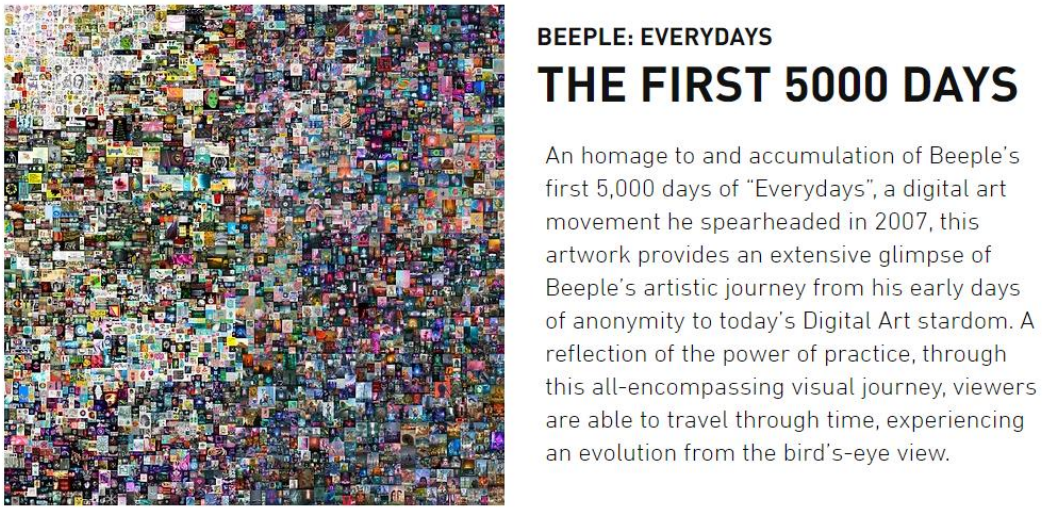


John Watkinson & Matt Hall, "CryptoPunk", 2017
Image credit: https://www.larvalabs.com/cryptopunks

Inspired by "Crypto Punk," a project called "Cryptokitties" successfully pushed the proceeds from the sale of digital cats to $100,000, and the NFT crypto art emerged and

[5] Labs, Larva. n.d. "CryptoPunks." Www.larvalabs.com. Accessed December 3, 2022. https://www.larvalabs.com/cryptopunks?utm_source=nonfungible.

showed great commercial value. In 2021, when the meta-universe burst forth, the crypto artwork "The First 5000 days" by artist "Beeple (formerly Michael Winkelmann)" fetched a high price of $69.3 million at Christie's online auction, creating the third-highest price for a living artist's work at auction, and setting a new record for digital artworks at auction, as well as the highest price for a lot sold online.[6] Today, the NFT art market is still hot, and NFT crypto art, as a pioneer of metaverse art, is in full swing with its art creation, exhibitions, and trading collections. It is in the context of the information society, where technology is developing, and the market is becoming more prosperous, that metaverse art has gradually shown its infinite potential from its inception to its development.



Beeple, "The First 5000 days", 2021
Image source: https://www.beeple-crap.com/viewing

[6] Schneider, Tim. 2021. "'This Was a $69 Million Marketing Stunt': Why Crypto Purists Say Beeple's Mega-Millions NFT Isn't Actually an NFT at All." Artnet News. March 18, 2021. https://news.artnet.com/market/beeple-everydays-controversy-nft-or-not-1952124.

I believe that although the metaverse and metaverse art have shown their full potential in the context of the fourth industrial revolution and the information society, the metaverse itself is still in the process of conceptualization and moving toward reality, "the most important concept in the understanding of the metaverse is that the metaverse does not exist,"[7] as Zuckerberg clearly states The metaverse is a long-term goal, and for the present, although metaverse art has gone through the process of birth and development, it is still immature, and while NFT encrypted art is commercially successful, it is to some extent disconnected from the old art system. It is conceivable that with the further development of VR and AR technologies and the gradual spread and improvement of Web 3.0, metaverse art will show a very different expression from the present.

Therefore, in order to better look into the future of metaverse art, we can draw from older, more mature artworks and use excellent artworks as a guide from specific angles to get a glimpse of the bright future of metaverse art.

---

[7] Dwivedi, Yogesh K., Laurie Hughes, Abdullah M. Baabdullah, Samuel Ribeiro-Navarrete, Mihalis Giannakis, Mutaz M. Al-Debei, Denis Dennehy et al. "Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy." *International Journal of Information Management* 66 (2022): 102542.

Chapter 2: Metaverse Interactive Art and Virtual Participation

2.1 What new experiences does metaverse art bring to users?

The expansion of metaverse art does not stop at the audio-visual experience brought by VR and AR technologies. As a digital twin art that integrates with reality, the audience of metaverse art will no longer stand at a distance and passively watch. However, with the aid of different cutting-edge motion capture and physical interaction tools, every metaverse user can transcend the confines of space and time and take part in the artworks, becoming a crucial component of them and giving metaverse art a new meaning.

The interactive participation of the viewer has always played an essential role in contemporary art practice. As early as 1920, Dadaist artist Marcel Duchamp's installation Rotate Glass Plate) included the viewer in the artwork, inviting them to open the installation and stand in a specific position to watch the image unfold. Duchamp's installations profoundly influenced the future of digital art, bringing about a shift from object to the concept in art making and pioneering the incorporation of virtual objects into art. By the 1970s and 1980s, artworks emerged more as open structures that relied on audience participation and performance, where the public became participants in the artwork, integrating textual and visual, and aural elements and the artist became less the creator of the artwork and more the mediator who guided the audience to participate in the work.[8]

---

[8] Christiane Paul, *Digital Art*, Thames & Hudson world of art, 2015, p.32

Continuing in this vein, the development of digital technology has provided a richer form of audience engagement with artworks. "A-Volve," a digital installation by artists Christa Sommerer and Laurent Migonneau, achieves a direct connection between physical reality and the virtual world. "A-Volve" invites the viewer to create virtual creatures and interact with them in a glass pool space filled with water. By drawing shapes with their fingers on a touch screen, visitors create virtual three-dimensional creatures that automatically "come to life" and begin to swim in the natural water of the pool in a simulated form. The movement and behavior of virtual creatures depend on their morphology, which ultimately determines their ability to survive and mate and reproduce - aesthetics becomes a critical factor in the survival of the fittest. These creatures also respond to the movement of visitors' hands in the water: one can "push" them forward and backward or place a hand on top to prevent movement, which may protect them from predators. “A-Volve” virtualizes the rules of evolution while merging the virtual with the real world. Through touch input and real-time image generation technology, “A-Volve” allows the experience to interact with the creatures in the pool and even restore human manipulation of evolution.

Sommerer and Mignonneau, "A-Volve", 1994
Image credit: Digital Art, p. 191

As a successful example of digital installation art, "A-volve" incorporates the audience's physical participation into the artwork, relying on the advanced technology of the time, and provokes people to think about ecological and human relationship issues while being attractive. "A-volve" proves that the level of technology determines the depth and breadth of audience participation invited by digital art and the expressiveness and infectiousness of the artworks. In the metaverse, each user not only passively perceives the virtual world through VR and AR devices at the visual and auditory levels but also actively participates in the artworks by using and wearing a series of body input devices at the levels of body movement, touch, and smell.

2.2 Technical bottlenecks and prospects of virtual participation in metaverse art

Looking back over the past 20 years, information technology and the Internet have profoundly changed human life and the social economy by bringing a large number of human relationships in society online and digitally. As information technology continues to evolve and its shape in society further evolves, the metaverse is being explored as an attractive vision and gaining market attention as technology giants search for the future shape of digital life.

"In our opinion, the metaverse is the culmination of the next-generation Internet and digitalization in a broader sense, with 3D, user-generated content, and longer online time as prominent features, as well as XR, AI, 5G, and other technologies in the C- and B-side of the comprehensive application, ultimately pointing to the future survival of humanity in the digital age. The Internet, industrial digitalization, intelligence, the Internet of Things, large-capacity devices, high-speed wireless communication, and other fields and technologies are just a few of the many connotations that exist in the metaverse."[9]The presentation of the metaverse will change from 2D to 3D, from flat visuals to richer sensory experiences, bringing immersive experiences and a closer integration of virtual and reality. This has been discussed in previous studies.

