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Meta-Universe Entertainment Ecology: Technology-Driven Immersive Entertainment Paradigm Shift and the Dilemma of Technological Alienation

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Abstract. With the rise and iteration of the concept of "meta-universe", the entertainment communication model is undergoing a fundamental change - from the traditional one-way transmission to a multi-dimensional form that emphasizes immersive experience, interactive participation, and content co-creation. Taking the entertainment ecology in the meta-universe as the object of analysis, this paper explores the complex relationship between technological empowerment and individual subjectivity in this context. By integrating the composite perspectives of philosophy of technology, political economy of communication, and critical theory, and combining the research methods of literature combing and comparison of historical evolution, this paper attempts to deeply reveal the development logic of technological alienation and its reshaping mechanism of user subjectivity. The study points out that although the meta-universe environment provides users with avatars, content production tools, and highly personalized algorithmic systems that enable them to have a dual "production-consumption" identity. However, at the practical level, users gradually fall into a technical alienation process consisting of an induction mechanism, demand domestication, cognitive construction, and structural locking, and the dissolution of subjectivity presents the characteristics of "spiral alienation". Based on this, this paper advocates that in the future development of meta-universe technology, a dynamic balance should be found between algorithmic transparency, clear data ownership, and the improvement of users' digital literacy, in order to realize a synergistic symbiosis between technological applications and human subjectivity, so that the meta-universe can truly become a new type of space that stimulates individual creativity, rather than a technological system that progressively weakens self-awareness.

Keywords: Metaverse entertainment, Technological alienation, Subjectivity dilemma, Immersive interaction.

1. Introduction

The iteration of media technology has pushed the entertainment paradigm from unidirectional transmission to immersive interaction, and the identity of people participating in entertainment has

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been transformed from consumers to producers and consumers due to technological empowerment. Yet technology comes with its own ideology and is not a neutral tool [1]. In recent years, the deepening of technological applications and the emergence of meta-cosmic forms of entertainment have brought the issues of technological alienation and the dilemma of human subjectivity to the fore. Fewer existing studies have examined the most fundamental and systematic interconstructive backlash against technological alienation and subjectivity dilemmas in the context of meta-cosmic entertainment [2,3]. Based on this, this study deconstructs the underlying logic of the metacosmic recreation's reshaping of human subjectivity, and the problem of subjectivity dilemmas brought about by the behavioural and rights dimensions. The exposition integrates multiple perspectives such as philosophy of technology, political economy of communication, and critical theory, complemented by a historical-comparative approach for systematic analysis, We also constructed a 'four-stage spiral alienation model', which reveals the deep-seated mechanism of the inter-constructive backlash between technological alienation and subjectivity dilemma, and has certain inspirational significance for the reconstruction of subjectivity in the digital era.

2. Technological evolution drives meta-universe entertainment paradigm shift

Metaverse - a term that first appeared in the science fiction novel Snow Crash to describe a virtual space parallel to the real world [4]. Users are free to traverse and interact in this network. With the development of Virtual Reality (VR), Augmented Reality (AR) and other technologies, meta-universe is now mostly used to describe a virtual world that is open, persistent and multi-user. The rise of the entertainment industry in the metaverse, a virtual shared space parallel to the real world, is essentially a product of the evolution of digital technology. From the flat interaction of Web 2.0 to the paradigm leap of immersive meta-universes, technological evolution has reconfigured the underlying logic of the entertainment industry through three paths: the iteration of media infrastructure, the topology of perceptual dimensions, and the reshaping of subjects' cognitive frameworks.

2.1. Iteration of media infrastructure: from “information conduit” to “embodied field”

In the context of the rapid development of digital technology, artificial intelligence, big data, blockchain and other technologies have gradually matured and been used in various fields, providing solid technical support for the rise of the meta-universe entertainment industry, while breakthroughs in virtual reality technology have provided users with a better sense of immersion and interactive experience. From McLuhan's theory of “the medium is the message”, the medium itself affects society more than the specific content it conveys [5]. The media is not a passive carrier of content, but actively shapes the way information is interpreted and social relations. The technical architecture of the traditional Internet as an “information pipeline” is limited to the disembodied interaction mode of “click-feedback”. The media infrastructure of meta-universe “remotely projects” the user's biological body to the virtual field through VR/AR technology, forming a “cyber-format body presence”, and the UGC content becomes a tradable NFT through blockchain technology [6]. The breakthroughs in technology allow users to realize a topological shift from “pipeline” to “field” in their access to information. Gradually, from flat interaction to immersive meta-universe paradigm. Technological breakthroughs have enabled users to realize a topological shift from “pipeline” to “field” in their access to information. Gradually, we are moving from flat interaction to an immersive meta-universe paradigm.

