

Research Paper

## Metaverse in Creativity – Present and Future

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### ABSTRACT

Metaverse is a virtual, immersive, interconnected environment in which users interact in real-time with other people and digital environments. Creative expression can be boosted in several ways by the Metaverse. As a result, artists and creators can explore and experiment with new forms of expression, collaborate and co-create, and engage with their audiences in innovative and engaging ways. This paper examines the possibility of creativity enhancement through the use of Metaverse. Collaborative Creativity at the global scale, enhanced Creativity using Virtual Reality (VR) and Augmented Reality (AR), Accessibility top different tools and platforms that enhances Creativity, direct feedback and engagement from the audience for artists, infinite possibilities of experimentation of medium for creative people and new avenues for monetization for creative artists are some of the expected ways of enablement of Metaverse for Creativity.

**Keywords:** Metaverse, Creativity, VR(Virtual reality), AR(Augmented reality), Human-Intelligent Metaverse (HIM)

Metaverse and Creativity are two interrelated concepts. We are in a world of innovations to make our life simpler and more enjoyable. Many creative minds are behind significant inventions and advancements (Vasconcelos, 2017). Creativity flourished in major organizations and workplaces when technology advanced, making jobs more accessible and entertaining. Virtual Reality has contributed a lot for people to think creatively for developing significant innovations. Technology and Creativity can go hand in hand to make the life of humans competent and fruitful (Oiku & Ogunrinde, 2022). Virtual Reality is a subset of Metaverse. Metaverse is still in development and is a hypothetical platform rather than single technology with many virtual reality experiences. Metaverse utilizes virtual reality experiences for better interactions, gaming, shopping, working, and more. Thus, it has expansions to many platforms related to everyone's life (Lytinen, K, 2021).

### What is Metaverse?

Metaverse is a concept that refers to a virtual reality space where people can interact digitally that transcends all physical boundaries. It allows enjoying numerous digital

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experiences such as games, social platforms, business, virtual worlds, etc. It mainly encompasses the significant components of Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) for unique user experiences. The term Metaverse was coined by a writer of science fiction named Neal Stephenson in his 1992 Novel "Snow Crash" in it, he explained a virtual universe for entertainment, socialization, education, gaming, and more by using Head Mounted Displays (HMD), Smartphones and other advanced technology (Laeq, 2022, Joshua, 2017 & Ball, 2020). Metaverse is derived from two words, 'Meta' and 'Verse'. The word 'Meta' refers to transcending, and 'Verse' represents the meaning of the universe. Here anyone can communicate or interact with one another regardless of their place of work or living, or location. We can consider Metaverse as a 'decentralized network of computer-generated worlds' where the participants perceive it as if they are in a different world for work, leisure, and learning. Metaverse is the 'next iteration of the internet' (Stephenson, 1992, Ball 2020, Fang, 2021 & Duan et al., 2021).

Metaverse is a virtual environment that imitates the real world for working together, playing, debating, discussing, sharing feelings, and all types of human interactions. (Laeq,2022). Research on social neurosciences revealed that our need to connect with others is more fundamental than primary needs like food or shelter. Thinking and learning are more fruitful through social interactions, friendships, and peer group inspiration (Lieberman, 2013:282). Metaverse with Augmented Reality (AR), Mixed Reality (MR), and Virtual Reality (VR) is an exciting platform for interactive learning in digital form. Augmented Reality helps the person to view the 3D images from their perspective.

In contrast, Mixed Reality techniques help to feel the learner have the same 3D images close to their physical settings, such as in their bed or table. Here the 3D character can hide behind the physical settings and provide a feeling of the object's physical presence. In the case of Virtual Reality, two or more people from different backgrounds can interact with the 3D character or any other characters in a common platform. Metaverse has multiple virtual platforms, reducing the gap between people living in different parts of the world. Extended Reality (XR) and 3D technology are not new to us and originated decades back and contributed a lot to Medicine, Chemistry, and Engineering. But those technologies were costly and specifically designed for specific industries. Today with the help of smartphones and motion sensing devices, XR is poised to make a leap from industries to our living rooms, working spaces, and schools or colleges for leisure, work, and education in an affordable way. Moreover, Metaverse can be easily implemented in creative sectors where we have a lot of enjoyment, entertainment, and creative problem solutions (Pimentel et al., 2022).