The Internet presentation is screen-based in the last 20 years, offering a 2D flat visual experience on a PC or mobile device. The current state of VR/AR technology only

[9] Belk, Russell, Mariam Humayun, and Myriam Brouard. "Money, possessions, and ownership in the Metaverse: NFTs, cryptocurrencies, Web3 and Wild Markets." *Journal of Business Research* 153 (2022): 198-205.

offers a 2D flat visual experience, which limits how immersively users can experience the meta-universe. The main goal of VR/AR devices is to completely improve the user experience. Tactile devices, brain-computer interfaces, and even VR/AR devices are expected to provide a richer experience in 3D vision, touch, and smell.[10]

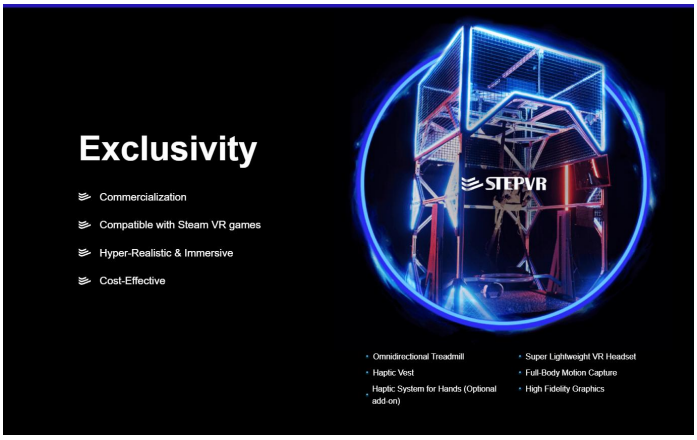
First,we will start by discussing enhancing users' haptic experiences in the metaverse. According to the metaverse's design, every user's physical movements can be accurately mirrored in the virtual world and reflected by their individual "virtual doubles," making motion input devices a vital component of the metaverse's technological environment. The Tactile Technologies project by Norwegian artist Stahl Stenslie aims to remotely transform the body's sensations and stimuli through the network, introducing the body to "digital perception" before technology companies conduct related research. The Tactile Technologies project aims to "digitalize" the body by remotely modifying bodily sensations and stimuli via the Internet. Participants in Stanley's "Inter Skin" project don a sensor-equipped garment that transmits and receives stimuli, like touch, to deliver and receive sensory experiences. In the midst of significant technological advancements, the Chinese VR company STEPVR released its debut offering, "Guo Cheng No. 1," to the general public in May 2022. This product's components include a PC-level computer, an ultra-slim virtual reality headset with a Pancake folding light path design solution, a vibration vest with touch controls, and an

---

[10] Singh, Onkar. 2022. “The Key Technologies That Power the Metaverse.” Cointelegraph. May 28, 2022. https://cointelegraph.com/explained/the-key-technologies-that-power-the-metaverse.

omnidirectional motion system that can freely move in all directions. These components enable the virtual world to restore the "five senses" of sight, hearing, touch, and vestibular balance sensation. Users can freely walk, run, and stand still in the virtual world by relying on a self-developed omnidirectional movement system. By using a wearable device to achieve haptic feedback, the user in the virtual world can restore the whole reality of the tangible experience.

Stahl Stenslie, (The First Generation Inter_Skin Suit), 1994
Image credit: Digital Art, p. 237



STEPVR, "Guo Cheng No.1", 2022
Image source: http://www.stepx.tech/#/pc

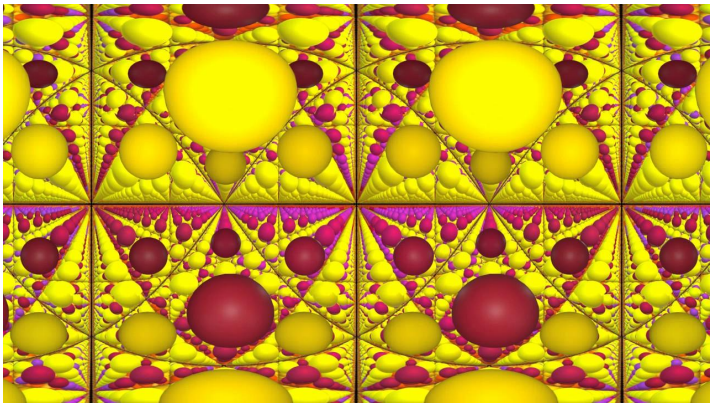
Several cutting-edge technologies are going further into the tangible experience of

the user of the metaverse, in addition to total motion capture input. The sensory-neural level is starting to receive more attention and exploration.

Second, on the olfactory level, "Feelreal" released the world's first VR mask that combines olfactory and haptic functions. Its internal components include an ultrasonic ionization system for water mist, a micro heater for heat sensation, a micro cooler for wind sensation, and a haptic motor for vibration. And the built-in nine individual aroma capsules, these aroma capsules can simulate 255 different smells, such as coffee, lavender, gunpowder smell, and even burnt rubber smell, etc., to bring users a more immersive experience. At the haptic level, dedicated to the introduction of realistic haptic feelings into the VR "HaptX" company's latest "HaptX Gloves DK2", which is a "real touch" technology advanced haptic feedback gloves, each of Each glove has 133 tactile feedback points, completely covering the palm and fingertips. At the same time, its patented technology can make the user's skin feel like touching real objects when the same shift, with a more realistic interaction, so that it achieves a sense of realism unmatched by other haptic devices. In addition, somatosensory feedback technology is also reflected in the more detailed part of Carnegie Mellon University Human-Computer Interaction Institute researchers developed a VR device that can produce lip-tooth haptics. The device consists of a thin and compact ultrasonic transducer beam-forming array, which can be installed at the bottom of the virtual reality headset. The ultrasonic vibrations are focused on the wearer's mouth to trigger different types of effects.

Ultimately, Metaverse has gradually developed a full system of input and feedback devices in terms of audience participation, ranging from bodily movement and motion to scent and tactile feedback from the fingers and lips. On the basis of this, we encourage the creation of metaverse artworks that welcome audience participation. Candy-colored psychedelic noises flow in the limitless crystal realm of Benjamin Outran's interactive VR artwork, "Crystal Vibes." Cristal Vibes charts sound rays based on the science of human senses, pushing the boundaries of technology-mediated sensory experiences in virtual reality. It does this by utilizing cutting-edge technologies in spatial 3D audio and sound visualization. Outland and the full-body Synesthesia Suit have collaborated to produce a multifaceted artistic experience that is visual, acoustic, and tactile in order to further enhance the viewing experience of Crystal Vibes. The full-body Synesthesia Suit is a synesthesia device that uses touch to improve the sensory perception of sight and sound. The full-body Synesthesia Suit, which is based on the conventional idea of "synesthesia" in art, is intended to blur the lines between various senses. It has 26 actuators inside that vibrate in time with the music, turning the human body into a path for sound waves. By tracking and capturing the user's head and hand movements, high-fidelity broadband vibrations are applied to the appropriate spatial location on the user's body in relation to the geometric contact, creating Crystal Vibes not only for audiovisual purposes but also for the entire body of the participant. And in Crystal Vibes, these visuals are produced using mathematical formulas and computer programs that use Fourier transforms, geodesic forms, Bravais lattice structures, sine waves, and bezier

curves. In order to create a hyper-connected audiovisual vibrotactile cosmos for the user, the creators drew inspiration from nature's inherent beauty in the 3D fractal crystal structure and used the artistry of rhythm and form in the music to obtain visual beauty.



Benjamin Outran, 'Cristal Vibes', 2017
Photo credit: https://www.benjaminoutram.com/crystal-vibes/

In the next stage of development for the metaverse, the feedback and experience mechanisms of each participant's senses will be linked through the system of the metaverse to form a whole. This will make the user's personal experience comparable to reality, which will, in turn, make the experience of participating in metaverse art more real and personal. However, metaverse art is clearly more than just an imitation of reality; in metaverse art, viewers not only participate in the artwork with their full physical senses, but they also rely on the virtual world of the Internet to cross the boundaries of time and space and participate with the global public, greatly enhancing the breadth and intensity of the act of participation itself; in addition, metaverse art introduces a "virtual double" that belongs to each user, making participation more personal and intimate; and finally, metaverse art makes participation more immersive In addition to this, Metaverse

Art introduces the concept of a "virtual double," which is unique to each participant. This "virtual double" enables participants to extend beyond the confines of the body, reshaping and altering reality through the use of the virtual identity provided by the metaverse.

2.3 Real and digital art world co-construction and integration

The collaborative efforts of VR, 3D digital image, real-time algorithms, and other technologies have created a digital twin art virtual world for the metaverse comparable to reality, but the metaverse is by no means an empty dream disconnected from reality but profoundly hooked up with the real world, relying on Web3.0 and AR and other technologies to feed offline from online, so that metaverse art and the real world can integrate with each other and promote the online metaverse world and offline The process of the intersection of virtual and real.