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2.2. Perceptual dimension topology: from visual hegemony to multimodal immersion

In his Phenomenology of Perception, Merleau-Ponty states that the perceptual world presents itself as a field state of dynamic interaction between the body and the environment [7]. That is to say, the human body constructs a perceptual world through interaction with the environment. Similarly, through multimodal perception technology, the metaverse liberates human beings from the cognitive cage of “vision-centrism” and builds a perceptual world for human beings. For example, haptic feedback suits (e.g. Teslasuit) realize force feedback through electrical stimulation, so that the “sense of impact” of virtual fighting games can be perceived by the user. The topology of the perceptual dimension makes the user's entertainment experience no longer “watching” the world, but “participating” in the world. Kevin Kelly argues that technological elements have an evolutionary logic similar to that of life, and that the direction of development is to continuously enhance the boundaries of human perception [8]. AIGC (AI-generated content) technology in the meta-universe generates virtual scenes in real time through a network of GANs to meet user preferences, so that the entertainment content is shifted from “predetermined” to “emergent”, and the user's entertainment state is changed from “one-way generation” to “two-way interaction”.

2.3. Subjective cognitive frame remodelling: from disembodied to embodied cognition

Traditional cognitive science has long adhered to the theory of 'disembodied cognition’, which views cognition as an abstract information processing process, and believes that the brain performs thinking activities in isolation from the body and the environment [9]. This theory was expressed in early HCI design - users interacted with the digital world through tools such as keyboards and mice, the body was only an input tool, and the cognitive process was reduced to the interpretation of visual symbols [10]. However, with the rethinking of traditional theories of cognition and research outside of disciplinary boundaries, academics have come to realise that cognition is the result of interactions between the body, the environment, and technology, and thus the theory of embodied cognition has emerged. In his phenomenology of technology, Don Ide points out that technology is not only a neutral tool, but also reshapes the way the subject perceives and behaves through 'embodied relations’ [11]. In this framework, the body becomes the basic vehicle through which cognition occurs, and the environment serves as an active participant in promoting cognitive activity. The dynamic interaction between the body and the environment drives cognition, and technology, as a key agent in this process, continues to facilitate the evolution of the cognitive framework of human subjectivity from the 'disembodied’ to the 'embodied’.

The breakthrough of meta-universe technology lies in utilizing virtual space as a medium and combining VR, AR, and other technologies as tools to deliver unprecedented immersion and interactive experiences to users. This 'immersion’ directly shapes the way users perceive themselves in the virtual world and the boundaries of their self-perception, allowing them to exist as avatars in the meta-universe. The transformation of the user's identity in the metaverse field is both a visual change and a shaping of his/her psychological level, which can lead to a deep and lasting transformation of the user's self-identity level - the avatar becomes the user's only identity marker in the metaverse. The user starts to look at his/her behaviour from the avatar's point of view. With deeper use, users will even think about their roles, values and relationships in the metaverse as avatars. By now, the avatar will not only change the user's external image but also influence the user's self-identity and behavioural patterns in a subtle way.

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3. Meta-cosmic recreational paradigm shift in the reshaping of human subjectivity

3.1. Reinventing the behavioural dimension: from 'consumer' to 'producer-consumer'

Dourish in Where the Action Is states that traditional screen interfaces limit cognitive embodiment by isolating the body from the environment [12]. The theory of embodied cognition emphasises that cognitive processes are closely related to bodily experience, and that users' cognition relies not only on the brain's processing of information, but is also influenced by the state of the body and the way it interacts with the environment [11]. Through avatar technology, Metaverse 'projects' the user's body into the virtual space to achieve the illusion of 'physical presence'. Reconfigured the way users exist - users are transformed from mere consumers of content to 'producers and consumers' who are also producers. Jenkins rejects the symbolic interpretation of mediated texts by fans as an act of 'ignorance', but rather as an active cultural production [13]. Fans have become 'skilled participants' and 'contenders for cultural power' by 'poaching' the resources of popular culture and collaging and reorganising them into new meanings. Users are no longer passive recipients, but are directly involved in the production and dissemination of content through the interaction between avatars and virtual environments, revealing the users' ability to actively reconfigure media content, which is further amplified by the openness and plasticity of the metaverse.