### *How has the Metaverse Evolved?*

The Metaverse is evolving from two decades back in the form of gaming. But it is beyond a gaming platform. We will transfer from today's Metaverse – Web 2.0 to the advanced form Metaverse - Web 3.0. Virtual worlds under Web 2.0 include Second Life, Roblox, Fortnite, and World of Warcraft. Web 3.0 will give a platform for Decentraland, The Sandbox, Somnium Space, and Cryptovoxels. Metaverse Web 3.0 will be decentralized and community governed. The beginning of Metaverse started with a second life game platform in 2003. Later Playstation Home was released in 2008. Runescape, World of Warcraft, Riot, and Amazon gradually progressed with Metaverse by 2014. Again in 2014, Microsoft acquired Minecraft for \$2.5 Billion, and by 2018 Fortnite nets Epic Games hit \$3 Billion. Decentraland was released on 20<sup>th</sup> February 2020, Roblox hit \$39 Billion in the Market, and later in 2021, Facebook changed the company name to 'Meta.' By 2022, Metaverse advanced

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so that Microsoft announced plans to acquire Activision Blizzard for \$68.7 billion. The technological evolution of Metaverse includes improved performance in avatar movement (An avatar is a digital identity or an online representation of the user) and environmental rendering, reduction of environment shading for improving the interaction of people, enhanced Accessibility of the devices, including mobile, reduction of local Hardware requirements, expanded data analytics and reporting for virtual space and so on (Morgan, 2022).

### **METAVVERSE IN CREATIVITY**

Creativity is an ability of a person to produce diverse and unique ideas, information, or expressions. It has extensions on arts, technologies, science, literature, music, and more. A creative person has some traits linked with ideational flexibility, spontaneous flexibility, fluency, imagination, divergent thinking, elaboration, curiosity, and willingness to take risks. Creative thinking makes an individual swing sideways to think and act, unlike relying on a single solution. Thus there will be an undertaking of different perceptions with various concepts and points of entry. The three significant ideas behind creative thinking are: 'defining the focuses, 'structure for creative thinking, and 'evaluation and implementation.' Creative thinking needs to focus and organize the ideas we receive by Brainstorming or through discussion with others or peers and implementing the concepts appropriately. Generally, creative thinkers are good communicators, open-minded and risk takers, knowledgeable and flexible. They all travel through a creative process in mind. The creative process involves analyzing or breaking down one concept or problem into simple parts, evaluating or checking the parts of problems that meet particular criteria, imagining or forming ideas or images related to the target problems in mind, and synthesizing or compiling various existing ideas to make something new. Creative thinking makes people live productively in their personal and professional life. Hence it is considered an essential skill for the workforce in the 21<sup>st</sup> century, which could be developed using different techniques (Gafour & Gafour, 2020).

Decades before, it was proved that Creativity could be enhanced through Electronic Brainstorming (EBS). Electronic Brainstorming can be done with individual cognitive priming with the help of computer-based, video, or Virtual games. Web-based computer games designed for Creativity through priming resulted in a significantly higher generation of creative ideas than participants in neutral priming (Dennis, Minas & Bhagwatwar, 2013). A study conducted among 409 company employees revealed that digital creative environment helped the employees generate creative problem-solving strategies and provided significant inputs to the organization (Dul and Ceylan). The blend of Creativity and Metaverse mostly happened during COVID-19 pandemic. People start to study and work remotely and even try to spend time for leisure and entertainment digitally. Gaming companies and industries that were dependent on virtual arts had astounding profits when some industries faded from the field.

Moreover, Artificial Intelligence (AI) also made a change in the way of making creative arts. AI helped the majority of people to use cyber worlds and virtual spaces, which paved the way for Metaverse to come up with gigantic and open 3D virtual Media which help to socialize, learn, collaborate, play, and create artistic works. When Creativity and Metaverse symphonized, the world economy has somewhat relieved from financial crisis due to the pandemic. In 2021, significant virtual creative arts industries contributed to the nation's highest revenue (Lee et al., 2021).

### *How can Metaverse Enhance Creativity?*

As a result of the Metaverse, Creativity can be fostered and facilitated in various ways. Here are some examples:

1. Metaverse provides virtual environments that offer immersive and interactive experiences: The Metaverse allows users to manipulate objects, spaces, and experiences in virtual settings that will enable immersive and interactive experiences. For artists, designers, and creators, these environments offer endless experimentation, collaboration, and creation possibilities. Users can design and build virtual worlds, architecture, artwork, and interactive experiences, allowing for unprecedented expression and Creativity.
2. Multimodal Integration: The Metaverse incorporates a wide range of technologies, including virtual Reality (VR), Augmented Reality (AR), mixed Reality (MR), artificial intelligence (AI), and 3D modeling. Creating with these tools allows creators to push the boundaries of traditional artistic mediums and discover new forms of expression. For example, artists can create three-dimensional paintings, architects can create virtual buildings, and musicians can make interactive soundscapes.
3. Co-Creation and Collaboration: The Metaverse facilitates collaboration and co-creation among creators from different disciplines and locations. Virtual spaces can bring artists, designers, musicians, and other creatives together for collaborations, exchanges of ideas, and combining their talents. As a result of this collective Creativity, new and innovative works can emerge that combine diverse perspectives and skills.
4. The Metaverse provides creators with unique opportunities for direct engagement and audience feedback. Creating works in virtual spaces allows users to interact with them and provide immediate feedback, allowing creators to iterate and improve their work. Creating engaging and engaging experiences can be enhanced by this immediate feedback loop.
5. Monetizing in the Metaverse: The Metaverse provides creators with new avenues for monetization. Through virtual marketplaces and economies, creators can sell virtual goods, artwork, experiences, and services to a global audience. As a result, artists and creatives can reach a wider audience and earn income from their work, encouraging further innovation and Creativity.
6. Democratization of Creativity: By lowering entry barriers, the Metaverse can democratize Creativity. Compared to traditional physical media, virtual environments, and tools are more affordable and accessible. A more comprehensive range of people can participate in creative activities thanks to this Accessibility, regardless of geography, socioeconomic status, or physical ability. Diversity and vibrancy can be achieved through this type of inclusivity.