In the process of crossover between virtual and reality, the most direct and core way is for each user in the real world to participate in the virtual world, and this vision can be realized in the metaverse not only because of the perfect development of AR technology but also because of the intermediary effect brought by each user's unique "Avatar." The effect of the word "Avatar" is derived from the Hindu word "fall," meaning the descent of God into the incarnate form of the earth. As a "virtual double," each metaverse user will be able to cross the boundary of space and time to participate in the real world while ensuring a full sense of presence and identity and realize the integration of the real art world and the digital art twin world in the art field.

"In the blueprint of the metaverse, each user will be able to use their own virtual

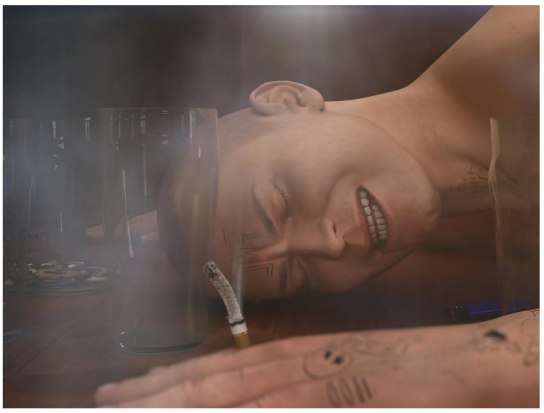
double, which can be freely chosen and created, and relies on the blockchain to guarantee ownership, and these virtual doubles will become the identity symbol of each user in the virtual world of the metaverse, giving people a sense of identity and participation in the metaverse. In the field of art, virtual doubles can play an even more important role, as each user's unique virtual double will be part of the metaverse art, along with the metaverse audience's "full holographic and full effect" interactive participation to provide new connotations for the metaverse art."[11]

Atkins' creations have always been at the forefront of technology, relying on 3D digital image generation and motion capture technology to create a series of virtual characters that are comparable to reality in appearance, i.e., various "avatars" of the artist himself. "avatars" of the artist himself. For example, in his 2014 work Happy Birthday, Atkins presents a virtual double created entirely by digital technology and relying on motion capture for its performance in the form of experimental video art. In the video, Atkins' avatar slowly rises from the water and looks hesitantly at the audience, repeating the different months of the year under his breath. In another work of the same year, "Ribbon," Atkinson used the same technology to create another more disheveled, more artistically virtual body. He is naked, his body is covered with "singing," and in other words, he is singing to the audience with a cigarette. Based on his extreme familiarity with cutting-edge technology, Atkins' work pushes the issue of virtual doubles to the

---

[11] Park, Jin Young, and Yang Kyu Lim. "Metaverse-Driven Interactive Performing Arts Content Development." In *International Conference on Human-Computer Interaction*, pp. 329-335. Springer, Cham, 2022.

limits of their time. The precision of motion capture allows the virtual doubles in Atkins' work to have extremely rich "micro-expressions," both fragile and tender, but it is clear that the artist's purpose in using virtual doubles is not simply to showcase technology. The virtual doubles created by Atkins are constantly praying to each viewer for care and affection, for empathy in the most realistic way. This is the artist's deep thinking about the integration of reality and the virtual world, which means that in the information age, regardless of the stage of technological development, each person cannot be separated from his or her "virtual double" while these virtual doubles are at the same time fragile and need to be cared for by each real person. In short, in the relationship between the virtual and the real, we are not using the virtual world to help reality through the development of information technology, but on the contrary, no matter how perfect the technology is, we need to build the virtual world from the emotions of the real world - only from their real feelings, virtual doubles are meaningful.



ED Atkins, Ribbon (Ribbon), 2014
Image source: https://www.artsy.net/artist/ed-atkins

Although Atkins' works are obscure, sticky, and focused on issues such as

distortion brought about by technological development, there is no doubt that Atkins' works are established because of the fine 3D modeling of the virtual doubles and the subtle changes in expressions brought about by motion capture, and the development of technology and proficiency in technology are the prerequisites for artworks that explore the relationship between technology and life. From this point of view, no matter how the future metaverse art views the series of technological achievements of the metaverse, the premise of technological development remains the same, and the general trend of integration between the real art world and the twin world of digital art will not change. In the entire metaverse framework, it is the AR augmented reality technology that glues reality and the virtual world most closely together, superimposing the metaverse on top of reality. It is based on the technical nature of metaverse art that John Craig Freeman created an AR artwork called "EEG AR: Things We Have Lost" in 2015. In this performance art and digital installation, Freeman used more advanced brainwave sensing technology in addition to AR technology. Freeman went out on the street and asked random passers-by what they had recently lost, wore a brainwave sensing device to select the corresponding virtual objects from the respondents' brainwave data, and presented these virtual objects to the respondents through AR technology. Compared with motion capture, the direct reading of the user's brain waves is undoubtedly another step forward in terms of technology. On the basis of the digital security given by Web3.0 blockchain, we hold and will no longer lose virtual objects, but the art of metaverse still tells us that we can reach the virtual world and then return to reality with a series of virtual doubles

and virtual objects from the virtual world until we find everything we have lost in reality.

John Craig Freeman, EEG AR: Things We Have Lost, 2015
Image source: https://www.lacma.org/lab/project/eeg-ar-things-we-have-lost

The integration of the real and virtual worlds is an important and lingering issue in art, and this issue does not only remain in the field of art but, through art, gives everyone the space to think and imagine this issue. However, no matter how metaverse art will view its "twin brother" as the digital virtual twin of the real world, there is no doubt that, along with 3D digital image generation technology, motion capture technology, AR and VR, metaverse art will certainly be more realistic and more imaginative. The "virtual doubles" will be the core, spanning the real and virtual art worlds, and based on each user's personal experience and spiritual feelings, realizing the integration of the real art world and the digital art twin world so as to participate more fully in the more colorful meta-universe art.

Chapter 3: New trends in the dissemination of metaverse art

3.1 NFT: Metaverse Art Cornerstone

3.1.1 What is NFT? - The Birth of Cryptographic Art

Whether it is the intuitive digital twin art based on VR, AR, and various digital technologies that emphasize an immersive experience comparable to reality or the virtual participation of the global public using multiple input devices as interfaces, virtual doubles as intermediaries, and the virtual world of the metaverse as a platform, this part of metaverse art has not yet taken shape due to the imperfection of the technology itself but remains more in the Although it has shown great possibilities in terms of artistic expression, user potential, and commercial value, it is still possible to see the complete picture of metaverse art only through more mature artworks based on a single medium or technology.

However, Web 3.0 technology, which is inextricably linked to the metaverse, has made much more progress than the idealized and conceptualized blueprint of the metaverse based on blockchain technology. In Matthew Bauer's elaboration of the metaverse, the common point between the metaverse and Web 3.0 is that both are the "next phase" of the Internet, but their goals are not the same. Therefore, metaverse and Web 3.0 are both parallel and distinct from each other but essential to each other. After looking at the two aspects of metaverse art: presentation and participation, we can return to the more mature and practical side of Web 3.0 to explore the new trends of metaverse art dissemination.

The NFT crypto art formed an essential part of the beginning stages of the rise of metaverse art, with Joe Looney's "Rare Pepe Wallet" opening the door to crypto art, from the "Pepe of Peperium The "Pepe of Peperium" series of emojis entered the blockchain space, allowing people to buy, sell and trade art freely. After that, from the experiment of "CryptoPunk" to the success of "Cryptokitties," NFT crypto art with the background of blockchain has gradually emerged in the world art field since the beginning of 2014, and gradually In 2020, the volume of transactions on the NFT market reached a record high. The volume of the NFT market reached $25 million in 2020, four times in 2019, and in 2021, when the meta-universe was blowing up, the third highest price was set for "The First 5000 days" by 3D digital artist "Beeple" making NFT crypto art an important part of the world art field. This makes NFT crypto art an important part of the world art scene and fully demonstrates the broad market of metaverse art. Nowadays, NFT trading platforms springing up all over the world, such as "MakerPlace," "KonwnOrigin", "OpenSea, "Raible" and so on, have given birth to many fruitful NFT trading cases.[12]

NFT, full name Non-fungible tokens, or non-homogenized passes, is a unique digital resource. Firstly, a pass with blockchain technology as a premise is a virtual collection of values issued by a fixed organization, and the pass is able to become a representative of digital assets. Secondly, unlike homogeneous passwords that can be

---

[12] Cremer, John. 2022. “How Are NFTs Changing the Art World? From New Platforms to Famous Buyers.” South China Morning Post. May 25, 2022. https://www.scmp.com/magazines/style/leisure/article/3179074/how-are-nfts-changing-art-world-sothebys-metaverse-platform.

exchanged and divided into equal amounts, NFT has the quality of being indivisible and non-exchangeable, which gives NFT a unique advantage in corresponding to specific assets, such as NBA star Lebron James' star card or star Lindsay Lohan's photo, etc. This type of digital asset is inexpensive in itself but has a high collection value due to its own scarcity. This type of digital asset itself is low-cost, but because of its own scarcity characteristics to obtain a high collection value, and therefore also has an inseparable, irreplaceable characteristic, it has become an essential application of NFT technology. In many digital assets with such characteristics and even tangible assets, the most difficult to measure with specific numbers is the artwork.

