Metaverse as media: Re-evaluating gains and losses of communication

Yong Hu*, Chunyi Liu

School of Journalism and Communication, Peking University, Beijing 100871, China. E-mail: huyong@pku.edu.cn

ABSTRACT

The Metaverse foretells a new round of technological innovation and network integration in the long history of digital revolution. It will not only change the internet industry but also reshape the field of communication. Although the concept of “Metamedia” precedes the Metaverse, it accurately predicts the dialectical relationship between new media and old media in the digital age, which is always constituting, shaping and relying on each other. Based on this relationship, the Metaverse is strengthening a “communication about communication”, that is, the process of “meta-communication”. As a space for Metamedia and metacommunication, the Metaverse, with its internal mechanism and technical characteristics, recalls context and consensus, voices and speech, and at the same time reveals the reflexivity and the infrastructure nature of the media that are neglected before. At the same time, the Metaverse could be disembodied, unreal, closed and without privacy, posing serious risks to this new communication revolution.

Keywords: Metaverse; Metamedia; Metacommunication

1. Introduction

Zuckerberg’s new commercial layout suddenly pushed the concept of “Metaverse” to the stage. For a time, the historical tracing, industrial analysis and investment suggestions of Metaverse caused a huge wave like the butterfly effect however, the two most urgent questions in both academic and industry are “what is the Metaverse” and “what is the Metaverse”. The sci-fi novel avalanche, which first invented the word “Metaverse”, limits the Metaverse to “a world generated by computer: the computer depicts the world on his eyepiece and sends the sound into his headset”[1]. The Metaverse imagined by author Neil Stephenson, regardless of form and operation, is essentially a huge and overcrowded virtual world, rather than a game environment with specific parameters and goals. It is more an open digital culture operating in parallel with the physical field[2]. Inspired by Stephenson’s text, several open games and virtual worlds have been created. However, the Metaverse we are discussing today is not simply equivalent to digital games and virtual reality. From the perspective of communication, it is a “meta media” in its ambition to cover all media, it contains changes in communication mode, communication ecology and communication philosophy.

2. The Metaverse as a “Meta medium”

The term “Metamedia” was first proposed by American computer scientist Alan Kay to refer to the
media characteristics of personal computers[^3], which is intended to describe that digital computers, as a collection platform of hardware and software, recombine and reproduce the previous media forms. With the subsequent development of digital technology, this concept has also been widely used to describe digital media with integrated nature to show the availability characteristics of these new media. Therefore, some Chinese scholars interpret meta media as “media of media”, specifically referring to a new communication platform integrating Internet and mobile terminals represented by intelligent terminals such as computers, smart phones and tablets[^4]. Although Metamedia is always linked to digital media in the current academic context and is gradually known by the development of integrated media, the construction of application ecology and the proposal of Metaverse in recent years, in fact, from the connotation of “media as media”, the discussion of Metamedia should precede the emergence of digital media.

Although Allen Kay referred to digital computers when discussing “meta media”, what inspired him was Marshall McLuhan, a former media theorist in the digital age who dialectically discussed the old and new media based on power media. McLuhan once proposed that the “content” of any medium is always another medium[^5]. Therefore, the media not only refers to itself, but also refers to the relationship between “this media” and “that media”. Therefore, “re medialization” has become an effective grasp for understanding the relationship between the old and new media, that is, while the new media “remedializes” the old media, the old media can also “remedialize” the new media. This remedialization process is necessary and necessary in the formation and development of media, because “no media has isolated meaning and existence, and any media can realize its own meaning and existence only in the interaction with other media”[^6].

Mcluhan’s media thought deeply influenced Alan Kay Kai pointed out that the computer is the first meta media, because it is the first media that can copy and integrate other types of old and new media. The reason for this is that because of digitization, the ability of computers to digitize other media works makes them have a special position in the media Kay learned from reading. McLuhan that the design of new media is not a trivial matter, because the use of media itself will change the thinking mode of a person and a culture the machine. Kay wants is “designed in a way that any owner can shape and guide its power to meet their own needs. A meta media, whose content will be a series of existing and unexplored media”[^7].

We bring together different media that have not been connected before in a common digital form, which redefines the way we look at media. Lev Manovich pointed out that the modern discourse on media depends on the assumption that different media have different attributes and are actually understood as opposites. Now, when we put all media in a single computer environment, although it does not necessarily eliminate all the differences in the content that various media can express and how they are perceived, it does make various media closer to each other in many ways. An obvious example of this connection is the emergence of multimedia as a standard form of communication, and the other is the rise of common interface conventions and tools[^8]. When computers are connected to each other and become the Internet, the latter is also called “the medium of all media”-that is, meta media. In fact, all the new media emerging after the computer are meta media or “post media”. When McLuhan proposed that the content of one medium is always another medium, his mistake is to assume that the content of another medium must be the early old media (novels and plays as the content of movies; movies as the content of videos). In fact, a relatively new or even nonexistent medium may be nested in an older medium. The most obvious are science fiction films, virtual reality environments, transmission devices or brain implants that predict breakthroughs in imaging and communication technologies without exception, the invention of new media has produced a series of hypothetical future, both utopian and anti Utopian.
The concept of meta media summarizes the availability of digital media. The biggest feature of the current digital media platform is that all the previously appeared media and their communication modes can coexist in digital form. It brings together media content such as text, image, sound and video, inherits almost all the original interactive modes of mass media and face-to-face communication, including narration, debate and games, and integrates one-on-one. One to many, many to many different communication and exchange modes. In particular, with the proposal of the Internet of things, the prevalence of big data and the development of AR, VR and other technologies in recent years, natural substances, historical relics and social arrangements have been gradually incorporated into the narrative framework of meta media. From this point of view, today’s spread of the Metaverse from the business community to the academic community once again indicates that the recognized concepts of “media” and “communication” will encounter challenges again.

As a “new invention” embedded in the development sequence of digital revolution and Internet technology, Metaverse, like almost all Metamedia, as an integrated media, reduces the former mainstream media that used to occupy the dominant position of human society to secondary media and subordinate media. If the Metaverse is understood as a digital ecosystem in which the real world and the virtual world interact and are independent of each other, there will be a large number of composite application components in this digital ecosystem. These composite applications just constitute a media collection, but with the development of open source technology, the text has become writable code; With the development of immersion technology, image, sound and video have also become more realistic 3D graphics, integrated spatial voice and holographic video that blurs the boundary between virtual and reality. From this perspective, the media “ambition” of the Metaverse is that when it swallows all the independent and integrated media in the real world, its commitment to create a parallel universe for human social interaction and cultural communication instead of the real world seems to be more credible.

