



## DOSSIER TECHNOLOGICAL & CULTURAL CHANGES IN THE DIGITAL ERA

### What's Metaverse Film? Sci-fi, DAO or Digital installation?: Research on the intermediality of the Metaverse and Cinema

*O que é Metaverse Film? Sci-fi, DAO ou Digital installation?: Pesquisa sobre a intermedialidade do Metaverso e do Cinema*

*¿Qué es Metaverse Film? ¿Sci-fi, DAO o Digital installation?: Investigación sobre la intermedialidad del Metaverso y el Cine*

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**Abstract:** "Metaverse" has been gaining popularity since 2021 and the term has observably inextricable relation with cinema. But the implication of Metaverse film should be far more than a sci-fi subgenre. Following Deleuze and Manovich's discourse of intermediality analysis, this paper discusses how Metaverse influences cinema with its connotation, cultural principles as well as its technologies, argues that it may bring about a fundamental change to cinema, especially when it is integrated with video installations, which will change cinema in all aspects of its aesthetics, narrative and distribution, and explores these revolutions from both the aesthetic and material perspectives of cinema.

**Keywords:** Metaverse. Film. DAO. Digital installation. Moving image.

**Resumo:** "Metaverso" vem ganhando popularidade desde 2021 e o termo tem uma relação observável inextricável com o cinema. Mas a implicação do filme Metaverse deve ser muito mais do que um subgênero de ficção científica. De acordo com Deleuze e Manovich com a análise da intermedialidade, este artigo tem como objetivo discutir como o Metaverso influencia o cinema com sua conotação, princípios culturais e suas tecnologias, argumentando que pode trazer uma mudança fundamental para o cinema, especialmente quando integrado a videoinstalações, que mudará o cinema em todos os aspectos de sua estética, narrativa e distribuição. Este artigo explora essas revoluções tanto na perspectiva estética quanto material do cinema.

**Palavras-chave:** Metaverso. Filme. DAO. Instalação digital. Imagem em movimento.

**Resumen:** "Metaverso" ha ido ganando popularidad desde 2021 y el término tiene una relación evidentemente indisoluble con el cine. Pero la implicación de la película Metaverse debería ser mucho más que un subgénero de ciencia ficción. Según Deleuze y Manovich con análisis de intermedialidad, este artículo tiene como objetivo discutir cómo Metaverse influye en el cine con su connotación, principios culturales y tecnologías, argumentando que puede provocar un cambio fundamental en el cine, especialmente cuando se integra con instalaciones de vídeo, que cambiará el cine en todos los aspectos de su estética, narrativa y distribución. Este artículo explora estas revoluciones desde el aspecto estético y material del cine.

**Palabras clave:** Metaverso. Cine. DAO. Instalación digital. Imagen en movimiento.

### Introduction

"Metaverse" has been gaining popularity since 2021 as a concept permeating in different fields including computer science, education,



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art, media studies museums, and even finance. The origin of the word can be traced back to 1992 in Neal Stephenson's science fiction *Snow Crash*.<sup>2</sup> "Metaverse" was not only a company's new brand name (by Facebook), but also depicted as a virtual reality world created with digital technology in Neal's work, as well as accepted as "the post-reality universe, a perpetual and persistent multiuser environment merging physical reality with digital virtuality" (MYSTAKIDIS, 2022, p. 486-497)<sup>3</sup> in public. Due to the generalization of Web3.0, this term became more and more appealing in different fields.

In films, the future sights and stories of the world in Metaverse have also already been described in numerous sci-fis, such as *Matrix(1999)*, *Avatar(2009)*, *Free Guy(2021)*, *Source Code(2011)*, *Ready Player One(2018)*, etc. This subgenre has been mushrooming for decades. But nowadays, a new term "Metaverse film" is being widely adopted to describe these films in online articles and critiques<sup>4</sup>. Although the term "Metaverse" and its connotation has been in an observably inextricable relation with cinema, the implication of Metaverse film should be far more than a sci-fi subgenre. As cinema has been transformed for years by the digital technologies, becoming so-called Metaverse inventions, such as the technologies of game engine, virtual reality and blockchains. Such game engines as Unity or UE have been applied to cinema for years and been digitalized the procession, audio custom and essence<sup>5</sup>. Virtual reality, another typical technology of Metaverse, has supported a great number of 360° audiovisual works in the most famous international film festivals<sup>6</sup> in recent years; And blockchains, which has been constructing the decentralized network, has given rise to the new form of non-fungible token

(NFT) to release short videos. What's more, film shooting has also become more diversified and creative as those technologies have been more popular and coalesced. The documentary *We met in Virtual Reality* (Joe Hunting, 2022), which presented how people established romantic relationship in the virtual world, was shot in a VR social APP called VR Chat. It moved the cinema genre into an uncharted territory, winning a nomination at the Sundance Film Festival and attracted the interest of publicity.

That's why we argue that cinema is being inevitably influenced by the developing Metaverse and metaverse technologies. But all the above phenomena in the cross field of Metaverse and film have not been discussed in the category of the term "Metaverse film." Some scholars have been concerned about it and proposed that "Metaverse film" should be a term embodying the concept, content, background and technical of metaverse (ZHU, 2022).<sup>7</sup>

Above all, this paper aims at discussing how Metaverse influences cinema with its connotation, cultural principles as well as its technologies, arguing that it may bring about a fundamental change to cinema, especially when it is integrated with video installations, which will change cinema in all aspects of its aesthetics, narrative and distribution. This paper will explore these revolutions from both the aesthetic and material aspects of cinema.

## Methodology

Aiming to answer the haunting question of "What is Metaverse film?", this paper adopts a method of future media archaeology, researching the prehistory of Metaverse film in praesenti. This research underscores the materiality of media,

<sup>2</sup> STEPHENSON, Neal. *Snow crash*. New York: Random House Publishing Group, 2003. ISBN 9780553898194.

<sup>3</sup> MYSTAKIDIS, Stylianos. Metaverse. *Encyclopedia*. [S. l.], v. 2, n. 1, p. 486-497, 10 Feb. 2022. Available from: <https://doi.org/10.3390/encyclopedia2010031>. Accessed: 14 May 2022.

<sup>4</sup> Top 10 "meta-universe" movies, meta-universe science fiction films and TV. (十大“元宇宙”电影, 元宇宙科幻影视). Apr. 2022. Available from: [http://news.sohu.com/a/536112571\\_352524](http://news.sohu.com/a/536112571_352524). Accessed: 14 May 2022.

<sup>5</sup> DALY, Kristen M. *CINEMA 3.0: how digital and computer technologies are changing cinema*. 2008. Thesis (Doctorate in Philosophy) – Graduate School of Arts and Sciences, Columbia University, New York, 2008.

<sup>6</sup> p.s. Venice International Film Festival, Cannes International Film Festival, Sundance International Film Festival, Academy Awards, and Taiwan Golden Horse Awards have all set up VR and new technology video screening and competition sections from 2013-2019 respectively.