The value of works of art can never be measured by quantifiable factors such as the cost of materials and working time consumed in the creation process, like the value of other commodities or artificial products. The value of works of art is never the cost of paints, canvases, materials, etc., consumed by the artist in the creation process, nor is it the amount of time and energy consumed by the artist in creating them. This is something that is common knowledge. An expensive and time-consuming piece of artwork may not have any value at all, whereas a finished piece of artwork created from worthless discarded "trash" or even one that is completely unadorned may become an immortal legend in the history of art and acquire a great deal of value on the art market. In addition, the value of artworks is not determined by how few of them are available; in essence, the one-of-a-kind quality of each work of art remains unchanged regardless of its selling price. Each individual possesses the capacity to produce a one-of-a-kind "thing," and

there is no authority that can limit the number of artworks that are produced. Therefore, it should come as no surprise that the concept of scarcity cannot serve as the basis for determining the worth of works of art. The digital assets of artworks are mapped on the blockchain, which can create a unique ID belonging to this artwork, and this unique ID encapsulates all of the characteristics of the artwork. Based on this characteristic of artworks, artworks entering the circulation market are fundamentally different from other commodities, and the NFT has a natural resemblance to art. Additionally, the NFT has a natural resemblance to art because the NFT is similar to In this sense, NFT itself, prior to representing artworks, first relies on its own technical foundation and constitutes "equivalence" with artworks; this is the premise that NFT crypto art can be established in the art field. In other words, NFT crypto art can be established in the art field because NFT itself represents artworks.[13]

3.1.2 Blockchain technology - decentralization for the freedom of NFT art

Of course, NFT is not just a digital ID that can be used with art, but NFT encryption technology plays an irreplaceable role in the creation, dissemination, sale, and collection of metaverse art and, furthermore, in the Web 3.0 environment, NFT based on blockchain technology will become the cornerstone of metaverse art.

The reason why NFT is placed in such an important position in metaverse art is that NFT has completely changed the problem of losing the rights of digital artworks

---

[13] David, L. E. E., and Lo Swee Won. "Nft of nft: Is our imagination the only limitation of the metaverse?." *The Journal of The British Blockchain Association* (2022).

under the old Internet environment and fully defended the rights of metaverse art creators and collectors. As the basis of NFT, blockchain technology is a set of shared and immutable data chain structures, a digital ledger covering grouped categorized into different blocks of data, while the use of cryptography technology guarantees the trustworthiness and reliability of the blockchain in the process of use.[14]Once any content is recorded in the blockchain, it cannot be changed or deleted. For the blockchain as a whole, there is no single control center but it is shared by the components of the blockchain system, and the information is shared by all members. Based on blockchain technology, the vision of Web 3.0 is built up.

"As a result of the blockchain's decentralized, transparent, and immutable character, NFT crypto art has gained widespread acceptance and expectation in the art sector," [15]In the course of their research, academics frequently acknowledge and have certain expectations regarding the decentralized character of crypto art. In the previous environment of the Internet, due to the characteristics of digital technology itself as well as the free and disorderly dissemination environment of the Internet, digital artworks were frequently freely reproducible and possessed by all users of the Internet. The reproduced digital art copies were not different from the original works created by digital artists in terms of either appearance or the content logic of the work. Although the act of

---

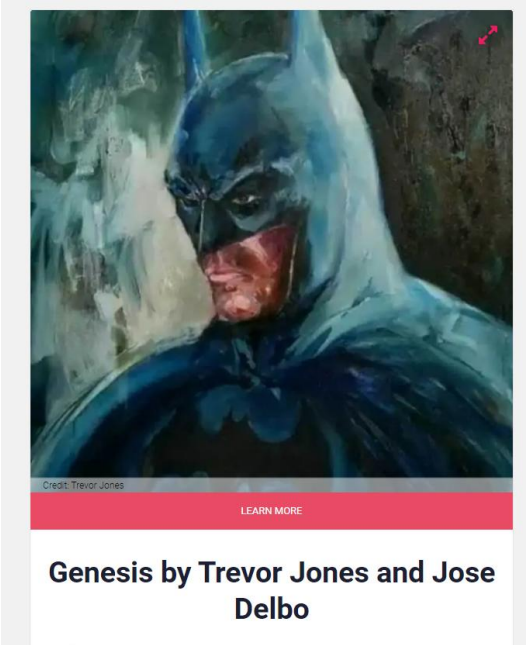
[14] Das, Dipanjan, Priyanka Bose, Nicola Ruaro, Christopher Kruegel, and Giovanni Vigna. "Understanding security Issues in the NFT Ecosystem." *arXiv preprint arXiv:2111.08893* (2021).

[15] Mazur, Mieszko. "Non-Fungible Tokens (NFT). The Analysis of Risk and Return." *Available at SSRN 3953535* (2021).

copying a work of art does not damage the work of art itself but rather helps to expand the dissemination of the work of art, it is undeniable that the quality of unlimited reproduction also greatly limits the development of the digital art market. The appearance of reproductions, on the one hand, discourages digital artists and buyers, further limiting the development of the digital art market; on the other hand, it also makes it more difficult for digital artists to compete with reproductions that are of high quality. The proliferation of reproductions has two opposing effects: on the one hand, it discourages digital artists and purchasers, which in turn slows the growth of the digital art market; on the other hand, it makes it difficult to guarantee artwork property rights and original identity, as well as other practical issues, which in turn leads to a number of issues involving plagiarism and infringement of digital art in the environment of the Internet.

Although an external monitoring system is being developed gradually in the current Internet environment, NFT crypto art based on blockchain is definitely a more incremental answer to the "root" of the problem. NFT crypto art in Web 3.0 provides an unquestionable, irreproducible, and unalterable proof of the original identity of artworks and the due rights of creators and collectors, maintains the normal order of the metaverse art market in the simplest and most direct manner, and indirectly promotes the growth of metaverse art production. The artist maps the artworks he creates to the blockchain, generates the equivalent NFT, and adds it to his own NFT wallet at the operation level. With NFT as a guarantee, the artist has full ownership and proof of authenticity for his original digital artworks, transforming them into NFT crypto art. "At the same time, the

datafied NFT can easily and freely circulate through the Web 3.0 blockchain network as a generalized ID signifying the transfer and transaction of artwork ownership." As stated in the report, with NFT as a guarantee, both the artist and the purchaser can display their works freely on social media and other platforms as in the current Internet environment, for any user to freely enjoy and even copy, but only the owner who actually purchased the NFT corresponding to the pair of works has the legal rights to the works, such as ownership. The DC Comics hero Batman, for instance, is a well-known superhero throughout the world. However, when comic artist José Delbo and crypto artist Trevor Jones sold Batman-themed paintings and animations on the "MakersPlace" platform, the Batman artwork titled "Genesis" was immediately accessible only to NFT holders. In contrast to inexpensive and inexpensive comics, this Batman NFT crypto artwork sold for a high price of 302.5 ETH, enabling individuals with an inexhaustible amount of room to imagine NFT crypto art and metaverse art.



José Delbo & Trevor Jones, "Genesis", 2020.
Image credit:
https://boomash.com/image/genesis_by_trevor_jones_and_jose_delbo

3.1.3 Analysis of art value issues in the Web 3.0 era - the revolution brought about by the dissemination

technologies. The revolution for metaverse art distribution will be decentralized once the NFT encryption technology ensures the originality, genuine identity, and ownership of artworks. In the sphere of metaverse art, the changes brought about by Web 3.0 are concentrated in the process of art dissemination. The new requirements of the Web 3.0 age.

