DOI:10.1145/3674722

The metaverse remains a work in progress, but improvements in how it handles ethical concerns and addresses cultural issues could push it further along the path to mass adoption.

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Ethics and Cultural Background as Key Factors for an Attractive Metaverse

IN RECENT YEARS, the concept of the metaverse has gained increasing resonance in both research and public discourse, perhaps second only to artificial intelligence (AI). Discussion persists, however, around the nature of the metaverse. Several studies have attempted to offer a definition, also considering how use of the term has changed over the past 20 years. For example, Markus Weinberger used qualitative meta-synthesis methods to analyze existing literature, proposing the following definition:

The Metaverse is an interconnected web of ubiquitous virtual worlds partly overlapping with and enhancing the physical world. These virtual worlds enable users who are represented by avatars to connect and interact with each other, and to experience and consume user-generated content in an immersive, scalable, synchronous, and persistent environment. An economic system provides incentives for contributing to the Metaverse.[30]

As seen here, ideas of community and connection between users seem to be important in defining the metaverse, as do notions of "hyper-spatio-temporality" and "multitechnology convergence."[29] These goals can be achieved through various technologies, such as virtual and augmented reality, avatar-based and second life systems, learning management systems, social media, simulation, and AI.[17]

The recent Gartner report "Emerging Tech: Adopter Anti-patterns—Metaverse Use Cases Are Plagued by Low Adoption" discusses some of the limitations that hinder mass adoption of the metaverse. The report points out two major issues. The first is the application of virtual reality (VR) in

» key insights

- **The success of the metaverse relies on providing a compelling user experience that addresses both technical aspects and users' cultural needs.**
- **The metaverse presents significant ethical challenges, such as privacy risks and potential harm from blurred lines between the virtual and real worlds, necessitating regulation and risk assessment.**
- **The metaverse has found significant success in South Korea, where it caters to both a highly competitive culture and a desire for new forms of self-expression beyond traditional societal constraints.**
- **Overcoming ethical risks and aligning with cultural backgrounds are essential for building trust and motivating users to engage in the metaverse.**

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non-gaming environments, which often fails to meet the expectations and scope anticipated by users. We must mention, though, that the metaverse is not the same as VR, which has been successfully adopted in specific applications and for tasks where entertainment is not the main scope. The second issue concerns virtual meetings with avatars in the metaverse, which have not yet achieved a level of engagement necessary for enduring and meaningful experiences. From the report, it appears that the metaverse died an early death. However, is this really the case? What is it that could attract people once the technical and ethical problems are solved? And why do some countries seem to be especially fascinated by it? In this article, we will investigate how the metaverse is changing the concept of user experience, identify the technical and ethical shortcomings it still faces, and, finally, explore the cultural factors favoring its adoption in South Korea.

Motivation, User Experience, and Interoperability

During the 2023 Augmented World Expo (AWE) USA conference, Neal Stephenson—the writer who coined the term *metaverse* in his 1992 novel *Snow Crash*—asserted that entrepreneurs, innovators, and companies investing time and money in the metaverse should seriously consider *why* people would want to use it, since people are only drawn to new innovations if they are either fun or essential. An important element to consider, then, is user motivation. Attracting and retaining metaverse users will require "a robust communications infrastructure, powerful and easy-to-use development platforms, and, perhaps most importantly, compelling applications that provide value to users that cannot be replicated or found elsewhere."[11] We believe that two more aspects should be taken into consideration: providing a quality user experience from both technical and ethical perspectives, and satisfying the needs arising from people's historical, social, and cultural backgrounds.

The first point to address when considering use of the metaverse is how it changes the user experience. At the very beginning of the computer era, there was basically no interaction between the user and the machine because everything was operator-mediated through punch cards. Only after the introduction of the personal computer did the importance of letting people interact with machines become clear, giving rise to the field of human-computer interaction (HCI), together with the introduction of graphical windows, icons, menus, pointers (WIMP) interfaces; direct manipulation; and metaphors.[22] The idea was to make interactive systems more usable by moving from "people adapting to technology" to "technology adapting to people," while still requiring users to learn the machine's language. For many years, the only improvements were to the fundamental ideas implemented in WIMP interfaces.

The metaverse brings with it a shift in the concept of human-computer interaction.

The next big advance was the smartphone, implementing a different interaction paradigm and becoming not just an instrument but also a seamless part of the user's world. Still, the user had to make an effort in learning to execute tasks—essentially learning a new language—while, again, the goal of usability is to move the workload from the user to the system.[18] Meanwhile, game design followed a completely separate path (probably guided by its different purpose: entertainment), developing engaging, immersive interaction environments in which players pursue a game's goals and have fun.

We are now at a historic moment in which two scientific advances are radically changing the concept of person-machine interactions and blurring the line between the real and the digital. The first is represented by large language models (LLMs), resulting in systems that, for the first time, really speak the user's language without the need for translation. The second is the metaverse, in which interaction takes place in ways similar to those of the human world but offers infinite possibilities. In both cases, the interaction is focused on building a truly personalized user experience.