<sup>7</sup> ZHU, Jia Ming (朱嘉明). *Metaverse and digital Economy* (《元宇宙与数字经济》). Beijing: China Translation & Publishing House, 2022. 290 p. ISBN 9787500170631

examining how Metaverse technology and culture form will mutually influence cinema as a medium with its intrinsic cultural principles. In order to discuss the evolution of film in the upcoming Metaverse era, we not only zoom in on the materiality of traditional film, but also take other contemporary audiovisual arts into our scope of research as the heterogeneous origination of future Metaverse film, such as *Dragonfly Eyes* (Xu Bing, 2017), *Droning Like a Ur* (Ian Cheng, 2014), *First Supper NFT* (2021), etc. Instead of being confined in the frame of fixed theories, we accommodate a holistic perspective in order to form a critical view upon the transformation of audiovisual arts at the future Metaverse.

The intermediality analysis among film, computer and Metaverse is highlighted in our research. By comparing these media technologies, we explore the inheritance, penetration and mutual influences of media cultures, and thus explore the essence, features and possibility of the formation of Metaverse film. Gilles Deleuze's *Cinema 1: Movement-image* (1986) and Lev Manovich's *The Language of New Media* (2002) provide the major theoretical resources for this paper. As to the theoretical discussion, two terms—moving image and movement-image—need to be distinguished in the article. Moving image is based on mediality research, while movement-image is a phenomenology perspective term. Hence, both of them are used in this paper to describe the different situations.

## 1 Intrinsic Metaverse Potentials of the Film on Cultural Principles

Following computer and the related media (such as intelligent cellphone), the Metaverse media are based on an audiovisual and informa-

tion culture. That's because the technologies (VR/AR, Blockchain, Game Engine, AI, and the core hardware such as graphics cards, chips, high-speed digital communication cables, etc.) are to construct an external form of Web3.0 that is based on computing the cultural form of moving image.

According to Deleuze, "The (film) shot is the movement-image." (1986, p.22)<sup>8</sup> Similar to the shot, computer screens (ranging from the large urban screens or the small iPhones ones) are movement-images or moving images. Cinema creates a represented moving image cultural form to tell stories and organize information (RODOWICK, 1997)<sup>9</sup>. As film's inheritor, computer display developed it into a wildly technological cultural form as humancomputer interface. That's why Rodowick said "Film is the represent form of the post-moving images." (RODOWICK, 1997, p. 202)<sup>10</sup> And Manovich said, "Cinema's aesthetic strategies have become basic organizational principles of computer software. ...The window into a fictional world of a cinematic narrative has become a window into a datascape. ....In short, what was cinema is now the humancomputer interface."(MANOVICH, 2002, p. 86)<sup>11</sup> On the contrary, computer also influenced cinema with its technology and cultural forms<sup>12</sup>. Not only is it changed from a mechanical motion moving image of "equidistant film" (Deleuze, 1986 p.5) to a moving image composed of 0 and 1, but also takes an effect on narrative (e.g., *Cloud Atlas*, 2013, etc.). Meanwhile, with the digital image editing technology the landscape and characters became more variable, such as *Gemini Man* (Ann Lee, 2019). But these skills have been ubiquitous in the film industry and of great commercial value. In the era of Web2.0, "films (are) have been changing from industrial art to electronic art, and gradually

<sup>8</sup> DELEUZE, Gilles. *Cinema 1: Movement-Image*. [S. l.]: University of Minnesota Press, 1986. 264 p. ISBN 9780816614004.

<sup>9</sup> RODOWICK, David Norman. *Gilles Deleuze's time machine, post contemporary inventions*. Durham, NC: Duke University Press, 1997. 258 p. ISBN 0822319624.

<sup>10</sup> RODOWICK, David Norman. *Gilles Deleuze's time machine, post contemporary inventions*. Durham, NC: Duke University Press, 1997. 258 p. ISBN 0822319624. "Because our contemporary life is immersed in an audiovisual and information culture, cinema's ways of working through the relations of image concept have become particularly significant to our strategies for seeing and saying."

<sup>11</sup> MANOVICH, Lev. *Language of new media*. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915.

<sup>12</sup> DALY, Kristen M. *CINEMA 3.0: how digital and computer technologies are changing cinema*. 2008. Thesis (Doctorate in Philosophy) – Graduate School of Arts and Sciences, Columbia University, New York, 2008.; MANOVICH, Lev. *Language of new media*. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915.; PISTERS, Patricia. *The neuro-image: A Deleuzian film-philosophy of digital screen culture*. Stanford, California: Stanford University Press, 2012. ISBN 9780804781350.

forming tele cultural form in the gap between art and information." (DALY, 2010)<sup>13</sup>

As an upgraded version of Web2.0, the Metaverse has a cultural form similar to that of computers, especially in this initial stage of development. That's why film could be an art form of intrinsic coherence to Metaverse on cultural principles, and this inherent disposition makes it accessible to an evolution back to film. However, Metaverse has new mediality in perception model, cultural composition and technical efficiency, owing to the four core technologies: VR/AR, Blockchain, game engines and algorithms (including AI and virtual human, etc.).

VR/AR, a perception technology, is the first step for the Metaverse to develop towards a full perception system in Web3.0. In VR/AR, the screen has changed from two-dimensional to three-dimensional, so that the traditional aesthetic objects has changed into an aesthetic space. The original way of interaction between human beings and computer/aesthetic objects has been replaced. Even the most proficient users have obstacle to take charge of it. In that case, application, game, film and even dramas have achieved a super integration in an unprecedented way in VR/AR. Even so, VR/AR is still a kind of computer display (the device called Head-mounted Display"). Thus, 360° VR and AR are also a kind of variant of moving image like the traditional humancomputer interface. That's why the new media and film artists have been attracted to try on the new language of moving images. For example, Laurie Anderson and Hsin-Chien Huang are respectively artists of American experimental art and Taiwanese new media art. They collaborated to create *La Camera Insabbiata* (2017), a VR work that was awarded the Best VR in Venice Film Festival; Alejandro González Iñárritu and Ming-liang Tsai, who have won countless awards in the film festivals, directed VR works *Carne y arena* and *The Deserted* in 2017 separately and successfully. As to the mutual development,

VR/AR and film are infiltrating aesthetic and cultural principles, which will gradually appear in their narrative, audiovisual language, story and other aspects. It has been initially revealed in the documentary *We met in Virtual Reality* released at the Sundance Film Festival in early 2022: stories that took place in VR could be regarded as equal to the ones in reality.

Blockchain technology is one of the cultural constituent technologies of the Metaverse. Blockchain not only creates digital currencies, but is also constructing new rules for the web that are completely different from those of the Web2.0 era. With algorithms, encryption and community building, blockchain is constructing new decentralized and autonomous economic and cultural communities on the Internet, giving financial value to digital content and giving it uniqueness, copyright and certainty. In other words, blockchain technology is building a new type of Internet cultural ecology through the Bitcoin financial market, Ether NFT and DAO model of community autonomy organization. This is where the DAO, as a form of organization based on the Internet and computer technology, is growing and has begun to form a political structure of sorts and is beginning to expand its cultural influence. Any cultural structure is a structure about people. DAO could be recognized as a Blockchain culture representing the cultural structure of Metaverse for Web3.0, as the "participation culture" (JENKINS, 1992) for the Web2.0. The impact of the formation of new cultural structures on art, aesthetics and popular culture is enormous, especially for the Metaverse media and film. Both of them have the qualities as the moving image, so they interpenetrate each other in more ways and at a faster pace. Therefore, DAO will influence film in the similar way that participatory culture affected cinema in the past (PISTERS, 2012)<sup>14</sup>.