3. “Meta propagation” in the Metaverse

When the Metaverse changes the existence mode of traditional media and the relationship between media and media, it must mean that the Metaverse reshapes the traditional communication mode, communication purpose and the relationship between subject and object at the same time. The author believes that the internal mechanism and technical setting of the Metaverse are reinforcing a “communication to communication”, that is, the process of “meta communication”.

The concept of “meta communication” was developed by Gregory Bateson after crossing the disciplines of anthropology, linguistics, psychology, psychopathology, information theory, cybernetics and other fields. Its premise is that the communication is far from simple literal information, “human language communication can and always operates on many opposing abstract levels”[9]. Bateson identified two aspects of meta communication[10]. Firstly, people conduct meta communication on coding, that is, whenever new topics or words are introduced into dialogue and humor or irony are used together, there will be problems in the coding of communication. However, in most cases, people will find out the relevant meaning of sentences and expressions in the process of communication through repetition, rephrasing, examples, etc. Secondly, people conduct meta communication on social relations. The nature of communication is mostly clear in the process of people taking turns to speak, including opening remarks, responses, explanations, etc. only in rare cases do people find it necessary to ask questions about relationships or personal identity explicitly or directly: “Who are you?” ‘who am I?’ And, in terms of this communication, “who are we”[11].

These two aspects precisely illustrate the two hierarchical structures in the process of
communication, namely, the message transmitted by coding and the interpretation of the message by social relations. Thus, the interpretability based on the concept of meta communication can also be reflected. The formation of human self-consciousness and the construction of social relations are affected by communication, which is the so-called “we are all the products of the communication process, affected by the environment and corrected and confirmed in various ways”[12]. In general, the problem faced by meta communication is the inherent anxiety of communication about “delivery” of information, and whether the transmitting and receiving sides can be in the same context and reach the common meaning field through media and communication in the media mediated by technology and media. So what ways can meta communication eliminate the anxiety of this kind of communication? In addition to the personalized coding information given by Bateson and the judgment of social relations condensed in coding, Klaus Jensen’s answer is “genre”, that is, “relying on different genres, mass communication establishes communication relations with absent objects”[13]. The so-called genre refers to the discourse conventions carried by different media, including theme type, form composition and speech mode. In the context of traditional mass media, typology and social relations are marked and completed by genre (literature, drama, news, etc.). For example, news and advertising adopt unique norms and practices, which internally set a unique social relationship with the audience, as citizens and consumers, is expected to interpret the content as a script that goes beyond the current real-time communication and can be transformed into subsequent actions[14].

As the “post media” of mass media, digital media not only hosts the “classical” mass media such as books, newspapers, movies, radio and television, but also gives birth to new media forms such as blog, podcast, search engine and social media; It will also create media that we may not have expected at present. At the same time, it inherits the internal relationship between the genre and the mass media, and modifies the internal relationship between the genre and the mass media. As a kind of meta media, the Metaverse also needs to frame a framework to support the smooth achievement of communication based on the coding, relationship and genre of meta communication. However, the Metaverse tries to use the technological philosophy of the post cyberpunk era to answer the two eternal propositions of information arrival and meaning sharing in communication.

If you want to clarify the technical core and game mechanism of Metaverse supporting meta communication, you should go back to the source of the concept of “Metaverse”. From the current academic and industry’s combing of the historical development of the Metaverse, although Neil Stephenson did take the lead in naming “Metaverse” in the science fiction avalanche published in 1992 and was translated into “hypermeta domain” in the Chinese translation at that time[15], from the internal design and operation mechanism of the Metaverse, the text interactive game appeared in the 1970s. For example, dungeons and dragons in 1974 and colossal Cave Adventure in 1975 are more like the “pre history” of the Metaverse[16].

Dungeons and Dragons is a structured but open game. Its structure is that there is a player interpretation framework in the whole story to interpret the content of the conversation and understand both sides of the conversation. However, to play the dungeon master, he holds the right to interpret the rules of this parallel utopian world drama and supports the smooth progress of the game. Its openness lies in that, unlike other competitive games aimed at “winning”, this is a game in which participants work together to create stories. There is no clear “win” or “lose”, and the core goal is to make players have fun in it. Therefore, the publication of “dragon and dungeon” is generally regarded as the beginning of modern role-playing games and related industries. Inspired by “dragons and dungeons”, cave exploration moved the playing method of this open game from the desktop to the computer. Due to the limitation of the nature of the computer at that
time, the game had no images and music, but only words. The background, events and characters of the game were presented in words. Players also had continuous interaction with the computer by inputting words to promote the progress of the game.

From desktop interactive games to early electronic adventure games, then to the later virtual world, open games and the current Metaverse, although the media technology is more advanced, and the immersion and reality of virtual reality are more realistic, the consistent core in this sequence called Metaverse or virtual parallel world is that this is an interaction with both structure and openness. If the interactive structure and openness of desktop interactive games rely on the individual occupying the “dungeon master” to maintain and interpret the rules, and the participants create their own stories to jointly promote the game; The structure and openness of video games depend on the code written in the software by the game developer in advance, and the players can type words independently to interact with the game. Then the structure and openness of interaction in the Metaverse depend on a standardized network protocol supporting interoperability and the open source versions of various interaction spaces connected by this protocol. Through these open source versions, participants formulate the operation rules, governance methods and dispute resolution system of the whole Metaverse.

Therefore, back to the three aspects (i.e. Coding, relationship and genre) affecting meta communication mentioned above, in real society, restricted by geographical conditions, economic constraints, social structure and power relations, it is always difficult to reach agreement and unity between the two sides in the process of communication, whether it is the coding of meaning or the communication rules of interpersonal relationship, so “noise” and “Misreading” occur from time to time. At the same time, the “genre” that controls the discourse interpretation framework is always set by the media speaker (formerly a mass media organization, now a commercial Internet platform) and fixed through a series of political and economic forces. Therefore, both sides of the communication always rely on communication, cooperation and co creation at the participant level in information coding, social relations and media genre with a given understanding”. User produced content” in the Web 2.0 era will evolve into “user co created content” or even “user co created code”, “user co created relationship” and “user co created genre” through the achievement of blockchain technology and open source code. The technology with decentralization as the value core will help to build a new order of distributed decision-making and distributed communication, and help to achieve an autonomous communication order like the autonomous organization (DAO) in the virtual world “decentral”[16].