As the cornerstone of metaverse art, NFT has significance for the work itself that extends beyond the level of the pure art market and goes beyond just serving as a means of establishing online trading credentials for purchases and collections. By relying on the immutable and distinctive digital asset ID produced by blockchain technology, each NFT encrypted artwork has been given its own original identity credentials. However, when

we look more closely at the existing NFT encryption forms, we discover that the NFT "non-homogenized pass" is still independent of the digital artwork. The digital artwork displayed on the NFT platform can still be copied, screenshotted, and saved as a copy of the original artwork because the replicability of the digital artwork does not truly change in NFT crypto art. To put it another way, NFT encryption "adds value" to the original digital artwork by offering unique and irrefutable proof of the artwork's identification rather than preventing the "devaluation" of digital artworks brought on by limitless duplication. “The NFT identifying ID is unquestionably where the extra value originates; the NFT itself, not the NFT-encrypted artwork, is what makes it truly distinctive.”[16]

According to the conventional definition of art, for a piece to be considered "unique" within the context of all of art history or the art system, it must achieve its own creativity and uniqueness in terms of creative creation processes, expression languages, and thematic ideas. To be more accurate, the issue of digital art reproductions has no impact on the artistic value of the work itself, but it does have an impact on how much the work is worth when it is traded on the art market, and this is also the case with the success of NFT crypto art. Like the metaverse and Web 3.0, art and the art market are inextricably linked, and the "uniqueness" of NFT on blockchain technology increases the market value of the metaverse art while also having an impact on the art itself. The BurntFinance crew set fire to the painting "Moron" by British artist Bansky on March 4,

---

[16] Pinto-Gutiérrez, Christian, Sandra Gaitán, Diego Jaramillo, and Simón Velasquez. "The NFT Hype: What Draws Attention to Non-Fungible Tokens?." *Mathematics* 10, no. 3 (2022): 335.

2021, over a live internet stream. Prior to that, they had purchased the 2006-created piece at auction for $95,000 and added it to the NFT Crypto Art Collection. The destruction of the "original," however, caused the price of the NFT "backup" version of the work, which was sold on the "OpenSea," to climb by a factor of four, benefiting the team instead. The "original" was lost, but the NFT "backup" copy of the work, which was sold on the "OpenSea" platform, saw a fourfold increase in price.

The burned “Moron”.
Image source: https://www.bbc.com/news/technology-56335948

If the act of burning " Moron " qualifies as performance art, then this incident has already demonstrated how NFT-encrypted art would fundamentally alter art in the Web 3.0 era. The skyrocketing price of the NFT version of " Moron " is not the acknowledged " original art, "but nevertheless, The NFT version of "Moron" is just a digital "backup" or "copy" of the true original if the "originality" and "authenticity" of the artwork are used as the criteria to judge the worth. The NFT rendition of "Moron" would be incredibly inexpensive or even worthless if the "originality" and "authenticity" of the artwork were the determining factors of value. After the original was burned, the NFT encrypted version's cost, which was the only thing that directly distinguished it from the original, significantly outweighed the original's. The creative value of NFT encrypted art is

therefore not in the surface-level artwork but rather is deeply ingrained in NFT itself, or in the Web 3.0 era, no artwork is as "unique" as NFT itself.[17]

The traditional art system relies heavily on a number of middlemen in the art transmission process, including museums, painting dealers, art critics, etc. Together, these intermediaries form the "art environment," and it is their job to "crown" the artwork. These mediators for the spread of art are those who "crown" the artwork. However, the "decentralization" of the Web 3.0 period has led to the abolition of the previous judgment framework and criteria for art, as well as a number of intermediates for art communication. It is simple to comprehend that, while giving each user the freedom to express themselves artistically, the act of making art itself is also lost. Meta-universe art, as mentioned above, will place all of its artistic value in the parallel structure of the artwork and the NFT. When ownership and originality are endorsed, the artistic environment on which the value of the artwork itself rests will also disappear as the context of the artwork shifts from the cultural environment to the blockchain of Web 3.0.

"The First 5000 Days" and "Genesis" are difficult to match their final transaction prices in the eyes of traditional art evaluation, and the reason is that what is really traded in the NFT crypto art market is not the artwork but NFT itself. Once this is made clear, we can understand why NFT crypto art has been able to give birth to such commercially

---

[17] Jesse Damiani, "From Crypto to Christie's: How Beeple Brings Digital Art to Market—and Catalyzes It," Forbes Magazine, February 16, 2021, https://www.forbes.com/sites/jessedamiani/2021/02/16/from-crypto-to-christies-how-beeple-put-digital-art-on-the-map-and-then-catalyzed-its-market/ ?sh=c4e93ef6a067, accessed November 17, 2021.

successful artworks. As a result, there is no substantive distinction between NFT crypto art and the NBA league's NFT star cards, and the content of NFT crypto art is identical to the images on the NBA star cards rather than the "art form" introduced by NFT encryption technology. Just a gimmick of "Non-Fungible Token".

But how can NFT crypto art and metaverse art be distinguished in value when the standards for judging artworks are no longer relevant in the metaverse art world of the Web 3.0 era? As we've shown, while NFT guarantees the value of metaverse art, it is unable to differentiate between the worth of various works of art. In actuality, the distinction in the worth of metaverse art depends solely on the creator's communication efforts, contrary to what all contemporary NFT art-related people and books imply. The value of the entire NFT encrypted artwork in the case of "Moron"'s value-added event is based on the NFT's proprietary code, while the webcast distribution of the burned original determines the precise amount of the value-added to four times and the distinction in value with other NFT artworks, and finally, the painting "Moron" itself is in the process of destroying the original and adding value to the NFT backup. It is not useful.

The first and most crucial piece of advice on how to become a crypto artist is to "speak about the process of creating art through social media or publications," according to "The NFT Revolution 2022"[18]. It is essential to completely communicate one's creative

---

[18] CRYPTO DUKEDOM, *The NFT Revolution 2022: Create, Buy, Sell And Make a Profit with Non-Fungible Tokens*, 2022. P.139

experience and concept, more so than the artwork itself. All of the successful NFT crypto artists are heavily invested in their online personas and rely heavily on social media to spread the word about their NFT artworks. For instance, "Beeple," the top NFT crypto musician, not only has a comprehensive personal homepage dedicated to him but also millions of fans on social networking sites like Twitter, Instagram, and YouTube.[19] Other NFT artists, particularly new and young NFT artists, regard social media as their first arena of conflict, in addition to NFT stars like Beeple. In the NFT crypto art scene, effective social media marketing and communication are far more crucial than the actual artwork.[20]

NFT artist Beeple's personal page: https://twitter.com/beeple

[19] Russell, Francis. "NFTs and Value." *M/C Journal* 25, no. 2 (2022).
[20] Popescu, Andrei-Dragos. "Non-Fungible Tokens (NFT)–Innovation beyond the craze." In *5th International Conference on Innovation in Business, Economics and Marketing Research*. 2021.

The value of art dissemination is elevated to a supreme position in the metaverse art in the context of Web 3.0 decentralization, while blockchain technology empowers each user. The value of a metaverse artist or artwork will entirely depend on the scope and strength of its dissemination in the metaverse. In other words, since the artwork itself no longer serves as a gauge of artistic worth, the evaluation of artistic value will only depend on the "non-art" component. The success of "Genesis" can be attributed to the "Batman" motif rather than the paintings. A more logical argument is that LeBron James' card garnered the highest price of $200,000 among the NBA's NFT cards because of James' outstanding on-court performance, not because of the quality of the photographs used to create the card. The Web 3.0 era's decentralized platform is everyone's battleground for the metaverse's artists.

It is conceivable that in the future of metaverse art, the virtual image and virtual space created and designed freely by each user, similar to the social media and personal homepages run by NFT artists today, will play a central role in the entire art dissemination in the metaverse art environment, and all art creation displays and transactions will be centered on a series of more intuitive and immersive metaverse virtual contents. With Web 3.0 empowering every user and the support of NFT blockchain technology, everything can be traded and is art, and metaverse art will form a revolution to art itself in the field of communication. With the elimination of communication intermediaries and thresholds, every user will enter the arena of metaverse art communication with an entirely equal mindset, realizing a more consistent

metaverse and We. The metaverse creative communication revolution is "decentered," intuitive, and immersive.