In terms of technical efficiency, the rapid advancement of game engines, algorithms, AI, virtual humans and other technologies has once

<sup>13</sup> DALY, Kristen M. **CINEMA 3.0**: how digital and computer technologies are changing cinema. 2008. Thesis (Doctorate in Philosophy) – Graduate School of Arts and Sciences, Columbia University, New York, 2008.

<sup>14</sup> PISTERS, Patricia. **The neuro-image**: A Deleuzian film-philosophy of digital screen culture. Stanford, California: Stanford University Press, 2012. ISBN 9780804781350.

again brought vitality to film. In the Web2.0 era, most of these technologies could still only be applied to big studios at extremely high costs to produce Fantasy films or sci-fis (such as *Lord of the Rings*, 2001-2003; *The Matrix*, 1999, etc.); in the Web3.0 era, with the development of infrastructure technologies such as chips and 5G, the rise of graphics card rate and cost reduction, the maturity of deep learning networks, big data began to be applied to model training for machine learning, and game engines are getting smarter. These technologies, which were extremely costly and difficult in the past, have now greatly lowered the barrier to entry and are even available for personal computers. This will make the special effects no longer mysterious, and the virtual shooting, as a result, automatic shooting technology of the film will also develop faster.

However, this research believes that DAO, as the cultural organization model of the Metaverse, will become the essential force of the Metaverse's influence on film, and in the model of DAO, the "Metaverse film" may be formed with a whole set of processes such as initiation, production, distribution, viewing and commenting in the Metaverse. With the development of Web3.0 and Metaverse technologies, this "Metaverse film" will form another art and popular culture form that is paralleled with film. Supported by VR/AR, algorithms, game engines and other technologies, a new set of popular culture forms and art paradigms will be formed with new media art, algorithmic art, installation art, interactive art and other art forms.

## 2 Mutual Features of DAO and Cinema: from the representational Metaverse culture to new media

According to Manovich, there are five principles for new media: numerical representation,

modularity, automation, variability and transcoding<sup>15</sup>. Through a historiographical study of the intermediality of film and computers, Manovich argues that in a broad sense, film can also be seen as an early form of computers (2002)<sup>16</sup>, which also operates on the five principles above. Metaverse is a new form of computer culture. Does DAO, which constructs the basic structure of Metaverse culture, work on the same principles summarized by Manovich?

DAO is the acronym for "Decentralized Autonomous Organization". According to Hassan, A DAO is "a blockchain-based system that enables people to coordinate and govern themselves mediated by a set of self-executing rules deployed on a public blockchain, and whose governance is decentralized (i.e., independent from central control)"<sup>17</sup>(HASSAN *et al.* 2021). Some researchers also describe a DAO as "a self-governed organization controlled only and exclusively by an incorruptible set of rules, implemented under the form of a smart contract"<sup>18</sup>, underscoring the autonomy of DAO (HASSAN; DE FILIPPI, 2021, p. 12). Another definition pays more attention to the technical feature of DAO, proposing that a DAO "represents the most advanced state of automation, where a blockchain-based organization is run not by humans or group consensus, but rather entirely by smart contracts, algorithms, and deterministic code"<sup>19</sup> (WRIGHT; FILIPPI, 2019, p. 146) And as the general languages of DAO are based on images or moving images, DAO is constructed upon four mediality: decentralized organization, algorithm-based techniques, blocky structure and iconographical form. How do these four media features of Metaverse culture coincide with Manovich's five cultural principles of new media and film?

First, the decentralization is a core attribute of DAO, which also demonstrates the organizing

<sup>15</sup> MANOVICH, Lev. **Language of new media**. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>16</sup> MANOVICH, Lev. **Language of new media**. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>17</sup> HASSAN, Samer; DE FILIPPI, Primavera. Decentralized autonomous organization. **Internet Policy Review**, v. 10, n. 2, 20 Apr. 2021. Available from: <https://doi.org/10.14763/2021.2.1556>. Accessed: 14 May 2022.

<sup>18</sup> HASSAN, Samer; DE FILIPPI, Primavera. Decentralized autonomous organization. **Internet Policy Review**, v. 10, n. 2, 20 Apr. 2021. Available from: <https://doi.org/10.14763/2021.2.1556>. Accessed: 14 May 2022.

<sup>19</sup> WRIGHT, Aaron; FILIPPI, Primavera De. **Blockchain and the law: the rule of code**. [S. l.]: Harvard University Press, 2019. 312 p. ISBN 9780674241596.



paradigm of blockchain culture at Metaverse. According to Manovich, digitization is the conversion from continuous data into numerical representation, as converting continuous data into discrete data (MANOVICH, 2002, p. 12).<sup>20</sup> These discrete samples are structurally decentralized. And their equidistant and random intervals bear a striking resemblance of the film for the 24-frames-per-second principle. The construction of the film is both structurally decentralized with multiple compositions and logically decentralized with random samples of any moments. Decentralization is not just a form of cultural organization; it is also a form of technology that is inevitably generated by the blockchain system composed of online encryption and protocols. In other words, it is both a technology that facilitates online collaboration between people in different regions and a cultural form that completely separates people in the reality spaces. In this way, decentralization is an outward expression of discreteness, and can be considered as a further cultural expansion of the discrete nature of computers. For film, the inherent decentralized feature is a predisposition to the evolution into a more thoroughly decentralized moving image at Metaverse.

Secondly, what lies behind the decentralized organizing paradigm of Metaverse culture is a structural paradigm featuring blockiness. A DAO is a blockchain-based system attributed with blockiness. Metaverse culture is structured upon DAOs, which are structurally presented as an aggregation in blocks. This structural paradigm is of a conspicuous similarity to Manovich's modularity. Modularity is another principle of new media, arguing that independent components of new media are stored and can be edited separately so that an addition or a deletion of any module does not deprive the meaning of the whole and it doesn't change the structure of the object. (MANOVICH, 2002, p. 30-31)<sup>21</sup> The macroscopic structure of film is also set upon the principle of modularity;

montage, plots and industrial stages are highly modular. With the modularity, film is also on the principle of variability, which is also a principle of new media, according to Manovich. (2002, p. 240)<sup>22</sup> In addition to the technical blockiness of the blockchain itself, the organizing paradigm of DAO is precisely a modular mode of operation with a high degree of variability. In the Metaverse, every single blockchain can be seen as a module, and the federated chains and subchains of different standards under each blockchain can be seen as a submodule. Among these modules, each DAO community built based on projects, games or virtual lands also forms its own block. These autonomously formed, autonomously governed, self-generating blocks are like building cities in the middle of the Internet; they have their own barriers, but they are also mobile and productive. This is very similar to the film communities in the Web2.0 era in the culture of participation: they have strong barriers and are productive due to the assemblage of projects. In this sense, film is an art form with the blocky structural paradigm of Metaverse culture, which is potentially prepared for a conversation at Metaverse.