4. The possibility of the Metaverse and the “recovery” of communication

Relying on its unique genre, framework and mechanism, Metaverse has built a set of communication modes that are different from those in the previous mass media era and Web era. In communication activities, how to deal with the relationship between self and others, symbol and meaning, individual and environment has always been an unavoidable problem for every generation of media. Different media will have different bias when dealing with the above relationship due to media material, media technology and other reasons. As a kind of “meta media”, Metaverse not only absorbs different media contents and mechanisms, but also makes some adjustments or returns to the bias of the old media in the past, but also brings some new aspects to the future communication.

4.1. Context based consensus communication

Starting from the meta communication theory, the meaning of the code we use in our communication also means the meaning of our relationship. Both meanings are established in context. Context is a very subtle concept, which may
be so subtle that people who deal with information every day often ignore it. It is a set of assumptions and relationships, and information is generated based on these assumptions and relationships. It determines the uniqueness and classification of information, the importance of relationship, which indicators are used to measure and so on.

An important reason why digital media has become so popular is the emergence of the world wide web. The world wide web has become a Petri dish for the explosive growth of “digital survival”. It means that we don’t have to worry about which server we are on or which directory we can access. We can only link and consider the structure later. The principle of promoting the initial development of the world wide web is to add a protocol (i.e. HTTP protocol) to the Internet to promote open sharing. According to its creator (from Tim Berners Lee), the purpose of the protocol is to “link and access all kinds of information as a node network, and users can browse at will”[18]. Once the network provides the ability to create the environment more easily and flexibly than before, people will use it, even beyond its predetermined boundary.

Now the network has far exceeded what we see in the special “web browser”. The feature of hyperlink used to link a metaphorical “page” to another page, but various forms of open apis appear immediately, to easily and smoothly combine and mix information from many different sources. The spirit of hyperlink means that everything can relate to other things without context. For example, we can connect the enterprise resource management platform with the assembly line, connect the map software with the car, inject the radio frequency identification (RFID) chip into the pet dog, and even our sneakers can broadcast how far we ran on the global network so that anyone can see it. The network has now become an infrastructure. We regard it as nature, just like shipping or irrigation. From then on, people will always ask for the ability to link to anything they like.

In addition, these technologies enable us to create a space composed of bits rather than atoms for the first time. This space is full of various places, not only the supplement or simulation version of the physical environment. They are a new kind of place species that we visit through luminous screen devices. The problem is that context also collapses: countless contexts collapse each other into a single record. Taking video as an example, the images, actions and words captured by the lens at any time can be transmitted to any place on the earth and preserved forever. The small optical glass lens becomes the door to the black hole, absorbing all time and space - almost all possible contexts - to itself.

The loss of context faced by people in applications such as you tube is not limited to video. Whether we are spending more and more time on the intranet or Facebook. If we measure reality by the place where meaningful human activities take place, these places will no longer be just “virtual”. They are now part of our real world.

The context unbinding brought by the worldwide web has penetrated into our physical environment. The structures we identified as having daily stable meaning are now penetrated by invisible connections and actions, which often change meaning in ways we don’t understand. Especially in the era of mobile Internet, we live in an active array of digital objects, which can run our economy, determine our financial situation, arrange our travel routes, and suggest where we should eat and sleep. With the occurrence of these subversions, we can no longer confirm the basic elements of our environment. Where I am, what objects do they contain, and how do they work? Who am I, who can see me, and what am I doing? What was clear in the past has now become blurred one by one.

Is it possible for the Metaverse to liberate network participants from the context free and context free environment? The current research regards the Metaverse as a meta medium that has a transformative impact on communication. The reason is that the Metaverse has two remarkable
characteristics that can break through the original constraints of virtual reality technology. These two remarkable characteristics are: (1) the Metaverse can provide enhanced visualization and simulation capabilities; (2) Metaverse supports contextual co-occurrence[19]. The author believes that these two points will become the technical basis for the consensus communication of the Metaverse. The 3D virtual information space of Metaverse has visibility, synergy, persistence and interoperability. It provides a real-time and shared social context for integrating information resources, integrating multi-media content and realizing big data cloud computing. This social context will help to create a consensus communication based on this context.

First of all, from the perspective of the promotion of Metaverse to visual information, immersive virtual reality technology must become the key to achieve this goal “Immersive Internet” once became another understanding of Metaverse. As early as 2008, the white paper on solipsism (virtual environment system developed by France Telecom) first released the “Metaverse” from the perspective of virtual world network system. The concept of “Metaverse” is defined as “large-scale infrastructure of interconnected virtual world accessible through general user interface (browser) and immersive Internet combining 2D and 3D”[20]. From the perspective of the history of human media interaction, the ability of human beings to process multi-dimensional visual information is much older than the ability to learn and process text information. First, we can adapt to the way of displaying information with visual images in 3D real space and can distinguish in time. Therefore, when the Metaverse provides information in a way that human beings have long been familiar with and naturalized with high immersion visual standards, it will certainly provide a more efficient fulcrum for the reception, transmission and digestion of information in the Metaverse.

Secondly, Metaverse not only provides a visual information tool in social and collaborative environments, but also gives participants the ability to build and modify virtual spaces, as well as the way for them to find “others” in these jointly built spaces and interact with other participants, which represents a phased leap in the construction of social networks and knowledge networks. However, in order to achieve this ideal of communication, the basic technology of Metaverse as a global meta medium must be open and non proprietary. Some studies regard the web as the inspiration source of the open Metaverse, and believe that the Metaverse should include a “virtual world browser” similar to today’s open source web browser to browse and interact with other virtual worlds. In addition, the Metaverse should also provide 3D hyperlink function across the context of the virtual world[21].