The interaction of the body with the environment is the basis of cognition, and the metaverse makes every action of the user in the virtual world part of the embodied experience. For example, in a meta-universe concert, the user is not only a consumer who watches the performance, but also a producer who interacts with the idol through avatars, collaborates with other audience members, and even creates virtual props or scenes on his or her own. Through the meta-universe technology, the screen barrier is reduced and the perception of 'presence' is strengthened, so that the user breaks through the identity of the passive receiver, reconstructs the identity, and promotes the transformation of the user from 'consumer' to 'producer-consumer'. The transformation of users from 'consumers' to 'producers and consumers' enables the reconstruction and expansion of user subjectivity in the interweaving of virtual and reality.

3.2. Reshaping the power dimension: from platform monopoly to triadic symbiosis

Traditional modes of communication (e.g.,newspapers, radio, television) are centered on cultural institutions or platforms with highly centralized power. Content production is unilaterally decided by the organisation or platform, and the user is completely disempowered and unable to participate as a mere recipient of information. Jenkins, in Textual Poachers, argues that users have begun to actively participate in the reconstruction and dissemination of content by "poaching" popular cultural resources [13]. This theory predicts the transformation of users' power from "deprivation" to "partial access", but due to the technical conditions of traditional media, it is still difficult for users to form an equal dialog with institutions. However, with the evolution of meta-universe technology, UGC tools, personalized algorithmic distribution, virtualized bodies and other technologies empower users with real-time interactions, breaking the traditional power monopoly, making users co-creators, weakening the agency's monopoly on distribution channels, and making the platform become only a provider of basic materials and technologies, Forming a triple symbiosis system of "organization-technology-user" [14].

In the case of the Forbidden City's digital creative design, for example, the Forbidden City provides the user body with cultural relics IP and digital resources as the basis of the cultural ecosystem and lowers the user's creative threshold. Users then develop interactive games based on

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the resources provided by the platform, utilizing technologies such as VR and AR. Users will share the created content to social media, forming a “user-user” communication chain. This “organization-technology-user” triadic symbiosis system has greatly increased the proportion of UGC content in the Palace's digital cultural creation [15]. Users initially break the monopoly of power, shifting the power structure from institutional monopoly to triadic symbiosis, and at the same time promoting the transformation of users from “cultural consumers” to “cultural co-creators”. The transformation of the meta-universe entertainment paradigm is essentially the deconstruction of technological monopoly through the reshaping of the power structure, breaking the absolute control of institutions over the production and distribution of content by means of algorithms, UGC tools, and real-time interactions, and the subjectivity of users is also reshaped in the transformation from “object of power” to “subject of power”.

4. Technological alienation and the dilemma of subjectivity

Metaverse Entertainment reconstructs human subjectivity through virtualisation, real-time interaction and user-generated content, giving users the dual identities of 'creator’ and 'participant’. However, the underlying logic of this transformation is the full penetration of technology into human perception, socialisation and cognition. So is this reshaping of subjectivity a technologically empowered liberation or a trap for technological alienation?

Although technological alienation is not unique to the metaverse. What is special about the metaverse is that it pushes technological alienation to the extreme - users are not only controlled by technology, but even actively embrace it as an expression of 'freedom’ [16]. This suggests that the meta-universe casino domain, which is characterised by enhancing users' sense of presence, has achieved a deep victory over the deconstruction of subjectivity through technological domestication, packaging users’ unconscious submissive behaviour into autonomous choice, enabling platform control to be de-coerced and internalised into active user participation, and power.