Thirdly, automation is an important feature as well. Both of the decentralized organizing paradigm and the blocky structural paradigm of Metaverse culture are constructed upon the underlying operating logic of algorithm-based technical culture. Some scholars propose that a DAO "represents the most advanced state of automation, where a blockchain-based organization is run not by humans or group consensus, but rather entirely by smart contracts, algorithms, and deterministic code". (WRIGHT; FILIPPI, 2019, p. 146)<sup>23</sup> It highlights the technical feature of a DAO, which demonstrates the algorithm-based technical paradigm of Metaverse culture. Manovich considers automation as a principle of new media with the capacity of autonomously generation, and its technical foundation is algorithm. (2022,

<sup>20</sup> MANOVICH, Lev. **Language of new media**. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>21</sup> MANOVICH, Lev. **Language of new media**. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>22</sup> MANOVICH, Lev. **Language of new media**. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>23</sup> WRIGHT, Aaron; FILIPPI, **Primavera De. Blockchain and the law: the rule of code**. [S. l.]: Harvard University Press, 2019. 312 p. ISBN 9780674241596.

p. 32)<sup>24</sup> In fact, the automation of a film is not only demonstrated on the autonomous sampling of shooting mechanics, it is also inherent in both narration as well as sensation of the film. Once a film starts telling a story, the narration will be constituted in a self-sufficient state, which will not be changed by the audience's attitude, even for the director, because the characterization and the basic line of the story have been established. The story itself comes alive and will proceed with the logic of the story itself in automation. Just as a comment on Godard's cinema goes: "Rather than simply authorizing images and sounds, he witnesses the autonomous unraveling of the cinematic process - a process that includes but outstrips him." (RIO, 2005)<sup>25</sup> And the montage also inspires auto-affection (Here refers to Deleuze's "auto-affection"<sup>26</sup>), transforming perception into sensation.<sup>27</sup> In the film works, the affect constructs the characters in the story, and the process of generating subjectivity is a process of complicated physical interaction between individuals. Under the domination of affect the sensations and feelings of characters interact with each other, linking the ups and downs into a narrative synthesis. (ZHAN, 2020)<sup>28</sup> The automation of both sensation and narration of film can be compared to a pre-setting algorithm, which implies its potential for its future of algorithm-based moving images at Metaverse.

What is more, the external representation of a DAO is manifested in the form of iconography, which reveals the iconographical formal paradigm of Metaverse culture. Manovich points out from the perspective of media archaeology that a programmed machine (Jacquard's loom) was already able to synthesize images before it could

process numbers. (MANOVICH, 2022, p. 22)<sup>29</sup> This example shows the iconographical nature of programmed machines. This nature has never faded and even been enhanced in its modern successor, the computer. The iconographical paradigm is underscored in Manovich's discussion on the last principle of new media transcoding by taking the structure of computer images as an example. (MANOVICH, 2022, p. 45)<sup>30</sup> In fact, the culture of Metaverse including DAO culture is also highly iconographical due to its reliance on computer. The inner operation of DAO is fabricated in binaries, making it invisible to human users. What makes human users' access to DAO possible is the visual interface with the representation constituted by computer images. Transcoding bridges the level of representation and the level of digital data. A similar process of transcoding can also be observed in the reproduction of film. When a film is being played, it is being converted from static images to moving images with the mechanical movement motivated by cinematographe. This process also transforms one code to another, and both of them are in the form of iconography. As for digital films and special effects films, the transcoding processes are influenced by computer, and with the digital data converted into moving images, the gap between films and the Metaverse culture has been narrowed down further. The external form of iconography and the transcoding operation of film are underlying principles that makes it a potential Metaverse culture in the future.

In the Web2.0 era, "film has become a new medium" (MANOVICH, 2022, p. 50)<sup>31</sup>; in the Web 3.0 era, as proposed by Professor Zhu Jiaming, film is likely to become a "Metaverse film" with a

<sup>24</sup> MANOVICH, Lev. *Language of new media*. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>25</sup> RIO, E. d. Alchemies of thought in Godard's cinema: Deleuze and Merleau-Ponty's reviewed works. *SubStance*, v. 34, n. 3, p. 62-78, 1 Jan. 2005. Available from: <https://doi.org/10.1353/sub.2005.0047>. Accessed: 14 May 2022.

<sup>26</sup> DELEUZE, Gilles. Spinoza: Affect and idea. In: SEMINAR ON SPINOZA: THE VELOCITIES OF THOUGHT, oo., 1978, Paris. *Proceedings* [..]. Vincennes-St. Denis: University of Paris, 1978.

<sup>27</sup> RIO, E. d. Alchemies of thought in Godard's cinema: Deleuze and Merleau-Ponty's reviewed works. *SubStance*, v. 34, n. 3, p. 62-78, 1 Jan. 2005. Available from: <https://doi.org/10.1353/sub.2005.0047>. Accessed: 14 May 2022.

<sup>28</sup> ZHAN, Di (战迪). Affective turn: a possibility for film theory construction in the post-criticism time (《情动转向：后批评时代电影理论建设的一种可能》). *Contemporary Cinema* (《当代电影》), n. 3, p. 6, 2020.

<sup>29</sup> MANOVICH, Lev. *Language of new media*. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>30</sup> MANOVICH, Lev. *Language of new media*. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

<sup>31</sup> MANOVICH, Lev. *Language of new media*. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915

decentralized DAO culture and organizing paradigm as the industrial model (ZHU, 2022)<sup>32</sup>, featuring numerical representation, discreteness, variability, automation, modularity and transcoding. With VR/AR as the main bearer of moving images, this "Metaverse film" is of the aesthetics of participatory, immersive, and full perception, with extensive use of avatars as movie characters, and algorithm-driven virtual shooting to make movies automatically generated. Such a Metaverse film will become a mainstream form with both commercial and cultural significance. It will not only change cinema from an industrial and aesthetic perspective, but also change the aesthetics of cinema, and even the essence of the film.

### 3 Prehistorical Metaverse Film: In Modern Art

In Gilles Deleuze's *Cinema 1: Movement-image*, he reveals the nature of film as the movement-image, which is also an open whole relating to time and spirit instead of content and space. (DELEUZE, 1986, p. 17)<sup>33</sup> With the booming of Metaverse film, the film maintains its nature as moving image of time and spirit, yet its content and form have been inevitably influenced by Metaverse. Lev Manovich's prediction by the turn of the 21st century foreshadowed the future of films: "Directions that were closed off at the turn of the century when cinema came to dominate the modern moving-image culture are now again beginning to be explored. The moving-image culture is being redefined once again." (MANOVICH, 2022, p. 308)<sup>34</sup> The aforementioned features of Metaverse film, which are being generated and might finally be realized, are not unprecedented in other art forms, yet they have just never been a complete system like film and its industry; after all, film is the representative art form of the moving image, but not the only form. What paralleled with the traditional film industry is the non-traditional production of films. They also belong to moving images. These works are committed to

thoughtfulness rather than storytelling during the creation, and all meaningful materials can be adopted instead of having to put a large part of the cost on improving image quality only for the sake of box office. In addition, they are not bound by the viewing effect of general audiences. In that case, they are of deeper thinking and sensitivity of the times, culture, technology and the future with characteristic and meaningful aesthetic forms as well as audiovisual language. That's why we could find the trace of the prehistorical Metaverse Film in modern art rather than traditional film.