The ideal Metaverse should be a 3D version of immersive Wikipedia. In this environment, users will jump out of the atomized and divided individuals dominated by the current business platform and become “network collaborators” sharing a higher level of situational awareness. Participants in the open Metaverse will be able to provide tens of thousands of intellectual resources for the 3D information space, and display and combine the content in a variety of formats, including text, image, animation, video, and even web pages, information and technology. All of the above contents can be immediately seen, accessed and supplemented by each Metaverse participant the influence of Metaverse society on productivity and creativity can not only promote the literary and artistic creation in the post cyberpunk era with virtual reality technology as the medium (such as the contemporary art practice in second life[22]). Moreover, it can also promote the digital generation of the public sphere. In a wider range of fields, such as the design of technical schemes, the formulation of legal rules, the decision-making of social issues and so on, it has led to the emergence of more original contents and schemes of “network collaborators”. With the technical support of meta media, it can be broadcast to the browser of every Metaverse resident at any time, to complete the synchronous construction of the social context in the Metaverse.
Metaverse must convey a constantly changing shared context or state. At the same time, we should also note that the real-time and large-scale co-occurrence of contextualization and situational needs strong computing power, which is difficult to provide in the Web era. However, some assumptions about centralized servers are not the most effective and economical scheme to maintain this contextual consensus communication even if the availability of low-cost cloud computing services is getting higher and higher, the financial and environmental costs of implementing such computing infrastructure are still prohibitive. Some studies show that the server cost required by 1.6 billion online users needs us $20 billion a year. This rough estimate does not take into account the costs of power supply, cooling and rack space, nor calculate the carbon utilization rate\[23\]. Therefore, if you want to convey every action and opinion of each avatar to everyone else in the Metaverse society, and the actions and opinions of each participant can change the social context of the Metaverse, you need a continuously updated context to enable the participants to maintain a consistent perception of the Metaverse space they live together. This will require a new round of digital technology revolution, especially the technological revolution at the infrastructure level (which has already happened in fact). Only in this way can the ideal of consensus communication not only stay at the discourse level.

4.2 Voice based speech communication

Modern society is a society based on visual media. It can be said that the “naturalized” existence, normal operation and legitimacy of modern society are all “writing”. Since the 19th century, almost every kind of “new media” has paid tribute to writing: photography is “writing” with light and phonograph is “writing” with sound. Even today’s new Internet media, which has continuously developed new technologies and created countless new terms, is also “writing” with code. Writing has completed a replacement of space and time - replacing time with space, because space is the only object that human beings can shape relative to time. Therefore, when writing media mediates the face-to-face communication before modern society, “presence” has become an “illusion” mediated by various audio-visual media. How to simulate the sense of presence in the communication mediated by various media has become the interest and mission of digital technology. Metaverse is expected to rely on sound to restore the communication advantage of speech communication in pre-modern communities.

Although some early experimental virtual environments provided voice communication, for many years, the virtual world based on Internet social mode only relied on typed text messages. With the large-scale popularization of broadband Internet and the availability of voice over Internet Protocol (voip)services, suppliers began to add voice channels to the virtual world. As two communication methods, speech and writing seem to have their own communication advantages. For example, compared with text, speech may have a greater emotional impact, and the non immediacy of text chat can help communicators better manage their self-image\[24\].

The “revival” of Metaverse on voice-based speech communication has also attracted voices with different opinions. The opposing sides can be simply summarized as “immersionists” and “augmentations”\[25\]. Immersionists believe that the virtual world is an “alternative reality” and a parallel universe independent of the real world, while enhancers prefer to believe that the virtual world is an extension of the real world and exists as a tool, platform and media of the real world the two people with opposite views once focused on the use of voice and sound in the virtual reality game second life.

After the introduction of voice chat in second life in 2007, because immersionists want to live a parallel “second life” completely separated from real life, they oppose the use of voice and believe that it will reveal their carefully hidden real identity in the game. They also believe that voice is an unnecessary intrusion of the real world into the “magical world”\[26\] identity is an important issue in the virtual world. The treatment of identity affects all links of communication, and it is no exception in the
the Metaverse. The individual in the material world exists in the form of “Avatar” in the Metaverse. The avatar is engaged in self agency, and forms the author’s narrative through selection and operation in the virtual world and the expression of self will, which is visually presented to other participants. Therefore, some participants in the virtual world attach great importance to anonymity in the digital environment, so that they can present gender, age, region and other demographic characteristics different from those in the real world. However, a person’s voice and the environmental sound that the voice may carry will not only convey, but also include the characteristics of identity politics and even class politics. Therefore, some people believe that the introduction of voice communication in the virtual world will interfere with role-playing\[27\], and break one of the purposes of individuals in the virtual world - escape from reality.

However, in some multiplayer interactive video games such as world of Warcraft, voice is warmly embraced by game players, and even in many game guilds, the use of voice is mandatory. Studies have shown that 60% of the members of world of Warcraft are using voip system, because participants generally believe that using voice services helps coordinate large teams and facilitate the achievement of strategies in a highly mobile environment. Some players believe that using voice is a way to make the connection between players more “personalized”\[28\].

For immersionists, speech communication based on sound is a kind of “accidental communication”, which will bring interference from real-world environmental sound, embarrass communication and destroy the valuable immersion feeling created by technology. Therefore, sound has become a “ghost of reality”, which constantly returns with the help of sound. It reminds the communicators of their fear, anxiety and sense of danger when communicating face-to-face in the real world the attraction of social media is precisely to provide users with a possibility to reduce the embarrassment and risk of face-to-face communication with strangers. As John Durham Peters said, “the sense of danger in the face of strangers, the history of human civilization is a long history of efforts to negotiate such dangers”\[29\]. For enhancers, since the virtual world is only a supplement to the real world, speech communication will help people expand interpersonal relationships in real life and accumulate their own actual social capital.

No matter from which standpoint, their common point is that voice based speech communication is a kind of communication that enhances the real identity and faces the “other”. It means breaking the monopoly of writing and visual media on communication. Therefore, it also partly means the breaking moment of the construction of “illusion” since modernity. Therefore, a Metaverse dream aimed at creating a fantasy gives a gap for reality to intervene through the window of sound.