We can see, though, that the metaverse brings with it a shift in the concept of human-computer interaction. The promise of a fully immersive digi-

tal universe led to the establishment of a research area for the blending of the physical and the virtual. The challenge is to create "a real-virtual bridge, a conceptual model that can be used to mediate between real and virtual objects."[27] Researchers aim to make the interaction mechanics more intuitive, addressing, for example, the relationship between gestures and devices in the metaverse, such as smartphone operation[3,26] and text-entry methods,[5] as well as the relationship between the metaverse and the Internet of Things (IoT).[15,23] Nonetheless, for many users, the learning curve is still steeper than desired, the user experience is not yet engaging enough, and the graphics and rendering capabilities, while advanced, still lack the refinement and realism that many expect.[8]

Another significant limitation is interoperability, which in the context of the metaverse has been defined as "enabling people to move to new networks with their avatars and virtual property."[16] Lack of interoperability affects the user experience because, without mobility, users may find themselves confined to specific ecosystems, potentially leading to fragmented communities, echo chambers, and a stifling of innovation.[8] It's akin to isolated islands in an ocean, where each island operates on its own rules and systems. To truly realize the potential of the metaverse, bridges must be built between these islands, promoting collaboration, shared experiences, and a more interconnected digital realm. To solve this problem, some have proposed building an open and interoperable metaverse using the Web and its standards.[7,19]

As we can see, many efforts are being made to overcome the technical limitations that still hinder adoption of the metaverse. The next few years will likely see advances in virtual reality hardware, augmented reality integration, and the overall blending of our physical and digital worlds.[12] Until then, the metaverse remains a work in progress, with its full potential yet to be realized.

An Ethics for the Metaverse

The introduction and use of the metaverse raises relevant ethical issues, which, like deficiencies in the user experience, contribute to driving users away because of perceived danger. Like LLMs, the metaverse is a tool that could reach a wider audience, and for this reason there is a need for risk assessment, regulation, and user awareness.[20] For example, in a 2008 paper Edward Spence discusses the rights and obligations of avatars.[25] Influenced by Alan Gewirth's principle of generic consistency (PGC), Spence formulates an ethical framework for digital domains. The PGC suggests that, when acting within virtual environments, any individual inherently deserves the rights to freedom and well-being. Rooted in the notion that people use avatars in the metaverse to represent themselves, Spence's theory posits that avatars act as digital reflections of real-world individuals. Given this, they should not only be granted the same rights but should also adhere to real-world ethical standards. Though it might seem to be a mostly theoretical issue, misconduct of avatars is a real problem, as in the case of sexual harassment. In the U.S., more than 40% of Internet users have encountered online harassment, a problem that becomes particularly salient in the metaverse, where harassment can feel even more personal and intimidating due to the lifelike nature of virtual environments.[21]

Philosophical models can help us define the metaverse, as well as the relationship between avatars and real people. Building trust in the metaverse, however, requires a bottom-up approach that addresses the problems that arise from actual use. So how can we build an effective, reality-based model of the metaverse that merges theoretical background with real problems? Some studies propose starting with AI ethics, which has developed significantly in recent years as a response to the widespread adoption of AI technologies.[1] AI ethics emerged because AI is a technological innovation that has a profound impact on society, like the metaverse might have in the future. As the metaverse incorporates AI components, it could face similar risks,[28] but it also introduces unique challenges deriving mostly from the problematic relationship between the real and the virtual. As such, an ethics of the metaverse should begin by addressing the illusions created by virtual environments, which necessitate contributions from cognitive science.[4] Experiencing virtual worlds can lead to illusions about oneself and one's relationships, with potentially dangerous effects on one's actions in the real world, perceptions of reality, and self-representation. The metaverse could in fact pose risks to mental and social health if people become addicted to it and use it as an escape from reality, leading to confusion between the real and virtual worlds, post-VR sadness and hangovers, dissociation, diminished sensitivity to the consequences of actions in the real world, cybersickness, and, in extreme cases, severe mental disorders.[1] For these reasons, it is crucial for potential users to be psychologically prepared to avoid addiction and maintain the distinction between the real and the virtual. In this regard, protecting children is an important area of concern, with potential risks such as the formation of false memories, desensitization to tangible threats, moral disengagement, technological addiction, and cyberbullying.[10]

Confusion between the virtual and the real can also be caused by excessive sharing of personal and biometric data with avatars.[13] In a recent paper, Carl Smith and colleagues[24] emphasized that privacy encompasses not only personal information but also our body image and data. The concern is that once a person's body image is captured, it can be perpetually used in deep-fake productions. There is therefore a need to expand legal protections of individual rights to include control over biological data, which includes various forms of biometric data. Protection of mental privacy is equally essential, since interactions in the metaverse might use brainwave capture to enhance experiences, for example, through brain-computer interfaces (BCIs). Some of these emerging technologies have the potential to essentially interpret human thoughts, model identities, draw detailed and contextually relevant conclusions, and then

infer thought processes via machine learning.[2]