Digital audiovisual installation is an important field, as it always has intimate term with new technology of media. *Dragonfly Eyes* (Xu Bing, 2017), a famous audiovisual installation which has been completed for five years, stitched with the irrelevant surveillance footage from the Internet, is a typical work of decentralization, variability, and transcoding. Every shot was downloaded from various open surveillance video websites. Compared to traditional feature films with selected and fixed actors, there are no real "actors" in Xu's video installation. The hero and heroine have to be presented by different people in different footage, and this innovation renders the characters to vagueness and uncertainty in dispersing body representations. Due to the source of the footage, the timers of surveillance cameras and watermarks of video websites overlap the screen. These salient marks serve as the coordinates of cyberspace, reminding the audience of the fact that they are somehow digital landscapes coming from the digital world. The different salient marks indicate the multiple sources of the images, which are highly decentralized, coming from various video websites. However, as a result, the film tells a generally complete story, even though there is no essential, actual, spatio-temporal connection between the images. The cold audiovisual style, scattered narrative, the ever-changing visual elements and images of the main characters in the frame interrupt the continuity of the move-

<sup>32</sup> ZHU, Jiaming. *Metaverse and Digital economy*. Beijing: China Translation & Publishing House, 2022. 290 p. ISBN 9787500170631.

<sup>33</sup> DELEUZE, Gilles. *Cinema 1: Movement-Image*. [S. l.]: University of Minnesota Press, 1986. 264 p. ISBN 9780816614004.

<sup>34</sup> MANOVICH, Lev. *Language of new media*. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915.



ment-image cinema.<sup>35</sup> It allows the viewer to think beyond the framework of film and story to consider the essential variability and transcodability of cinema, as well as what the ubiquitous camera brought about including the power, experience, and the narration fused of reality and imagination. Besides, although this video was finalized under Xu Bing's domination, he could only mediate the story to fit the materials at hand, instead of producing the material according to a conceived story, because he could only select the materials that came from completely different institutions and they were shot and uploaded by different individuals. Hence, its production carried a great uncertainty and was a de-artist/director-centered production process. It also suggests that these digital images were stored in the cloud and has already been transcoded for a couple of times: first, the surveillance camera transcoded the received optical pictures into numerical representation, and then these digits were transformed into moving-images on the screen. These data were uploaded to the cloud and transcoded into moving-images again on the interface of the Internet. Finally, Xu's video installation has a more complicated transcoding process than traditional films including regular digital films do. This work is of a much more blocky feature due to its higher level of modularity, which makes it similar to the Metaverse culture form.

Algorithmic art is another type of audiovisual installation, which is also an art in moving images with significant variability and automation. As an early work of algorithmic art, *Data.tron* (Ryoji Ikeda, 2012) manifests the moving images generated from algorithm. In this work, strings, binary numbers, horizontal and vertical lines and arrays of flickering white dots convey mathematical beauty in extremely orderly and rigorous rhythm with mysticism. These strings were originally taken from some scientific graphics<sup>36</sup>. Ryoji Ikeda discarded these original images and deconstructed them into bytes and characters with software,

with basic elements such as sinusoidal waves and white noise. The representation of continuity is dispelled in Ryoji's work, revealing the discrete nature behind the digital content. It also decentralizes the aesthetic object in the traditional binary aesthetic structure. Yet there is no interaction with the viewer; the discrete and movement of images and sounds are generated automatically through algorithms, making it a classic work of semi-automated creation by machines that are somewhat free from the absolute control of an artist. Ian Cheng's generative arts serve as vivid examples. In his digital work *Droning like a Ur* (2014)<sup>37</sup>, the characters have their own agency, acting by themselves in infinite live simulations, and the visual manifestation is projected on a screen as moving-images. On the background of a three-dimensional dene, the "creatures" (according to Ian, they are somehow creatures) are demonstrated on the screen as human-like characters and non-human-like characters that look like faunas or floras. They interact with each other in the ways that even their creators can not understand, and the environment also changes in the response of creatures' behaviors. And if the program is reset, the procedure and the images will be different because the development of this system is random and uncertain without human control. Ian Cheng creates an ecosystem in the digital world that operates in automation and variability. The digital creatures are generative from algorithm but their actions are unpredictable. It seems that every creature is an independent individual, serving as a module that constitutes the ecosystem. They sometimes integrate with each other, float in the air, or talk to each other in English or incomprehensible non-verbal languages. Those digital creatures that dispense with the external interference gained the subjectivity, composing an audiovisual space redefining film.

To some extent, *Data.tron* challenges the conviction that the digital world is always logical. By deconstructing the meaning of the images and

<sup>35</sup> p.s. The movement-image here refers to Deleuze's movement-image in the sense of phenomenology.

<sup>36</sup> RYOJI Ikeda | datamatics. Available from: <https://www.ryojikedada.com/project/datamatics/>. Accessed: 14 May 2022.

<sup>37</sup> DRONING like a ur. Apr. 2016. Available from: <http://www.echoparkfilmcenter.org/droning-like-a-ur/>. Accessed: 14 May 2022.

breaking them into binaries, Ryoji Ikeda demonstrates the illogical side of the Metaverse, which is often ignored by digital residents. Ian Cheng also creates a series of works that could not be comprehended with one's reason. His digital creatures in the virtual world provide another possibility for artificial intelligence. The artificial intelligence is often related with exquisite calculations, expertise in a specific field and non-emotional characteristics. However, Ian Cheng also designates his illogical creatures as artificial intelligence, because they are able to make their own decisions.<sup>38</sup> Both of Ian and Ryoji create an anti-logical Metaverse in their audiovisual space.

VR is another type of audiovisual installation, and the festival has taken a keen interest in VR art due to its narrative potential. The most important feature of VR is its 360° visual space and interactive narrative language, which changes the centrality of the aesthetic object in the traditional aesthetic binary relationship and strengthens the creative value of the viewer in the aesthetic process. The automatic rendering of graphics cards and game engines conjures a new world out of the 360° works that automatically generated from machines. In interactive VR arts, the audience can interact in the virtual space instead of just accepting the projected vision in a negative way. In traditional films, the audiences are confined to the seats and only allowed to watch what has been arranged and fixed by the filmmakers. On the contrast, the subjectivity of the audience is liberated in the Metaverse film. The immersive VR film *The Hangman at Home*, the Grand Jury Prize winner of "Best VR Immersive Work" at the international Venice Film Festival 2020, is an exemplar of autonomous experiences of viewers. With the VR headset and touch controllers, the viewer somehow become an "actor" because the viewer can act in the virtual space with the avatar. There are a few triggers in the virtual space of the film, and only when triggers are touched by the viewer's avatar will the hidden scenes been

played. The viewer can explore the virtual space by themselves either forwarding or backwarding with the immersive 360° vision.

In fact, crypto art, which today is mainly in the form of images, also has the extraordinary potential to become films, as exemplified by the launch of *First Supper* NFT in 2021. The editable NFT art work *First Supper* is an image composed of 23 NFTs, including one Master and 22 Layers, and all the NFTs are encrypted with algorithms on the blockchain. The creation of the artwork is highly collective. Before the NFTs entered into market, the picture was created by 13 artists. Each layer becomes an editable module after the ownership has been passed to owners. The integrity of the image was disassembled into separated editable layers, deconstructed the centralized picture into decentralized components. The owners of each layer can change the colors, angles and other visual contents of objects. In that case, the owners actually become creators along with artists to some extent. Considering that most of the layers have more than 3 variations and there are 22 layers, we will achieve more than  $3^{22}$  possibilities, in other words, about 31.3 billion kinds of different representations in this NFT artwork, if every possibility of parameter setting were tried. (VASAN; JANOSOV; BARABÁSI, 2022)<sup>39</sup> So this artwork is actually not static if you see it in the flow of time continuance. If each of these images were played one by one with 0.01 second on the screen, it would take about 10 years to finish. In the initial stage of film, it was a series of moving-images that were slightly different from each other, demonstrating the changes or movements of the objects with the effect of visual persistence. In this sense, we can take the changing image of editable NFT artwork as a film in its infinite transformations.