4.3. Reflexive communication based on Avatar

In the Metaverse, the body in the material world exists in the form of “Avatar” after being processed by technology, digitization and virtualization. Therefore, the Avatar has become the counterpart and agent of the individual in the real society in the virtual society. The current academic definition of avatar is more as a “virtual self”\[30\], or “Extensions of our selves”\[31\]. “Avatar” was originally an Indian word, which means “manifestation” or “appearance”. It is an expression of gods entering the real world\[32\] like the original Sanskrit, the contemporary use of the word “Avatar” involves transforming consciousness into a new form In today’s cyberspace environment, Avatar has changed from being an intermediary product of the connection between gods and the real world to a technical product of the connection between individuals and the virtual world. It is a movement from human body to digital representation. In the existing virtual world and open games, people regard avatar as a tool for “socializing outward” and “exploring inward”. In the coming era of Metaverse, avatar becomes the digital
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representative of self, which is the digital expression of embodiment, and the purpose is to realize “realistic” communication in the simulated environment.

Although through the baptism of digital games, avatar is not a strange concept to us, more people’s cognition of avatar only stays in the image of self in the virtual world, so it is separated from real and intensive communication. However, with the development of virtual reality and sensory technology in the future, avatars will break through the limitations of our existing technology and present more natural and clear body expression and emotional expression. For this reason, the communication mode with avatar as the guide and medium will become a common choice for network communication in the future.

In fact, in the open game “second life”, thousands of users log in as avatars all the time, freely participate in various activities, form social relationships, and build tens of thousands of social network relationships centered on each avatar, which is very similar to the composition of social networks and social relationship networks in an international metropolis. It can be seen that avatar is not just a virtual image problem, but a relationship problem in essence. It involves how individuals deal with various relationships between themselves and avatars, between avatars and avatars, and between the real world and the virtual world.

Avatar is a kind of visual reflexion of network self. It is an important reference and way for individuals to locate self reflexion and obtain identity. It is undeniable that some people will think that avatars provide an unstable structure of individual existence. A person can have many avatars or cancel avatars at any time. Therefore, it seems irresponsible and lacks persuasion and effectiveness to regard avatars as a reflexive reference to the real self. However, we ignore that our real self is never a pre-existing entity with essential significance, and self-identity is by no means a fixed and changeable existence. On the contrary, self and identity are always the product of the continuous collision and integration of social culture and individual cognitive experience, but this process of integration and collision is often not explicit, clear, easy to self identify and self analyze. It is always necessary to mirror and reflect with the help of some events or some media before it can be recognized by itself.

The Metaverse and avatar are the mirror and medium because the Metaverse provides an open “new world”, and the avatar gives people the way to enter the new world. Then, when the real self has a virtual copy that can be created freely according to free will, its shaping and giving of avatar identity, action practice based on avatar and the development of social relations with other avatars provide us with a perfect sample of self observation and self analysis, as well as the development of social symptoms. Therefore, the author believes that the Metaverse communication activity based on avatar and node is actually a reflexive process, which includes both individual reflexivity and real social reflexivity.

Some scholars have carried out case studies on avatars and “actual operators” hiding behind avatars based on second life. It is found that incarnation is often used to cross borders, among which crossing gender, race, body and cultural boundaries is the most common attempt. A Muslim woman in real life admitted: “Because I’m not used to going out without a veil, it’s a little uncomfortable to wear casual clothes in second life. When someone in the virtual world says you look sexy, I feel something wrong”. However, after overcoming the initial discomfort, the Muslim lady began to enjoy the crossing of social and cultural boundaries. For her, second life is like a sketch book in which people can write new stories. Through the case of the Muslim lady, we can find that there is a real individual behind each avatar, in which “just as there are countless avatars in the virtual world, there are countless kinds of avatar/self relationships”.

The reflexivity of the avatar does not mean that the communication in the Metaverse only takes self
reference as the main value. In fact, the avatar in the Metaverse not only has the purpose of entertainment, game and social interaction, but also acts as the “third place” in social life. Ray Oldenburg once showed the importance of “the third place” in his book “Great Place”[35]. He regarded bars, cafes, grocery stores and other meeting spaces in the city as key places to stimulate local democracy and maintain community vitality; however, in the digital age and post-epidemic era, the space available for people to gather in real life is gradually compressed, and the “third place” can only be continued in an alternative way, while Metaverse is expected to provide the public with a community space close to real life. For example, in second life, the avatar can attend a political conference with serious social issues, or go to a live house music club after attending the political conference. In real life, people with physical disabilities can experience social activities that cannot be reached due to physical obstacles in the dance club in second life. Thus, the avatar becomes the public in the Metaverse society. It talks and socializes with others in the “third place” through virtualization and technology. Therefore, the Metaverse has the potential to form public opinion and public sphere.

4.4. Environment based multi task communication

Although Metaverse has similarities with the previous virtual world and open games, and is also embedded in the development sequence of the Internet, it cannot be completely equivalent. Jon lad off divides the whole Metaverse system into seven layers from bottom to top, namely: infrastructure, man-machine interface, decentralization, spatial computing, creator economy, discovery and experience[36]. The author believes that Metaverse is the next generation development of the Internet and a large collection of virtual world, equipment, services and software. The Internet is a broad set of protocols, technologies, pipelines and languages, plus access to equipment and content, as well as the communication experience on them so will the universe[37].

Therefore, Metaverse can be regarded as a comprehensive digital media system relying on network collection. The essence of this system is organic, interconnected, stable and circular. Through this system, an alternative form of economic operation, social organization mode, cultural production mode and human survival mode can occur. It is far more like a single media or media through the digital environment, McLuhan once said, “media is information” means that a new environment has been created, and “the environment is not a negative packaging product, but a positive process”[38].

David Deutsch’s definition, description and Prospect of virtual reality in 1997 may help us better understand the Metaverse as an environment. He believes that “virtual reality” refers to any situation that is artificially given to experience in a specific environment. For example, flight simulator is a kind of virtual reality generator, which enables pilots to feel the experience of flying the aircraft without leaving the ground. Such a machine (or, more accurately, the computer controlling it) can be programmed with the real characteristics of the virtual aircraft. The aircraft environment, such as weather or airport layout, can also be specified in the program. When pilots practice flying from one airport to another, the simulator will make appropriate images appear in the window, feel appropriate vibration and acceleration, and display corresponding readings on the instrument, etc. The proposed aircraft, mechanical failure and its impact can be considered. Therefore, the flight simulator can provide users with a wide range of driving experience, including some experiences that cannot be provided by real aircraft: the simulated aircraft may have performance characteristics that violate the laws of Physics: for example, it can cross the mountain at a speed higher than the speed of light or without fuel[39].