3.1.4. Risks faced by NFT

The recent rapid growth of the metaverse sector has also encouraged the explosive creation of digital collections all around the world. First off, according to ForeChain's Monthly Report on Global Digital Collection Trading Market, the market for digital collections has grown rapidly and transformed into a whole industry chain (April 2022). The rapid increase in interest in digital collections in the art world has prompted a number of legal difficulties. Second, because the NFT (Non-Fungible Token) transaction method alters the traditional online digital content works copyright transaction mode, its digital credentials as a digital asset, based on non-homogeneous and indivisible characteristics, etc., makes the copyright and flow of digital works more convenient. Additionally, the market for digital trading works has emerged as the most popular trend. We will unavoidably have to deal with the legal repercussions brought on by the NFT transaction model in the near future since there will certainly be more diversified and extensive application scenarios in the copyright space. Additionally, there are many differences between different countries in terms of the underlying logic, technical level, trading platform, copyright protection, etc., of digital works. These factors, along with the significant risks associated with NFT transactions, also hinder the new growth and advancement of the art market. Therefore, it is essential to identify the legal risks related to NFT transactions and carry out a forward-looking study of their impact and associated

mitigation measures.

The first is the degree of the legal significance of NFT transactions. NFT is essentially an item-specific transaction-valued certificate of interest.

Second, different places and platforms have different levels of NFT legal protection and regulation. On the one hand, while contrasting different trading platforms around the world, such as OpenSea and Foundation, there are differences in the degree of transaction difficulty. The majority of the time, the trading platform allows NFT to be free and without restrictions resold, but some platforms may be prohibited, like China's domestic NFT trading platform, which is more careful and has more restrictions. The laws governing cryptocurrencies may differ between sites. Furthermore, the laws and regulations vary greatly from one platform to another. On the other hand, NFT is governed by varied legislation depending on the region. For instance, when NFT is used only to certify digital artwork, the legal environment in the United States is more lenient; yet, when it is utilized as a security, it is more restrictive. On the other hand, in 2022, the EU released the Draft Market for Crypto Assets (MiCA) Regulation, which covered NFT as a topic of regulation. NFT is governed by many laws that vary greatly in power across various nations and regions. The degree of trading discipline, how to adhere to copyright and digital rights protection for NFT, and the legal risks connected with NFT trading are all extremely different.[21]

---

[21] Wang, Qin, Rujia Li, Qi Wang, and Shiping Chen. "Non-fungible token (NFT): Overview, evaluation, opportunities and challenges." *arXiv preprint arXiv:2105.07447* (2021).

The potential legal ramifications of NFT copyright protection are the third. Before considering the legal problems associated with NFT copyright protection, it is essential to examine the case for employing NFT technology for digital copyright protection. "The ability to protect digital copyrights is made possible by NFT technology, which can grant each digital collection in the blockchain flat a globally unique digital identity with characteristics like non-replication, non-enforceability, non-reciprocal interchangeability, and non-splittable, among others. The digital collection assets that are converted into NFT over the blockchain are open for anyone to access, trade, and track. "[22]The development of the trading of digital commodities in cyberspace is reflected in the tokenization of digital universe group items, which allows the copyright holder of digital works to choose the method of selling digital works and eliminates the previous method of proving ownership of virtual property. Because of the meta-universe, it is exceedingly difficult to pin down the perpetrators of NFT theft, and other copyright violations in this model, which results in cases of damaged works with damaged copyright but "no method to protest" and tiny adjustments to the characteristic NFT works on the shelves. Other NFT trading platforms have been found to breach NFT owners' copyright; as a result, it is now crucial to protect this property in advance, improve the platform's policies, and punish offenders.

The fourth danger is the legal risk caused by the technical risk associated with NFT.

---

[22] Fisher, Katya. "Once Upon a Time in NFT: Blockchain, Copyright, and the Right of First Sale Doctrine." *Cardozo Arts & Ent. LJ* 37 (2019): 629.

The sale of copies of digital works as digital goods under the transaction object of this model results in the transfer of property rights, not copyrights. Because only the contract is necessarily vulnerable to errors and manipulation, posing risks to both the code and the law, the smart contract, which is the main technology enabling the NFT transaction, also plays a crucial role. The scarcity of works of art and, consequently, the risk of issuing NFTs may be impacted by the independence across blockchains, which may exist in separate blocks and relate to the same NFT works.

Future studies should concentrate on defining the enabling laws, designing the legal framework for NFT transactions of digital works, and creating the underlying technology. In any case, there is reason to be optimistic about the future of the NFT trading market for digital works because both technological development and the improvement of supporting regulations always take time to sharpen.

The crypto art world that the author hopes for will open up more great creative space for art creators through the iteration of crypto technology, and closer synergy and more diverse ways between collectors and artists from different fields will make it possible for crypto art to add real value. At the same time, a broader and closer connection between crypto art creators, brands, collectors, and the general public will eventually emerge and, through the development of NFT, will continue to break down the boundaries between art and the way we live our daily lives. People will participate in the blockchain ecosystem as they never have before. "These technologies and facilities have been available to artists since the birth of the computer and communications

infrastructure. They consciously create a specific social relationship with their platform or their work. When artists are exposed to new technologies, you find artists exploring the potential of diverse human interests and experiences by making certain connections, even though they are neither necessarily utilitarian nor profitable. Artists discover the potential of their tools, devices, systems, and cultures in expression and communication, and they make difficult concepts more accessible, more readable, and more engaging. They have a methodology and a series of processes for revealing the availability of the use of a subject, media, or technology. With something that is not understood, it is about working with its possibilities, fleshing out what it looks like, and allowing others to approach and perceive it with different parts of themselves." [23]This passage from the book Re: Thinking the Blockchain may inspire how we see the future of crypto art, namely: opening our imagination to the possibilities of crypto, allowing the possibilities to take root in our paintings, music, animation, and other various art forms, allowing people to perceive, embrace and immerse themselves in them, and that the future begins now.

3.2 Metaverse Art Exhibition

3.2.1 Breaking with tradition - an art space for everyone

The metaverse and Web3.0 are inextricably linked and indispensable to each other: for Web3.0, if the metaverse composed of VR, AR, and other digital technologies lacks

---

[23] Catlow, Ruth, Marc Garrett, Nathan Jones, and Sam Skinner. *Artists re: Thinking the blockchain*. Vol. 1, no. 3rd. Torque editions, 2017.

intuitive and realistic experience, then Web3.0 can only be a technical concept in the air, which is difficult to be understood and recognized by the public, and the concept of bringing changes to the information society cannot be discussed. More importantly, for the metaverse, if there is a lack of decentralized Web3.0 and blockchain technology that provides trustworthiness for every user, then the metaverse will return to the anti-utopian image originally in Neal Stephenson's science fiction novel "Snow Crash," becoming a network of power monopolized by a certain Internet giant, as the current As the Internet and social media show, the power of speech is often held by a few. And fundamentally, Web 3.0 looks to stimulate the realization of a meta-universe based on blockchain technology and open standards, managed by computers in a global network rather than a few giant corporations, so that, as Matthew Bauer states, "Web 3.0 aims to avoid the creation of a sensationalist meta-universe"[24], in the sense that an egalitarian, decentralized The value of the Web 3.0 network for metaverse and metaverse art is by no means limited to the guaranteed property rights and transactional value provided by NFT cryptography.

In the traditional art field, from the birth of artwork to meeting with the public to its sale and collection, a series of intermediary links, such as galleries, art museums, painting dealers, and auction houses, are often inseparable. The most practical problem is that the physical space limitation of galleries and art museums, and other places make the

[24] Ball, Matthew. 2022. The Metaverse and How It Will Revolutionize Everything. New York, NY: Liveright Publishing Corporation, a division of W.W. Norton & Company

audience that the artwork can always face limited, and the scope of dissemination cannot be compared with the Internet. In addition to physical space limitations and other problems, in the old system of art display and sales, although artists retain ownership and originality of their own works and do not face the problem of reproducibility of digital art, it is difficult to have the full right to display and interpret their own works, and various intermediaries within the art system as authorities often control the means of art dissemination and the space for art value elaboration. At the same time, intermediaries with strong communication and higher visibility mean higher costs for exhibition venues and other fees, constituting a barrier to participation in art activities and preventing most artists, especially emerging young artists, from promoting, displaying, and selling their own works.