The aforementioned texts manifest that the possibility of "Metaverse film" is not just an unfounded speculation. With the development and changes of technology, culture and ideologies,

<sup>38</sup> IAN Cheng, Veronica So & Lars Bang Larsen | Symposium | Mud Muses. 21 Feb. 2020. 1 video (105 min. 12 sec.). Published by the channel Moderna Museet. Available from: [https://www.youtube.com/watch?v=0EQDh\\_mSUvI](https://www.youtube.com/watch?v=0EQDh_mSUvI). Accessed: 14 May 2022.

<sup>39</sup> VASAN, Kishore; JANOSOV, Milán; BARABÁSI, Albert-László. Quantifying NFT-driven networks in crypto art. *Scientific Reports*, v. 12, n. 1, 17 Feb. 2022. Available from: <https://doi.org/10.1038/s41598-022-05146-6>. Accessed: 14 May 2022.

video art has already started some relevant experiments. They have provided experimental works for the process, narrative and style of Metaverse film, and can be regarded as a kind of prehistorical Metaverse film.

#### 4 The Future Possible Turn of Film: Metaverse Film

As Zhu Jiaming mentions, now it is still too early to define "Metaverse film" (ZHU, 2022)<sup>40</sup>, as its aesthetic paradigm and industry structure have not yet been formed, and there are even few works - most of the films discussed in this field are either films that partially use the relevant technologies or describe the related scenes, or digital video installations that have been developed over many years. These can only be considered as the prehistorical stage of Metaverse film, and the real one has not yet arrived. But for now, this article will use the concept of Metaverse film to explore how cinema will change under this new technological and industrial revolution.

##### 4.1 The Essence of Cinema: From Centralization to Decentralization

As a supreme expression of mechanism (MCLUHAN, 1964, p. 317)<sup>41</sup>, the ontology of cinema is a complex issue. It is the result of elaborate designs on machines, objects and nature by human creators, and it also presents an autonomy beyond the perception of human subjects. In Deleuze's arguments, cinema contains three parts: the movement-image, the mechanics and the wholeness.(DELEUZE, 1986, p. 21-22)<sup>42</sup> Together, the relationship of these three components constitutes the state of cinema — a reshaping of the reality scene with narrative as its central purpose.

First, on the mechanicality, Metaverse will further escalate the digitization of cinema. The part of cinema that possesses transcendence over human consciousness and control is derived from mechanicality of cinema.".....But the sole

cinematographic consciousness is not us, the spectator, nor the hero; it is the camera sometimes human, sometimes inhuman or superhuman." (DELEUZE, 1986, p. 20)<sup>43</sup>, and it is this part with transcendence is constantly changing, from the entry of sound into cinema to the entry of digital technology into cinema, cinema has changed from visual art to audiovisual art, and from optical images to digital images. Nowadays, the further integration between cinema and the concept, technology and culture of the Metaverse, as well as the future generating of Metaverse film are also the inevitable results of the autonomy of the film machines.

In the structure of DAO culture, with the support of game engines, VR/AR, AI, and algorithms, the characteristics of film as the materiality bearer of cinema are further offloaded. Film is about to moving from the semi-film-semi-digital era into the era of total digitalization. At this stage, it is not just the digital transcoding of optical images, but to complete the modularization and automation of all camera elements (including people, scenery, objects, light and shadow, color, composition). This is common in technologies of avatars, virtual shoots, AI cameras, and VR built-in shoots. An excellent example of this is *We met in Virtual Reality*. It is a documentary shot in VR Chat. The director simply turned on the camera function to enable subjective shots by using the built-in camera function of VR. All the characters in this film are real people in their nijigen(にじげん) avatars wearing helmets in VR. The emotions and behaviors are real from human beings, but the figure was transformed into an entirely new image by re-modeling in the game engine, and simplified motion capture equipment driving through the VR headset. The "virtual figure+ motion capture" technology of blockbuster movies is now being liberated and popularized once again with the Metaverse technologies, appearing in low-budget movies made by young directors. In the future, this model might also become the standard for

<sup>40</sup> ZHU, Jiaming. **Metaverse and Digital economy**. Beijing: China Translation & Publishing House, 2022. 290 p. ISBN 9787500170631.

<sup>41</sup> MCLUHAN, Marshall. **Understanding media: the extensions of man**. New York: Signet, 1964. 318 p.

<sup>42</sup> DELEUZE, Gilles. **Cinema 1: Movement-Image**. [S. l.]: University of Minnesota Press, 1986. 264 p. ISBN 9780816614004.

<sup>43</sup> DELEUZE, Gilles. **Cinema 1: Movement-Image**. [S. l.]: University of Minnesota Press, 1986. 264 p. ISBN 9780816614004.

bloggers making videos, while the more costly traditional movies have the possibility of modeling and calling all elements. In the latest released UE5, lighting and shadow effects have become a modular component that can be directly invoked by scene designers and automatically simulate real lighting effects according to the scene, and constantly alter itself to fit the changes of time and space. This all-round digitalization, modularization and automation from characters scenery and objects to light and shadow, color and composition further intensifies the variability and discrete nature of the cinema: the parts originally divided by frames and movements in the picture become a data model divided by digital infinity, and they will become even more varied if matched with corresponding algorithms.

Secondly, at the level of movement-image, decentralization will become one of the essential features of Metaverse film. Firstly, when the movement-image no longer takes human beings and the nature they touch as its inevitable object, the real and the virtual begin to achieve parity (ZHAI, 1998, p. 39)<sup>44</sup>, and the dominance of the real in culture is further reduced, which is also a kind of decentralization of the real. Secondly, traditional cinema will probably become two cinematic modes alongside with Metaverse film in the aesthetic system and popular culture, which will also promote the further generalization of Metaverse culture to various moving image media and fields of art, further structuring traditional art and cultural modes. Thirdly, due to the modularity, automation and variability based on algorithms and images as well as the advancement of VR/AR technology in the field of perception, interactive language will become a core language of Metaverse film, and participation will more fully deconstruct the traditional binary structure of aesthetic relationship, decentralizing the aesthetic object.

Thirdly, Metaverse film will be more fragmented, pluralistic, and polysemic at the holistic level.

It is because of these decentralized features that the great illusion of continuity once created through montage will no longer be the most important feature of cinema in the era of Metaverse film but will become one of the forms of Metaverse film. With pervasive production and application techniques, a de-director-centered collaborative model, a participatory, interactive aesthetic, and shot relationships with infinite variability, the narrative will no longer be centered and standardized on the continuity, fluidity, and plausibility of the story, but rather on the extremely mutual collaboration of moving images either from different blocks, or automatically generated from different algorithms, or obtained from different participants. For example, *Dragonfly Eyes* could be regarded as a prophase pattern as well as aforesaid. This work distinguished from traditional films with its wider range of choices for footage. For traditional films, the materials are limited in the footage accumulated in the duration of shooting. (MANOVICH, 2022, p. 240)<sup>45</sup> But in Xu's work, the database for selection was enlarged to the whole Internet, which brings enhanced variability to his film making. These moving-images were treated as modules and assembled into a video. Though this process is similar to the editing procedure of traditional films, *Dragonfly Eyes* is constituted of more fractured scenes, and its incontinuity could only be partly improved with the application of post-dubbing. The Metaverse film, on the other hand, may not even have a dominant figure like Xu Bing, and its narrative principles will be more based on the blockchain, the protocols of the DAO community, or the principles of algorithms and AI. This will make Metaverse film less distinctive in continuity than traditional films, but will become a new form of art, culture and entertainment.