In the 1990s, people’s imagination and discussion of the virtual world have regarded it as a digital environment that can replace or even surpass the real environment. Virtual world technology
simulates three-dimensional Euclidean space, in which users can move and locate their specific performance as in physical space. When the Metaverse becomes a virtual environment almost equivalent to the real world, people will be located in the virtual world and the real world at the same time, which requires a management of multi communication context across different spaces, interwoven online and offline activities and identities, and developed “multi task capability” in the physical and virtual environment at the same time\(^{40}\).

As for the multi task communication that the Metaverse will bring as a media environment, some scholars believe that it will bring changes in the cognitive sense, that is, the “digital participants” growing in the digital environment will take digital technology as their mother tongue and develop a cognitive style with multi task characteristics, which is embodied in the short duration of attention in work and learning\(^{41}\). However, by recording and analyzing the text or spoken language used by avatars working together in the virtual world, some studies have found that most of the topics people communicate in the virtual world are tasks to be completed, rather than focusing on the virtual world itself\(^{42}\), which means that the virtual world, as an invisible medium, provides a feasible environment for learning and work that will not distract people’s attention.

As an environmental medium, whether the Metaverse can have the stealth effect of natural environment should be investigated from the two aspects of social presence and media richness provided by the Metaverse Social telepresence refers to the degree to which a person is regarded as a “real person” and the perception of contact with others in the process of communication through media This concept was proposed by John Schott and others in the 1970s\(^{43}\), which is mainly used to describe a characteristic of communication media, which can determine people’s interaction and communication: media with high social presence are generally considered to be social, enthusiastic and humanized, while media with low social presence are considered to be non humanized and will damage information. Therefore, social telepresence theory holds that media with high social telepresence are more suitable for communication activities of important social tasks (such as conflict resolution and relationship building)\(^{44}\) the media richness theory based on social telepresence interprets richness into four aspects: the ability of media immediate feedback, the number of available clues and channels, language diversity and attention to the audience\(^{45}\) media richness theory holds that the more information a task requires, the higher the level of richness.

One of the Inspirations of social presence and media richness to the Metaverse is that as a meta media, the Metaverse can be used as a “logistics media” to support multi task communication in the digital environment only when it has a higher sense of social presence, richer media forms, more immediate media feedback ability, more diverse media technical language and attaches great importance to the role of the audience\(^{46}\).

5. The finiteness of the Metaverse and the “loss” of propagation

As a technological innovation or the next development window of the Internet industry, Metaverse will naturally trigger a new round of capital boom and cheers from its followers. However, from the perspective of communication, when Metaverse relies on technology to bring more communication orientation, it also brings anxiety and lack of communication because of technology. Like two sides of a coin, when the Metaverse recalls the elements of context, voice, reflexivity, consensus and so on, what it delivers at the same time is body, authenticity, openness and privacy.

5.1. Physical transmission

With the launch of the new technological revolution in the second half of the 20th century, a “body turn” has taken place in many disciplines,
including communication. The body has attracted more and more attention in communication, and this attention has increased in recent years. A large part of the reason for this is that a series of digital media brought about by the new technological revolution are building a body free culture, from computers to smart phones, to wearable devices and virtual reality helmets. All these new media brought about by the digital revolution are using “remote presence” instead of “physical presence”. As some scholars said: “putting the body directly at the center of the debate is not a fashion, but a top priority, because scientists and engineers are reconstructing and reorganizing it[47].

Information technology is replacing or has replaced industrial technology as the leading development direction of modern technology. If the boundaries of technology and body are still isomorphic in the period of industrial technology, the boundaries of technology have exceeded the boundaries of body in the period of information technology. Technology “transforms a phenomenon that cannot be experienced or perceived by the body (which is actually the sensory function of the daily body) into an image function However, if these phenomena are mediated by technology or tools, they can really experience[48], and technology has a transforming effect on the body. Therefore,” without tool intermediary, there is no experience of these phenomena[49].

In the Metaverse, the body becomes the “Avatar” and the existence becomes the “electronic existence”[50]. The effective integration of data and information constitutes the real meaning of “I” in the Metaverse Lehrer believes that the history of human evolution is the most parallel of history and technology, just as Lehrer believes that the history of human evolution is the most parallel of history and technology[51]. The body and mind have both technical and cultural attributes, which are not only analyzed by phenomenology, but also endorsed by anatomy and physiology. For example, the characteristics of human digestive tract determine that people need to live a collective life[52] When “remote presence” throws the body out, what is lost is not only the symbolic information that cannot be copied by language in nonverbal communication, but also the huge cultural and moral meaning carried by the body itself.

The problem that social media wants to solve since its inception is how to realize the presence of communication under the technical premise of physical absence. As Bill Gates said in 1999, “if we want to replicate face-to-face communication, what do we need to replicate most? We need to develop a software to let people in different places meet the software can make participants interact and make them feel good, and they are more willing to choose remote presence in the future[53]. However, if the Metaverse simulates the sensory experience of the body and the physical body is still excluded from the interactive relationship, the social contract of the Metaverse space will weaken its binding force (just like the chaos and hostility we see in cyberspace today). A virtual community for the purpose of meeting others will be due to the invisibility of the body and the cultural structure behind it. It is difficult to really realize a “communication for others”.

In July 2021, Zuckerberg, who vowed to turn Facebook into a Metaverse company, looked at Metaverse like this: “it’s embodied Internet T, because you’re not just browsing content, but in it. You feel together with others and appear elsewhere, creating an experience you can’t have on 2D applications or web pages[54]. He believes that if the Metaverse eventually contains life like avatars, you can create a deep feeling of being with others. However, if such an avatar is really on the road, we will face thorny problems about how we show ourselves to others. How will these virtual versions of ourselves change? How we feel about our bodies (i.e. Whether they are good or bad)? If social media is a warning, we need to understand why avatars in the Metaverse will have a far-reaching impact on people’s feelings and lives in the real physical world.

In the Metaverse, the body is always a balance
that needs to be carefully maintained: the avatar technology must take a fine route, which should not only maintain enough authenticity to be faithful to people’s identity, but also not threaten the mental health of the people behind the avatar.