In the process of gradually transforming the blueprint of the metaverse into reality and moving towards Web 3.0 with the information society, metaverse art will completely overcome the above-mentioned obstacles. First of all, unlike real-world art galleries and other art display intermediaries, a series of online metaverse art exhibitions are now the new favorites for art dissemination that better meet the needs of NFT-encrypted art. These metaverse art exhibitions are not the rudimentary environment of the old Internet environment, which simply displayed digital artworks in the form of web pages that could be copied at will. Rather, while giving full play to the advantages of online dissemination, they draw on and continue the experience of traditional art dissemination in galleries and art museums. Based on the Web3.0 blockchain NFT crypto art market,

the Meta-Universe Art Show superimposes digital technologies such as 3D, VR, and virtual images, transforming the NFT platforms such as "Super rare" and "KnownOrigin" into web pages that better meet the requirements of the Meta-Universe. The web pages of NFT platforms such as "Super rare" and "KnownOrigin" are transformed into intuitive and immersive virtual environments that are more in line with the requirements of the metaverse. For example, the "Spatial" platform allows users to freely design and build their own metaverse art exhibition space, and then they can display their own NFT works, either created or purchased, in their own metaverse exhibition space or invite other users to join them as curators to hold their own metaverse art exhibitions. In "Spatial," artworks are no longer restricted by physical space and rent, and each metaverse art exhibition has unlimited and free display space, giving artists full creative freedom. At the same time, as a 3D virtual metaverse space, each user in "Spatial" can take on the role of his or her own virtual double and view each metaverse artwork directly in VR mode. Although the 3D and VR technology of "Spatial" is still inadequate, it is conceivable that in the future of the metaverse, metaverse art exhibitions such as "Spatial" will break the limits of physical space while perfectly replicating and even surpassing traditional art exhibitions. In the future, it is conceivable that metaverse art exhibitions such as "Spatial" will break the limits of physical space while perfectly replicating and even surpassing the interactive experience of viewing and participating in traditional art exhibitions. [25]

---

[25] SAVANNAH FORTIS,“Spatial digital art exhibitions to level up metaverse experiences”,cointelegraph,AUG 24,2022,https://cointelegraph.com/news/spatial-digital-art-exhibitions-to-level-up-metave

Scenes from the "Spatial" metaverse art exhibition.
Image source: https://spatial.io/create-your-gallery

3.2.2 Empowering every user - how the concept of decentralization is used in art exhibitions

To address the issue of discourse on art dissemination and interpretation under the traditional art system, along with the gradual spread of blockchain, thanks to the decentralized characteristics of Web 3.0, metaverse art can truly achieve equality and democratization. Under the blockchain framework of Web3.0, no authority or company can control the creation and promotion of artists, and every creator has equal autonomy in creation and promotion, which allows the creators of metaverse art to free themselves from the restrictions of the old art environment and show themselves to the world public. In "Spatial," each user has the right to create his own metaverse art gallery, which undoubtedly benefits the metaverse art creators the most. The retreat of the dissemination intermediary as the center of artistic activities in the metaverse Web3.0 framework has also driven the metaverse art creators to develop collaborative efforts, relying on social media, and many NFT trading platforms have launched their own communication groups

---

rse-experiences,accessd November 17,2022.

- artists can organize their own metaverse art exhibitions, while scientists, technology They can also unite with artists' groups in the new Web3.0 network space, instantly apply advanced technology to all aspects of metaverse art exhibitions, and add to the creation and development of metaverse art and the entire metaverse from different perspectives, fully demonstrating the inclusion and equality brought by the decentralized nature of Web3.0 to the metaverse. The flourishing of metaverse art exhibitions has also begun to force real art museums to re-examine NFT crypto art and metaverse art. For example, the Guggenheim Museum in New York is also adapting to the new trends brought by Web3.0 and NFT crypto art, trying to better understand this new phenomenon that disrupts the entire art market, and seeking strategies and ways to participate in the NFT crypto art market. [26]This shows that the decentralized and egalitarian way of art dissemination brought by metaverse and Web 3.0 is not only reflected in the virtual space online but also feeds reality through online activities, further promoting the integration and co-construction of the real art world and the twin world of digital art.

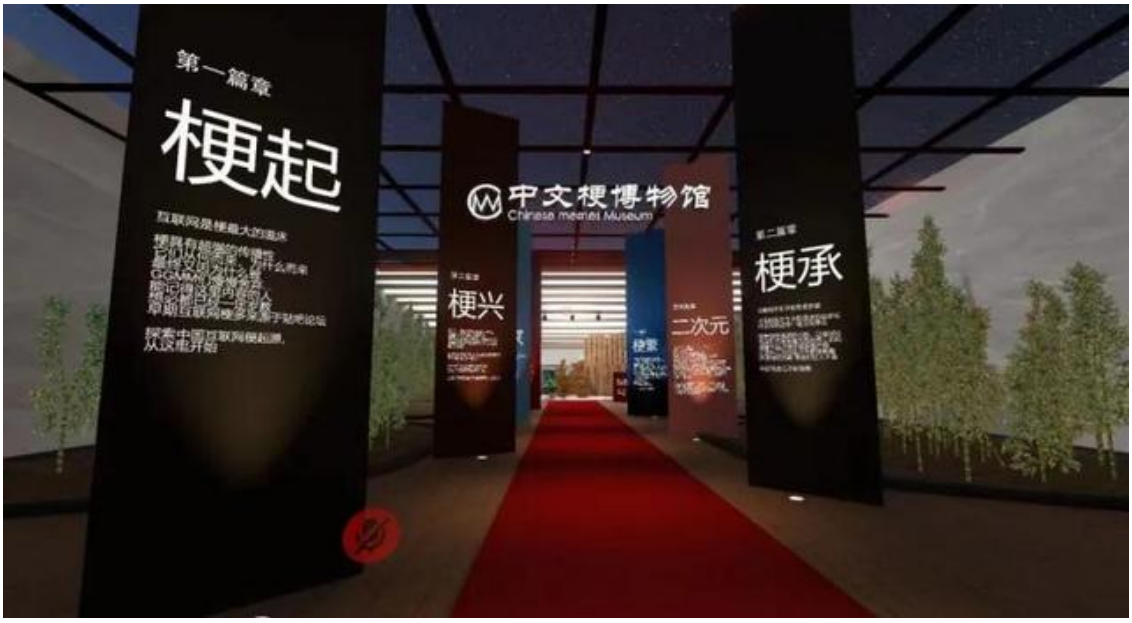
The Meta Universe Art Fair not only breaks the threshold of the old art world, provides unlimited creative space for art creators, and gives artists the autonomy to create and disseminate, but more importantly, the decentralized and globalized Web 3.0 truly empowers every user, not just art creators, with the right to create. Whether it is "SuperRare," "KonwnOrigin," and other web-based NFT encrypted art trading platforms,

---

[26] CRYPTO DUKEDOM, *The NFT Revolution 2022: Create, Buy, Sell And Make a Profit with Non-Fungible Tokens*, 2022. P.139

or "Spatial," a 3D virtual art exhibition that is more intuitive and closer to the metaverse vision, each user has the opportunity to create, display, and sell their own NFT crypto artworks with zero barriers and in an easy and fast way. But Metaverse Art's empowerment of each user does not only mean giving ordinary users the right to create "artworks," but more profoundly, it means giving each user the right to participate in defining "Metaverse Art." As we can see, in the metaverse concept, unlimited virtual spaces, virtual objects, and virtual doubles can allow users to create their own designs and trade and sell any virtual assets they create by relying on NFT to gain ownership. In "CryptoKitties," users can use the digital currency Ether to buy and trade virtual cats in the game, and they can also cooperate with other users to breed virtual cats. Although the virtual cats cannot be freely designed by users, the breeding of virtual cats is already a kind of autonomous creation with rules. It is conceivable that in a more perfect metaverse world, each user can freely create and breed virtual cats that are more vivid, have their own AI habits and personalities, and have a unique appearance, just like the "electronic pets" that became popular in the 1990s. However, who can say that the virtual cats created, nurtured, and raised by each user do not belong to the metaverse? The exclusive virtual space created by each user and guaranteed by the blockchain, as well as the virtual items and virtual pets therein, is not a metaverse art exhibition in the true sense. Even now, when the metaverse is still in its conceptual stage, the metaverse art exhibition is not the old definition of "art exhibition." In the famous VR game "VR Chat," which is one of the important prototypes of the current metaverse, Chinese video blogger "Four Traces"

In VR Chat, a well-known VR game and one of the most important prototypes of the current metaverse, Chinese video blogger "Four Signs" has brought together popular elements of the Chinese Internet and designed and produced a "Chinese Terrier Museum," where each VR Chat user can wear a VR device and enter the Chinese Terrier Museum to experience first-hand the development of Chinese Internet culture since the 21st century. Each "VR Chat" user can wear a VR device and enter the Museum of Chinese Stems to experience the development of Chinese Internet culture since the 21st century and feel the creativity of the makers in their creation. It also shows us how the Web 3.0 and metaverse era will expand the breadth and depth of metaverse art and realize deeper "equality," "democracy," and "decentralization."