4.1. The subjectivity dilemma and the long-term evolution of technological alienation

In the axial age, when technology was not yet deeply involved in human existence, Western philosophy had already laid the groundwork for the modern dilemma of subjectivity. Descartes establishes the absoluteness of the cognitive subject through 'I think, therefore I am’, but he presupposes the premise that 'thinking requires a subject’, which is caught in the circular argument between 'I think’ and 'I am’ [17]. I think’ and “I am” [17]. Moreover, Descartes abstracted the 'I’ into pure thought, ignoring its embodiment and socio-historical conditions, essentially constructing a closed cage of subjectivity. Although Kant develops subjectivity as the 'a priori self’ and emphasises the agency of subjectivity in constructing the empirical world, the epistemological framework runs the risk of implicit solipsism by ignoring the problem of recognition of the subjectivity of the other - the other always exists as the object to be constructed. Hegel tried to unify subject and object with the absolute spirit, but this pan-logical solution led to the dissolution of individual subjectivity into universal reason and the suppression of individual freedom by systemic reason, forming the philosophical archetype of the subjectivity dilemma. These strands of the history of thought suggest that the essence of subjectivity is the fundamental questioning and construction of self-existence, cognition, action, and freedom as human beings explore their relationship with the world. And the emergence of the dilemma of subjectivity in the history of philosophy is essentially a contradiction arising from the one-sidedness of theoretical presuppositions, the limitations of logical deduction, and the fundamental severance of the multiple relationships between the individual and the whole,

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the self and the other, and the thinking and the being in the process of human beings grasping the relationship between themselves and the world through rational thinking. Technological alienation simply externalises and pushes this inherent contradiction to extremes.

The Industrial Revolution brought about the first systematic technological alienation. When the machine was transformed from an extension of the limb into an instrument of capital, the relationship between the worker and the fruits of his labour was inverted: the worker was reduced from a subject to a 'living accessory' to the machine system [18, 19]. This process of technological objectification gives rise to the 'one-way man' - when labour is reduced to a mere means of earning a living, spiritual pursuits are dissolved by the logic of capital, and the resistance of the working class is gradually blunted by the discipline of consumerism [20].

In the digital age, technological alienation reconfigures human subjectivity in more insidious forms. The 'attention economy' created by the platform's capital through algorithmic manipulation data-enabled cognitive processes. Recommender systems are in fact digital 'Sisyphus mechanisms': users appear to be free to make choices, but are in fact controlled by algorithmic loops [21]. Algorithms are alienated into digital leviathans: platforms leverage user data to accurately profile users and achieve implicit deprivation of cognitive sovereignty through advertising and push. In the 'personalised service', the user's thinking boundary is limited by the algorithm, the critical power is degraded in the information feeding, and the phenomenon of 'cognitive colonisation' of people by technology is gradually formed [16].

The meta-universe pushes technological alienation into a holomorphic dimension. The dilemma of human subjectivity presents itself in the sense that users are not only monitored by algorithms in the physical world, but also face the complete objectification of their digital identities in the virtual space. The metacosmos blurs the boundaries between reality and illusion, and human subjectivity is dissolved in the existential dimension. When human beings devote most of their existence to the virtual world, their ability to perceive reality and their critical consciousness will face systematic degradation. At this point, technological alienation will rise from instrumental oppression to existential crisis.

4.2. The "four-stage spiral alienation" model of technology and people

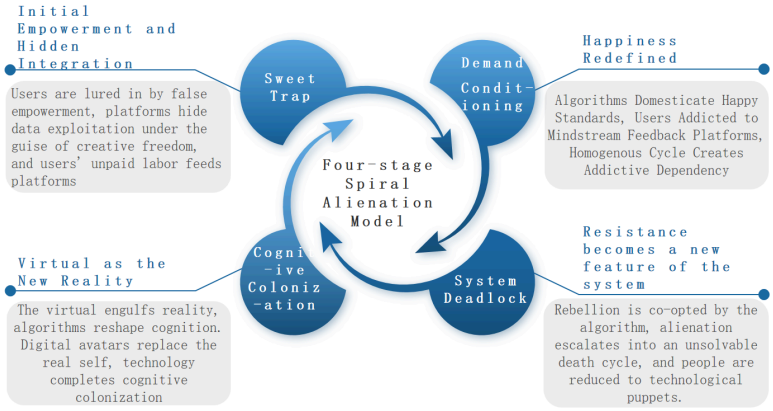

Figure 1: "Four-stage spiral alienation" model

The four stages of the spiral alienation model are: sweet trap, demand domestication, cognitive colonization, and system deadlock (Figure 1). In the first stage, the platform implicitly collects users through initial empowerment. The meta-universe entertainment platform provides users with low-

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threshold creative tools and techniques to empower them falsely. Users appear to be deeply involved and experience immersive entertainment, but in reality, it is a violent means of acquiring UGC rights by the platform. Users are still immersed in the euphoria of being empowered, unaware that they have already been spontaneously engaged in labor under the illusion of “freedom of creation” and have been incorporated into the digital production chain as free labor. From the platform providing users with pseudo-freedom, so that users get the satisfaction of being valued, resulting in a brief expansion of subjectivity, to the user's behavioral data and the fruits of their labor are unknowingly captured by the platform and appropriated, resulting in the initial alienation of the technology, and ultimately, because of the complete exposure of user's privacy, the “ego” can no longer help but to allow the technology to further alienate the user's privacy.