5.2. Real communication

In the current reality, digital tools for creating a virtual alternative space in cyberspace can be seen everywhere, not only the creation of avatars with reference to the real self mentioned earlier, as well as the intertextual relationship between avatars and the real self, but also the maturity of VR and AR technologies in recent years, making immersive experience an increasingly daily and experiential reality. It is precisely because of these new technologies that constantly appear around the sense of reality and immersion that the Metaverse has a meaning of “critical mass” in the sociological sense. Therefore, the experience of using virtual avatars to enter virtual reality has gradually become the same as all the exploration and transcendence of the real world with the help of avatars in human history (such as novels, dramas, etc.), accompanied by the pursuit and obsession of reality.

Realism has been regarded by many researchers as the key and core component of the successful operation of the Metaverse to achieve this sense of reality, we do not only need to seek a kind of imitation of reality in the virtual space and immerse users in mind and emotion through sensory technologies such as vision, touch, hearing, smell and taste, but also need to achieve a universality, that is, the user’s virtual identity or collective role remains unchanged in the transformation process within the Metaverse. At the same time, in terms of interoperability, it is also necessary to seamlessly exchange information between different systems or platforms, so that users will not have gaps and space for the sudden return of real ghosts in the Metaverse.

However, the imagination of technology is much more sensational than that discussed above the maturity of brain computer interface and the invention of brain implants in the future will greatly increase the possibility of controlling the mind, so realism is no longer a “harmless” action that only needs to wear VR glasses, but has become a posterity proposition that “man becomes the last extension of the media”.

The more emphasis and weight the Metaverse and virtual reality technology give to the sense of reality, the more it is suspected of “trying to cover up”. Because virtual reality is trying to replace the “reality” we get from real experience with a “quasi reality”, and in the face of this exchange, we are often unprepared and willing to compromise. After all, as Negroponte said in his book “digital survival”: “virtual reality can make man-made things as realistic as real things, or even more realistic than real things” at the same time, this realism is a quiet to evasive technical mechanism, just like the two concepts of “pervasive computing” and “calm technology” proposed by American computer scholar mark Viser in his article to illustrate that the future information technology will have three main connotations of “disappearance”, “invisibility” and “embedding”. In the era of pervasive computing, media will exist everywhere and deeply, and computers will be “quiet” and invisible. The function of human-computer interaction will not interfere with people. Therefore, we will relax our vigilance against the intervention of media. As a more universal network collection, the Metaverse has a higher level of computing power, so the evasion of media intervention will only be better.

We need to be very vigilant that the new “military industrial complex” will impose an implantable surreal world on others. After all, as the real world becomes more and more scary, the surreal world may become more and more attractive. When the alternative reality replaces the whole reality of human groups, the power to manipulate the alternative reality has the power to make others believe almost anything. The worst case of this power is virtual slavery. In this case, our equipment and platform will control everything we see and secretly control our behavior. Therefore, we lose the freedom of thought and the freedom to have our own
views and any spectrum we want. There is a real danger here because metaverse technology is much more powerful than television or the Internet, and will be doubled. Therefore, when the Metaverse quietly enhances the sense of reality through virtual reality technology, the real life experience of human beings in real space will be transformed into the interface of digital information, and man-machine integration is likely to announce the collapse of human subject, as Foucault said: “People will be erased, like a face on the sand by the sea”[58].

5.3. Open communication

Although the concept of Metaverse was put forward by science fiction writers in the 1990s, it ceased to exist and became unknown in the next two decades. Instead, it was dominated by its adjacent concepts such as virtual world, open game, holographic Internet and so on. It was not until 2018, when the film “player No. 1” was released, that the concept of Metaverse was brought back to the forefront of discussion. However, people see the “open” side of the film or the “open” side of the universe.

Metaverse in avalanche and oasis in number one player are dystopian nightmares. They are all controlled by a single entity. Although there will be some cooperation, most companies investing in the creation of Metaverse will inevitably seek the dominant position often described in science fiction. Companies led by meta are actively building different versions of social technology that they believe will constitute the future. This brings us an extremely important question: will there be only one Metaverse? And how to conduct Metaverse governance?

Zuckerberg admitted in his open letter: “the Metaverse will not be created by one company. It will be built by creators and developers to create new experiences and digital projects that are interoperable and unleash a huge creative economy beyond today’s platforms and their policy constraints”[59].

We are very familiar with the script. That’s what the giants said in the face of the open Internet. The final development result is that their business model is based on the formation of scale and squeezing competitors, while keeping their most powerful asset user data in a walled garden.

Although VR, AR and other multimedia technologies make the Metaverse have a better sense of experience at the use level, the development of technology alone can not solve all the problems in the Metaverse, because multimedia technology can not ensure the transparency, stability and sustainability of the digital economy behind the Metaverse. Just as the current digital economy is operated centrally by platform companies relying on monopolizing user data, this also means that the digital assets in the Metaverse may actually belong to platform operators rather than users.

There was a scandal named copyboy in second life. A community group named LIBS second life has been carrying out reverse open source engineering for users in second life. The original intention of the project is to help users create a more intuitive and customized programming interface. Unfortunately, the team has developed a software code called copyboy, which can generate copies of all target objects in second life, including avatars, buildings, cars, clothes, etc. Therefore, copyboy seems to have the power of God. It can search virtual characters from the grid of second life at will and store them in the library for future use. As a result, many content creators in the virtual community have erected countless high walls to prevent suspicious objects from entering. Therefore, the whole virtual economy in second life is almost facing collapse. This scandal shows that the openness of the Metaverse is bound to be troubled by the ownership of digital assets.

In addition, when large companies and capital intervene in second life, there will be a squeeze on the open and creative space. These large companies blindly regard the virtual community as a tool to promote their products, so the novel aircraft created
by users are replaced by Toyota’s proportional model, and the burning jet boots are replaced by Adidas’s virtual sneakers\(^60\). The invasion of these commercial companies from the physical space of the old world destroyed the original intention of second life to establish a new world.

Openness is the key word for the rapid development of the Internet at every stage since the digital revolution The Internet is successful (and still in operation) because it is open and its design is decentralized Hundreds of millions of servers and devices can not only run the infrastructure, but also allow access to the rich experience on it This does not mean that everything can run anywhere, but it does mean the existence of a standard participation model.

Take the web as an example. In the spring of 1993, all users of the web could obtain the technology hiding behind without paying any fee. Two and a half years later, Netscape triggered the revolution of the Web era with its landmark IPO. Ten years later, more than 11.5 billion publicly indexable web pages have emerged in the whole network\(^61\).