#### *4.2 The Industrial Procession: fusion of development, pre-production and post-production*

The process of industrial film making will also

<sup>44</sup> ZHAI, Philip. **Get real**: a philosophical adventure in virtual reality. [S. l.]: Rowman & Littlefield Publishers, Inc., 1998. 256 p. ISBN 9780847689835.

<sup>45</sup> MANOVICH, Lev. **Language of new media**. [S. l.]: MIT Press, 2002. 400 p. ISBN 9780262296915.

be reshaped by the Metaverse. Just as what we have mentioned, the traditional film and the Metaverse film will be coexisting and developing in paralleled ways. In the upcoming era of Metaverse film, the traditional industrial production of film will remain, yet the film making process of Metaverse film that branches out from the way of traditional industrial film making will transform into another morphology with the participation and algorithmic supports. As a result, the existing ecosystem of film making will be reshaped for the Metaverse film. It might lead to the fusion of development, pre-production and post-production, which will blur the boundaries of the separated stages of the traditional industrial process. As a result, the film making paradigm of Metaverse film may become a production-cored integration. In the Metaverse film industry, the remaining industrial culture featuring assembly lines in film making will be displaced by Metaverse culture represented by DAO culture.

In the future of Metaverse film, the audience will no longer stay still as viewers on the seats. Instead, they might participate in the creation of the film. The NFT art *First Supper* indicates a new way of film making which involves the owners as authors of the film, and this process of creation will be ongoing forever without reaching the end. In the Metaverse era, the audiences might obtain the subjectivity in film creation. A Metaverse film might be initiated by a real person or a DAO in the form of NFTs, and the film will be pieced together with the film segments collected at the public recruitment. A community might be formed to set the rules for the film making, such as presetting the virtual hero or the main plot of the film. In that community, the closed development stage for traditional film will become an open process allowing wider participation outside filmdom. The open collaborating shooting and editing paradigm might also change the production and post-production stages into a more involving experience for the film viewers.

The technical support of algorithm will be another factor that is going to change the process of film making. The developing stage and the pre-production stage of a Metaverse film may become a semi-autonomous or even an entirely autonomous procedure based on algorithm. In the future, AI might generate a script and a series of character settings after inputting an initiative idea. The generative art based on algorithm will be infused into Metaverse film. NFT visual art work *Invisible Friends* is a series of moving-images generated from algorithm, and every single moving-image is unique. Besides, the application of AI in literary creation also suggests the possible turn of film making. Now there are already AIs that are able to generate the poems and essays, and even fictions. An AI continue-to-write APP called *Caiyun Xiaomeng* has already landed in the app stores, and this AI is able to generate the following paragraphs based on the text put in the box. The fictional works written by this AI are put on the Internet and are being read, commented and discussed by Internet surfers. The innovations in literature might also happen in the field of the film, bringing the developing stage into automation. Besides, the algorithm-based virtual technology has already entered the traditional process of production and post-production, and this technical feature will become dominant in the upcoming Metaverse film. The 3D modeled virtual humans and the 3D virtual scenes have been widely applied to sci-fi films and animations in the post-production stage of film making. These technologies will be further adopted in the Metaverse film. The AI might replace the designers' place to generate the scenes. Now there are already AIs with the ability to generate customized pictures with the given textual descriptions such as *Dall-E*<sup>46</sup> and *Disco Diffusion*<sup>47</sup>. The AI-generated scenes might be an essential part of the Metaverse film. Besides, the virtual humans might replace the human actors. There are already virtual humans

<sup>46</sup> OPENAI. **DALLE**: creating images from text. 5 Jan. 2021. Available from: <https://openai.com/blog/dall-e/>. Accessed: 14 May 2022.

<sup>47</sup> GOOGLE laboratory. Available from: [https://colab.research.google.com/github/alembics/disco-diffusion/blob/main/Disco\\_Diffusion.ipynb](https://colab.research.google.com/github/alembics/disco-diffusion/blob/main/Disco_Diffusion.ipynb). Accessed: 14 May 2022.



playing in advertisements and live streaming for the online stores. For example, a Japanese virtual model Imma was partnered with the luxury ice-cream brand Magnum in 2020, and released a series of advertising pictures and a video.<sup>48</sup> In the advertising video, Imma, a pink-haired girl, is crossing the crowded street on her skateboard with ice-cream in hand, and both her appearance and performance would not be dwarfed when compared with human actors.<sup>49</sup> Imma's performance in the video foreshadows a rosy future where the virtual idols might obtain the status of Hollywood stars and starring in the Metaverse films. Another algorithm-based innovation might be the shooting of films in the production stage. Automovision is a computer-camera allied system invented by Danish director Lars von Trier. (DALY, 2010, p. 130)<sup>50</sup> This camera can choose the best framing with computer algorithm in the duration of shooting by randomly tilting, panning or zooming the camera. Lars von Trier has already applied this technology in his film *The Boss of All* (2006).

The distribution stage of Metaverse film will also be distinguished from traditional film distribution in its more complicated copyright system and finance feature. The intellectual property rights of the NFT are still vulnerable in these days.<sup>51</sup> However, there are already attempts to vest the owners' commercial rights for NFT artworks. BAYC (Bored Ape Yacht Club) is a series of NFT art works consisting of 10,000 generative ape images which can be used as one's social media profiles. It is so popular that the cost of the BAYC has been raised from the original 0.08ETH to hundreds of ETH. What makes these digital images attractive is because the owner not only attains the access to the image, but also obtains the copyright at the same time. In that case,

the derivatives of these ape images mushroom both online and offline. Now a series of animated film of BAYC *The Degen Trilogy* is already in the pre-production stage, and it announced that its NFT owners can send their apes for casting.<sup>52</sup> The selected Ape holders in the casting will receive a license fee worth \$10,000, and the licensing agreement will be recorded on the blockchain. It foreshadows a future that a Metaverse film might come from NFT as its derivatives, and the copyrights of these films require the agreements with the NFT owners.

Pak's *Merge* (2021) provides another possibility for the distribution of future Metaverse film. *Merge* is a NFT project that kicked off the public sale in December, 2021 with 91 million USD deals, which makes Pak the living artist with the highest public sales value for a single work. The distribution of *Merge* is enlightening for the distribution of the future Metaverse film. When the *Merge* NFTs were first released at the public sale, purchasers could buy virtual balls which was in infinite supply during the public sale. A virtual ball is called a "mass". Each purchaser can buy any number of masses, but if one purchases another mass when one has already got one, the two masses will be merged into a single ball in a larger size. The visual merging process of virtual balls can be regarded as the merging of multiple films. If masses were unique film segments in the form of NFT with intellectual property rights on the blockchain, then this merging process would be the fusion of two films, creating a new Metaverse film with a shared copyright in a single NFT. This innovative way of film distribution might influence the narratology of the Metaverse film as well as its acceptance among the audience. If the future Metaverse film distributes film segments in sepa-

<sup>48</sup> MAGNUM China has partnered with Imma the most famous virtual human in Asia @imma.gram and fred & farid shanghai to launch its new flavor magnum matcha, available in china. Aug. 2021. Available from: <https://adage.com/creativity/work/magnum-china-nevers-topplaying/2277621>. Accessed: 14 May 2022.