Four Traces, etc., "Chinese Terrier Museum", VR Chat
https://baijiahao.baidu.com/s?id=1740928819170270132&wfr=spider&for=pc

In the Web 3.0 era, the decentralized and equal metaverse will be not only tolerant of art creators or technical workers but also of every ordinary user, and the so-called

empowerment of every user does not only mean giving the right to participate in the NFT crypto art market so that the virtual and even real "works" created by every user can be rightfully called "artworks." In other words, the "decentralization" of metaverse art is not for art but for the public. In other words, the "decentralization" of metaverse art is not for art services but for every user who will actually live in the virtual world of the metaverse, becoming a real "empowered per user."

Chapter 4 Conclusion

In the art world, the metaverse has long been a topic of interest, and people are looking forward to this new technology and concept, which is still in its infancy, expecting that the new technology will bring a new form of art and art experience. I believe that Meta Universe Art will not fail to meet people's expectations, whether in the use of new tactile technology and other artificial sensory systems to enhance the user's art experience or the use of virtual reality and blockchain technology to allow everyone to achieve "freedom of art exhibition." With the advancement of technology, people's experience of metaverse art is bound to get better and better. Just like the NFT crypto art discussed in the article, although it has experienced being pushed to the top by capital, the decentralized connotation it carries, the freedom of creation, and the new value judgment system brought by this new technology are invaluable. This kind of technology and power that can break the old system is what every creator seeks.

In accordance with the article, I will summarize the following four directions about the growing influence of the metaverse on artistic practice: 1. To foster artistic abilities that are a fusion of the actual and virtual worlds. That is to say, the working field of the future artist must be a combination of real space and virtual space; it cannot only be based on the metaphysical experience of the physical world. As a result of this encounter, artists will need to have a strong command of their artistic abilities in both the real world and the online world. 2. The beginning of art that is indigenous to the metaverse Because technical mediums are constantly evolving at a rapid pace, this will continue to be a

driving force behind the growth and expansion of artistic language. We believe that in the future, there will be an increasing number of artists who are able to master digital technology as well as art as a composite ability. These artists will become more important art workers in the art ecology of the metaverse era as a result of their ability to master both digital technology and art. They are also skilled at making use of the ecology that is produced by the metaverse to generate artwork that can be native to the metaverse as well as using blockchain and various other technologies and mediums. 3. The widespread use of technology will, going forward, continue to encourage extensive public participation in artistic endeavors. The metaverse is an online virtual environment that promotes a decentralized worldview and an economic model based on creators, with consensus serving as the primary value. When we refer to "creators" in this context, we are not only referring to professional creators and elite creators like artists but also to public creators who are empowered by technology. Because of this, the concept of artists is becoming less prevalent in the metaverse, while the concept of creators is becoming the new consensus. The revolution brought about by communication was again the topic of discussion in this article, just as it was in the one before it.

In addition, we need to pay attention to some of the crises that have been brought about by metaverse art, such as the legal risk and the intellectual crisis that have been brought about by some of the creations that fall under the category of metaverse art. As a result, in addition to focusing on the creation of metaverse art, we also need to pay

attention to the formulation of metaverse regulations. Metaverse art has the potential to become our ideal art world, but only if it is governed by sound and flawless rules.

Bibliography

Anderson, Janna, and Lee Rainie. "The metaverse in 2040." *Pew Research Centre* (2022).
Matthew Ball, *The Metaverse: And How It Will Revolutionize Everything"*, 2022, W. W. Norton & Company, New York, 2022, p. 35

Labs, Larva. n.d. "CryptoPunks." Www.larvalabs.com. Accessed December 3, 2022. https://www.larvalabs.com/cryptopunks?utm_source=nonfungible.

Zen yiguo. "批判理论，文化工业与媒体发展——从法兰克福学派到今日批判理论." *新闻与传播研究* 1 (2016): 26-40.

Horkheimer, Max, and Theodor W Adorno. 1993. Dialectic of Enlightenment. Burns & Oates.

Schneider, Tim. 2021. "'This Was a $69 Million Marketing Stunt': Why Crypto Purists Say Beeple's Mega-Millions NFT Isn't Actually an NFT at All." Artnet News. March 18, 2021. https://news.artnet.com/market/beeple-everydays-controversy-nft-or-not-1952124

Dwivedi, Yogesh K., Laurie Hughes, Abdullah M. Baabdullah, Samuel Ribeiro-Navarrete, Mihalis Giannakis, Mutaz M. Al-Debei, Denis Dennehy et al. "Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy." *International Journal of Information Management* 66 (2022): 102542.

Christiane Paul, *Digital Art*, Thames & Hudson world of art, 2015, p.32

Belk, Russell, Mariam Humayun, and Myriam Brouard. "Money, possessions, and ownership in the Metaverse: NFTs, cryptocurrencies, Web3 and Wild Markets." Journal of Business Research 153 (2022): 198-205.

Singh, Onkar. 2022. "The Key Technologies That Power the Metaverse." Cointelegraph. May 28, 2022. https://cointelegraph.com/explained/the-key-technologies-that-power-the-metaverse.

Park, Jin Young, and Yang Kyu Lim. "Metaverse-Driven Interactive Performing Arts Content Development." In International Conference on Human-Computer Interaction, pp. 329-335. Springer, Cham, 2022.

Cremer, John. 2022. "How Are NFTs Changing the Art World? From New Platforms to Famous Buyers." South China Morning Post. May 25, 2022.

https://www.scmp.com/magazines/style/leisure/article/3179074/how-are-nfts-changing-art-world-sothebys-metaverse-platform.

David, L. E. E., and Lo Swee Won. "Nft of nft: Is our imagination the only limitation of the metaverse?." The Journal of The British Blockchain Association (2022).

Das, Dipanjan, Priyanka Bose, Nicola Ruaro, Christopher Kruegel, and Giovanni Vigna. "Understanding security Issues in the NFT Ecosystem." arXiv preprint arXiv:2111.08893 (2021).

Mazur, Mieszko. "Non-Fungible Tokens (NFT). The Analysis of Risk and Return." Available at SSRN 3953535 (2021).

Pinto-Gutiérrez, Christian, Sandra Gaitán, Diego Jaramillo, and Simón Velasquez. "The NFT Hype: What Draws Attention to Non-Fungible Tokens?." Mathematics 10, no. 3 (2022): 335.

Jesse Damiani, "From Crypto to Christie's: How Beeple Brings Digital Art to Market—and Catalyzes It," Forbes Magazine, February 16, 2021, https://www.forbes.com/sites/jessedamiani/2021/02/16/from-crypto-to-christies-how-beeple-put-digital-art-on-the-map-and-then-catalyzed-its-market/ ?sh=c4e93ef6a067, accessed November 17, 2021.

CRYPTO DUKEDOM, The NFT Revolution 2022: Create, Buy, Sell And Make a Profit with Non-Fungible Tokens, 2022. P.139

Russell, Francis. "NFTs and Value." M/C Journal 25, no. 2 (2022).

Popescu, Andrei-Dragos. "Non-Fungible Tokens (NFT)–Innovation beyond the craze." In 5th International Conference on Innovation in Business, Economics and Marketing Research. 2021.

Wang, Qin, Rujia Li, Qi Wang, and Shiping Chen. "Non-fungible token (NFT): Overview, evaluation, opportunities and challenges." arXiv preprint arXiv:2105.07447 (2021).

Fisher, Katya. "Once Upon a Time in NFT: Blockchain, Copyright, and the Right of First Sale

Doctrine." Cardozo Arts & Ent. LJ 37 (2019): 629.

Ball, Matthew. 2022. The Metaverse and How It Will Revolutionize Everything. New

York, NY: Liveright Publishing Corporation, a division of W.W. Norton & Company

Catlow, Ruth, Marc Garrett, Nathan Jones, and Sam Skinner. *Artists re: Thinking the blockchain*. Vol. 1, no. 3rd. Torque editions, 2017.

SAVANNAH FORTIS,“Spatial digital art exhibitions to level up metaverse experiences”,cointelegraph,AUG 24,2022,https://cointelegraph.com/news/spatial-digital-art-exhibitions-to-level-up-metaverse-experiences,accessd November 17,2022.

CRYPTO DUKEDOM, The NFT Revolution 2022: Create, Buy, Sell And Make a Profit with Non-Fungible Tokens, 2022. P.139