Interoperability is the key idea that the Internet exists in countless servers, because those who have great foresight in how people should share information have established a set of interoperability standards at an early stage, such as: how do we share data packets? How do we ask for information? And how do we place the content? All these are necessary components for the establishment of the world wide web. In the Metaverse, we will need the same thing. This does not require every three-dimensional world to be interconnected, but it is important that the way to share things and obtain content between them is standardized.

Matthew Bauer, a venture capitalist, takes “unprecedented interoperability” as one of the defining features of the Metaverse\(^62\) this attribute of “unprecedented” actually points out a reality: we live in an era from open Internet to platform dominated Internet, and the largest technology platform has little interoperability. If the future Metaverse, like today’s digital platform, continues to be ruled by a single, monopolistic and unimaginative commercial company, and we are unprepared and blindly follow it, without thinking about the coding values behind the Metaverse and without analyzing the platform rules governing the Metaverse, then the Metaverse will not promise us a more open communication environment. It will eventually become a new territory for some business giants to transfer the current dilemma of Internet development and find capital accumulation.

5.4. Dissemination of privacy

It means that we must take the digital data as a form of living in the future, which means that we must exist in the universe in a wide range of ways. At that time, data and information security and privacy issues will certainly become the focus of the tripartite game between users, platforms and the government.

For the current Internet platform, whether Tencent, byte beating or meta, the biggest attraction of the transformation. Metaverse is that when users are active in a highly digital, self-contained and all inclusive environment, the granularity of the available data is more than one order of magnitude higher than that of the current interface based interaction. Because for the interface-based media platform, the more explicit network activities such as user clicks, comments, sharing, sliding and staying are the data resources that can be absorbed and utilized by the algorithm. However, when the Metaverse completes the full sensory encirclement of users based on multimedia technology, it also builds a channel to the human subconscious. At that time, not only what we watch and how long we watch, but also subtle physiological reactions, psychological changes and emotional fluctuations will be recorded and transmitted digitally, which is a huge intangible asset for platforms and advertisers.

Compared with the old Internet, a key difference is that the embodied Internet of Metaverse needs new sensors to monitor us when we browse, interact and move around the world the demand for
new sensors seems to be insatiable. Take Facebook as an example, each generation of Facebook hardware will add more sensors. The core of various versions of Oculus VR helmet recently is “Oculus Insight”, which is an artificial intelligence tracking system. It uses three types of sensors: sensors that track the direction and movement of the helmet and controller, four built-in helmet cameras that map your room, and LEDs in the controller tracked by the helmet. All these will be fed back to Insight, helping it “track your position and environment in real time with submillimeter accuracy”. Oculus controller now includes capacitive sensor, which can finely detect the movement of your fingers. Oculus also integrates with your mobile phone and other devices for heart rate and health tracking. Zuckerberg hinted and demonstrated the face and eye tracking function of the future Quest/Cambria model, and the recently leaked information of Quest Pro shows that there is also a fingerprint sensor. In the parallel world of augmented reality, Facebook’s smart glasses include a camera for taking photos/videos and a microphone for answering calls. Adding more sensors and cameras is equivalent to increasing the amount of self-centered data Facebook can collect.

For Metaverse, the biggest ethical risk lies in the illegality of data acquisition and mining of users by the platform. The data traces left by users on the platform can be divided into active data and passive data. Active data is the data left by users when they actively click, comment and forward on the platform. They are the traces left by users when they use a platform. Different from active data, it is passive data, that is, personal information such as geographical location, social relationship, voice and face that users do not know or voluntarily leave when using platform products although each platform will also display “user informed consent” and provide access to personal information by closing the platform, in the commercial platform adhering to technical instrumentalism, due to the “black box” of data capture and algorithm mechanism, there are still a lot of uncertainties in data acquisition means and data privacy processing.

The current Internet platform is still like this. It is hard to imagine that when we step into the Metaverse with the good wish of creating “second life”, the personal information we try to escape and hide in the real world is recognized and even utilized by increasingly sophisticated technology, so that when human brain interaction can obtain the individual’s subconscious, the platform not only knows the most unspeakable secret of each individual. Moreover, it can touch the “I” that can not be fully reached by the “self”. In this case, the cost, risk and harm that the platform led Metaverse may bring to individuals will be much more serious than we thought.

In the data, privacy and ethical issues of Metaverse, in addition to the tension between users and platforms, the government is also a key power subject. With the construction of digital government and the modernization of national governance, China’s commercial Internet platform has become an important cooperation and intervention object for the government to promote digital government and digital governance. The arrival of COVID-19 in 2020 makes this cooperation and intervention faster than expected. In the post epidemic era and the next stage of Internet development, the intertwined relationship between Metaverse and the government will be closer, and its data integration function will help national digital governance at a new level, which will also put forward higher requirements for the government’s digital negotiation ability, the grasp of the scale of data openness, and the balance between national governance and personal privacy.

6. Conclusions

Like every time people cheer and embrace technology, the birth of the Metaverse leads to the prospect and conjecture of the new world. However, digital survival has been put forward for more than 20 years. Since the information revolution, all the glory and defeat have been shown to people. There is no doubt that the development of multimedia technology endorses the possible transformation brought by the Metaverse to communication. To
some extent, it answers the anxiety of communication about “delivery” and “delivery” from beginning to end. At the same time, it also tries to alleviate this anxiety by recalling sound, constructing context and shaping avatar. However, “recovery” is often accompanied by “recovery”. Body, reality, privacy, data, etc. May become a time bomb planted by the Metaverse for human society.

Even though some people swear that the Metaverse is a world parallel to the real society, some scholars have found that the virtual world policy will deeply affect the policy in the real world[64]. Then we need to ask further questions: which technology companies will write the framework and agenda of the future Metaverse, and to what extent will users decide? Can the agendas prepared by these technology companies solve the real contradictions and conflicts we face in the real world? For example, how a global Metaverse system respects the laws and customs of different countries and nations. For example, technology companies that urgently need to get rid of knowledge arrogance and technology supremacy, how to reflect on the values contained in the code behind the Metaverse. How can we ensure that the Metaverse is not ruled by a single, unimaginative company. We can’t complete this kind of agreement with the devil’s attitude of technology and society at the same time.

**Conflict of interest**

The authors declare no conflict of interest.

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