<sup>49</sup> IMMA x magnum | cherry flavor ice cream TVCM. 26 May 2021. 1 video (15 sec.). Published by the channel Aww. Available from: <https://www.youtube.com/watch?v=eUNjwI68eNg>. Accessed: 14 May 2022.

<sup>50</sup> DALY, Kristen M. **CINEMA 3.0**: how digital and computer technologies are changing cinema. 2008. Thesis (Doctorate in Philosophy) – Graduate School of Arts and Sciences, Columbia University, New York, 2008.

<sup>51</sup> GRIMMELMANN, James; YAN, Ji; KELL, Tyler. **Copyright vulnerabilities in NFTs**. 21 Mar. 2021. Available from: <https://medium.com/initc3org/copyright-vulnerabilities-in-nfts-317e02d8ae26>. Accessed: 14 May 2022.

<sup>52</sup> AHAMED, Md Rakib. **BAYC animated film coming in 2022**. 1 Jan. 2022. Available from: <https://rakibahamed.substack.com/p/bayc-animated-film-coming-in-2022?s=r>. Accessed: 14 May 2022.

rate NFTs instead of releasing a completed and fixed final product, the audience will be allowed to merge film segments according to their wishes, which will lead to infinite possible combinations of the film. The variability of Wong Kar Wai's film *2046* (2005) provides a prospect for the final representation of a Metaverse film. There are various copies of *2046* with different footage and discrepant editions, which result in distinguishing plots since the versions are diverse when they were put on the screens or published on DVDs in different countries and regions. (DALY, 2010, p. 22)<sup>53</sup> Innumerable versions of *2046* portend the infinite variability of upcoming Metaverse film. Another possible response of the audience might be the formation of virtual film communities if they do not want to merge their film-segment-NFTs together. The text of a Metaverse film is open due to the independence of the film segments. Franz Kafka's unfinished novel *Der Prozess* (1925) can be compared to the innovative morphology of Metaverse film since it demonstrates as a vivid example of an open text. Kafka's manuscript had never been published in his lifetime, leaving the chapters of *Der Prozess* without chapter headlines or fixed orders. Only the first chapter and the final chapter can be recognized, and the order of the chapters has been debated for decades and there are various publications of *Der Prozess* in different orders. (POLITZER, 1960)<sup>54</sup> In the virtual film community, the audience might upload the film segments in their collection, and only the members of the community have the access to these moving-images. And the viewers can arrange these unordered segments in various orders, creating a narratology with more uncertainty and audience subjectivity.

### 4.3 Cinematic Economy: the Production of

#### *Art and Finance*

Traditionally the film economy has relied on the popularity of film content, its box office and post-product development. Film marketing is also directly related to the financial markets in which film companies operate. Today, several film IPs (such as *Matrix*, *Spiderman*. etc.) began to sell the elements of the films on blockchain in the form of NFT<sup>55</sup>. In October 2021 Wong Kar-Wai sold a 1:31 minute clip of Maggie Cheung and Tony Leung on the opening day of *In the Mood for Love* (2000) at Sotheby's fall auction for \$4,284,000 for its NFT<sup>56</sup>. Traditional films have entered the blockchain space by releasing NFTs; NFT works are released as short videos, motion pictures or mutable images. This affects not only the distribution field of cinema, but also the economic development model of cinema.

The film economy inherently has financial attributes. When Feng Xiaogang shot *Assembly* (2007), he signed a betting agreement with a bank<sup>57</sup>, an event that made films not only as a cultural industry project, but also a financial project. At present, although the data of a full-length film of about 2 hours is too large, no movie has been released in NFT due to technical limitations; however, this technical barrier is bound to break, and NFT projects of full films are just around the corner. So, is a film released in NFT still a purely cultural product? Obviously, the way NFT is sold determines that a film released in NFT is much more significant as a financial product than it is as a cultural product.

On top of that, individual film projects also have the potential to turn into digital currencies. Given *Merge*'s current success in the digital currency field, it is not a myth that film will become the next *Merge*. Similar to *Merge*, the infinite nature of movies comes from the infinite nature of their

<sup>53</sup> DALY, Kristen M. **CINEMA 3.0: how digital and computer technologies are changing cinema**. 2008. Thesis (Doctorate in Philosophy) – Graduate School of Arts and Sciences, Columbia University, New York, 2008.

<sup>54</sup> POLITZER, Heinz. The puzzle of Kafka's prosecuting attorney. **PMLA/Publications of the Modern Language Association of America**, v. 75, n. 4-Part1, p. 432-438, Sept. 1960. Available from: <https://doi.org/10.2307/460606>. Accessed: 14 May 2022.

<sup>55</sup> FINN, John. **World's first movie score & soundtrack for sale as an NFT**. Apr. 2021. Available from: <https://screenrant.com/triumph-worlds-first-soundtrack-nft-music-rights-ip-blockchain/>. Accessed: 14 May 2022.

<sup>56</sup> FINN, John. **World's first movie score & soundtrack for sale as an NFT**. Apr. 2021. Available from: <https://screenrant.com/triumph-worlds-first-soundtrack-nft-music-rights-ip-blockchain/>. Accessed: 14 May 2022.

<sup>57</sup> BAR, Luju. **Feng Xiaogang paid 168 million to Huayi Brothers! The history of the decline of Huayi Brothers**. 27, May 2021. Available from: <https://lujuba.cc/en/561301.html> Accessed: 14 May 2022

information, footage and frames. This means that if a movie project is placed on a blockchain, it can either be a complete, non-detachable NFT, or it can become a detachable *Merge*, and eventually even a digital currency that can be bought and sold online. It can be said that the blockchain and NFT approach opens up the monetary properties of film and brings the art and financial markets closer together.

## Conclusion

Although Metaverse film is a new term to describe a possible form of cinema art and industry, it has to be discussed at this very moment. One reason is that, due to a new round of cold winter traditional film industry has suffered, there is a need to find new ways to rekindle the industry vitality of moving image; The other one is that the concept of Metaverse involves a wide range of philosophy, aesthetics and sociology issues. Moreover, film itself has already begun changing. As mentioned above, the technology, culture and aesthetics related to Metaverse have been being combined film art. In the past, technologies such as Game engines, virtual shooting, virtual human, motion capture and others were more than expensive to be applied to the film and had a limitation on the popularity in production. Technologies, such as algorithms, AI and encryption, has higher requirements for knowledge. They are mainly applied to contemporary art rather than popular art. However, they are still steadily developing, moving forward and closely integrated with the film all along.

As the research on the intermediality of cinema, digital science and metaverse technology indicate, decentralization, blockiness, automation, and iconography could be the mutual features. These features are transforming cinema into Metaverse film. It will be much more digital, variable and discontinuity, as the film industrial replaced by Metaverse culture with the DAO culture as its representative. As to the NFT distribution form, the monetary properties of cinema would be much more manifest than before.

At this era, terms might lose their radiance

when business tide ebbs. Metaverse can be a name of a cyber world in the novel as well as that of a company. Even though it is indeed a functional term to describe the developing digital technology and the future, it might be replaced by other more accurate terms. However, the future of the digital world is coming up and moving image of film transcends time.

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