In the second phase, the platform enables the user's pleasure to be redefined through requirements training. The platform defines the criteria of “pleasure” through technology and domesticates the user's acceptance of the platform's mechanisms. The platform's algorithms allow users to enter a state of mindflow during use - an activity in which the user is completely immersed, feeling time fly by and self-consciousness disappear, accompanied by a high level of focus and satisfaction. Users gradually internalize the “effective pleasure” criteria set by the platform. Take the example of platforms deconstructing user behavior: platform rules allow users to start censoring their own behavior and get rewarded for catering to platform requirements - B-station UP owners deliberately shorten the length of their videos in anticipation of the platforms giving them greater exposure. As more and more users cater to the rules, making the content homogenized, the homogenized content in turn simplifies the technical design of the platform, which in turn tames the users easily. In the process, users become accustomed to relying on the framework of activities set by the platform, and even rely heavily on the guidance and assistance provided by the platform's technology. Algorithms domesticate subject behavior, and domesticated subjects feed back into algorithmic optimization. This cycle of technological alienation and the interconstruction of user subjectivity erodes human subjectivity like a drug.

This is followed by the third stage of the spiral alienation model. At this stage, technological alienation begins to penetrate the user's cognitive level, causing a fundamental shake-up of the foundations of user subjectivity. Technology at this stage no longer serves merely as a tool, but becomes a central force in shaping the user's cognitive framework and defining the boundaries of reality. Through algorithmic recommendation, virtual reality, augmented reality and other technologies, the platform carefully constructs a highly realistic and attractive virtual world, making it difficult for users to distinguish between the real and the fake. Users' experiences, interactions and perceptions in the virtual world feed back to reshape their behavioural patterns and values in the real world. As the virtual world becomes a new window for users to perceive and understand reality, users will gradually rely on technology to construct self-awareness and identity. Platforms such as social media and online communities create a 'digital self’ for users. These digital selves are often carefully shaped based on user behavioural data and preferences, so that they can subconsciously replace their real selves as the primary basis for users' understanding of themselves and the world.

In the last stage, technological alienation assumes its ultimate form. As users begin to realise the erosion of their subjectivity by technological alienation, they attempt to escape the control of technology over their subjectivity by limiting their time of use, choosing alternative platforms, and engaging in technological critique. However, these acts of resistance are seen by platforms as new opportunities to improve their services and optimise their algorithms, and are incorporated into their algorithmic recommendation pools, enabling platforms to more accurately understand the needs and pain points of their users, and to introduce more intimate and attractive services as a way to further

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consolidate their control over users. This cycle of resistance and cooptation leads to escalating forms of alienation. Users, seduced and oppressed by technology, are gradually reduced to a technologised existence, with subjectivity completely dissolved. At this stage, technology completely permeates the user's life and becomes an inescapable part of it. While enjoying the convenience and pleasure of technology, users also suffer the backlash of technological alienation on subjectivity. This contradiction and struggle then constitute the ultimate form of the interconstructive backlash between technology and subjectivity - the system deadlock.

5. Conclusion

The emergence of a meta-universe entertainment paradigm empowered by technology breaks down space-time constraints and provides users with an immersive experience, while also amplifying the limitations of the technology itself, i.e., alienation is inevitable in the evolution of the technology. By constructing a four-stage spiral alienation model, this paper reveals how meta-universe entertainment pushes technological alienation to the extreme, gradually plunging users into the prison of subjectivity dissolution. In the digital age, one must be wary of the potential human and social impact of the emerging entertainment paradigm of meta-universe entertainment. In the future, a dynamic balance between technological development and the protection of subjectivity needs to be established, and only by finding a dialectical unity between the paradox of technological evolution and the dissolution of subjectivity can the meta-universe be truly transformed into a new field that empowers the entertainment experience.

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