### *Creativity Behind Metaverse*

It is an exciting fact that Creativity drives Metaverse itself. Creativity helps individuals to construct their digital worlds. Creative people play a significant role in giving new content to Metaverse. The digital environment is a blank slate, where any creator can make novel creatures based on their interest. The term 'Metaverse' also originated from the creative product of the writer Neal Stephenson. Companies like Baidu, Apple, Nvidia, Epic Games, Meta, and Microsoft are in a venture of maximum creative contributions with the help of computer scientists, Engineers, designers, and artists to develop a Creative Universe with the help of Metaverse. User-generated content (UGC) is the most crucial area of Metaverse, where people can contribute creatively to the virtual world. For example, Avatars, virtual

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assets, games, and even businesses are easily accessible and customizable by the contributors. Thus, UGC is a platform for sharing one's creative thoughts and viewpoints for developing the Virtual worlds for Metaverse (Olunjinmi, 2023). Creative photography has a significant link with the development of Metaverse with the help of AR and MR. Even though the camera is the standard tool of a photographer, the essence of photography lies in the process, not the tool where immense creative thinking is needed. Most creative photography and other workups are used for games, but now the companies Roblox and Meta are ahead of the game world and focus more on interactive virtual universes. The Metaverse world expects magical moves from everyone who can create something that can foster unpredictable outcomes (Maher D.M, 2022).

### **FUTURE OF METAVERSE**

In future, Metaverse will not be limited to Gaming platforms. It will become part of everyone's life for chatting, social living, shopping, watching movies, etc. However, the securing of Metaverse is a concern in future (Ning Etal, 2021). Presently, security technologies such as Block chain and quantum encryption protect the Metaverse. In the future, the Metaverse will be secured by 5G in collaboration with the present privacy, encryption, and integrity protection technologies. The new Web 3.0 relies on transparency and openness, which can also make the Metaverse more trustworthy (Morgan, 2022).

Metaverse has numerous future implications. The healthcare Metaverse can form virtual twins of the patient in the virtual world. Thus, doctors can study and explore cases remotely without natural organisms (Thomson, 2021). Metaverse can turn medical schools into scene teaching where medical students can join the virtual platform to observe surgeries and even practice them with the patient's virtual twin (Pedram et al., 2020). Human-Intelligent Metaverse (HIM) is an essential future contribution that can meet human needs and comprehend human emotions and physical and mental states. 'HIM' can turn to digital humans who will be more efficient and intelligent in managing business and other human jobs. Digital humans can act as TV presenters, brand ambassadors, etc. AlphaGo is a digital man who acquired fans worldwide, a contribution of Metaverse (Bory, 2019). Artificial Intelligence combined with Metaverse can make avatars and digital humans more versatile, accelerate multi-lingual Accessibility, and enhance intuitive interfacing (Gadekkalu et al., 2023). 5 G-enabled Metaverse will help with low latency, high reliability, larger bandwidth, and accelerated wide connection. Metaverse and Human-computer interaction will be fostered so that the Metaverse system can directly determine the capability boundary of human beings with technological advancements. The 'service Metaverse' has revolutionary significance for people with disabilities. Metaverse can help people with disabilities to achieve the advantages of being non-disabled. They can attend any entertainment with the help of VR (Virtual Reality) glasses at home to enjoy the experiences of virtual cinemas, theater performances, and museum and gallery exhibitions. Transportation facilities will become more cost-effective with the help of Metaverse. Education will be accessible to the underprivileged as children learn everything from remote locations. Thus, Metaverse has a promising future. Metaverse will emerge as a low-cost, Lightweight mode that can be accessed anytime, anywhere, and on any device. Ultimately, Autonomous Metaverse will aid users in getting democracy regarding ownership and transactions. Even people can participate in government decision-making (Chen et al., 2023).

### **CONCLUSION**

Metaverse is emerging from its primitive hypothetical form to reality in the near future. Gradually, all humans are entering another universe where anyone from anywhere can

interact without a physical barrier. Creativity fields are highly benefited through Metaverse. There are several exciting possibilities for creators and collaborators to collaborate and interact with one another and monetize their work through the Metaverse. Creators of the world are utilizing virtual reality experiences to generate unique ideas, which will be enhanced with Metaverse for new interactive and colorful life. With the advancement of technology and infrastructure, we can expect greater creative possibilities for individuals and communities in the Metaverse.

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