The problematic relationship between the virtual and real worlds can cause both technical and ethical issues. Each of the issues mentioned—and potentially many more—merits a more detailed discussion, which in some cases has already been started by researchers. The complexity of these issues highlights the imperative of expanded ethical deliberation on metaverse usage and the pressing need to regulate user behavior. Questions about how to penalize misconduct and determine the appropriate regulations and policies for the metaverse must be addressed.[20] Moreover, there is an urgent need to enhance monitoring tools: In the metaverse, interactions will be more immediate and direct compared with traditional social media platforms, necessitating effective real-time moderation and oversight mechanisms.[21] These tools must adeptly blend real and virtual content, striking a balance between ensuring user freedom and filtering malicious or inappropriate content. An interesting emerging idea is that addressing ethical issues and ensuring control and security would actually make the metaverse more trustworthy, fostering its adoption. That said, it is also necessary to provide a technology capable of matching social and cultural expectations, discussed in the next section.

Matching Cultural Expectations: The Case of South Korea

Each culture is different. This is why it is not easy to design a technology that is equally effective everywhere and for everyone, as highlighted by the postcolonial computing approach.[9] Due to its immersive experience, the metaverse faces this problem even more so than other technologies. Indeed, we believe the metaverse is a concept whose acceptance and success are deeply rooted in the cultural backgrounds and expectations of people. This idea is based on observing how the metaverse has achieved significant success among the public, industries, and policymakers of countries like South Korea and Japan. As an example, we will discuss the South Korean case.

The metaverse is a visible and expanding phenomenon in South Korea, going beyond being just a source of entertainment. The Ministry of Science has introduced an ambitious plan, rooted in the Digital New Deal 2.0, to position South Korea as a dominant player in the global metaverse landscape. The plan's key components include developing a platform ecosystem centered around Korean cultural content, nurturing talent, supporting enterprises, and creating an ethical, inclusive metaverse. The South Korean government's investment in this technology is fueled by the population's enthusiasm for it and the potential applications it offers. A global survey conducted in 2022 by Ipsos, on behalf of the World Economic Forum, revealed a 71% familiarity rate with the metaverse in South Korea, higher than the average of the nations analyzed. Moreover, 63% of South Koreans expressed a positive outlook on integrating extended reality into their daily lives, compared with the global average of 50%. Another Ipsos survey, published in September 2022 and titled "Gen Z and the Metaverse," sheds light on South Korea's Gen Z perspective, which sees the virtual world as a platform brimming with opportunities for both entertainment and financial gain. Gen Z fosters close connections with friends made in the virtual world and adeptly seeks out like-minded individuals within the metaverse. To them, the metaverse is viewed as a more effective and flexible environment than the real world, enabling users to readily pursue their aspirations and explore new horizons.

In recent years, social changes in South Korea have weakened certain cultural heritage principles, such as the emphasis on the group over the individual, while strengthening the desire for self-affirmation and fulfilling personal needs. A growing number of people have begun using service platforms that not only cater to the hectic pace of contemporary life but also provide the opportunity to limit social interaction, which is increasingly seen as entrenched in formalities and part of a hierarchical system that younger generations are rejecting. For this reason, the government has viewed the "untact policy" as a potential means to stimulate economic development. *Untact* is a term created in South Korea by adding the privative prefix *un* to the word *contact*. It refers to a "service provided without face-to-face encounters between employees and customers using digital technologies."[14] Launched in 2020, the idea of untact gained momentum during the pandemic and quickly extended into various sectors. Though concerns about isolation and societal fragmentation persist, for a multitude of individuals, the policy has brought several benefits, such as enabling anonymity, alleviating the burden of formality, and mitigating the emotional labor often associated with the service industry. South Korea's transition toward a social culture of metaverse technology, as well as its positive reception, is indeed a rather expected development. This technology is already widely applied in the entertainment industry, for example, in the realm of K-pop, where fans design avatars that allow them to encounter their beloved artists virtually. It is relevant to mention the case of Mave, a South Korean girl quartet, which gained 20 million views on YouTube and exists solely in the virtual world: The four members reside within the metaverse, and their songs, choreography, interviews, and even their hairstyles are all crafted by Web designers and AI.

To understand why the untact policy and the metaverse are so successful in South Korea today, we must explore the country's cultural background. In South Korea, the metaverse offers individuals an opportunity to seek refuge in a reality where they can express their own identity, transcending the norms of a society deeply rooted in Confucianism, which rose to prominence on the Korean peninsula during the 15th century. Despite South Korea's modernization and the widespread adoption of Christianity, the enduring influence of this traditional philosophy is still evident in family relationships, political attitudes, and approaches to problem solving. Morality, practicality, and self-cultivation are the pillars of Confucianism.[6] It posits that excellence must be pursued in both

inner morality and outer achievements. In politics and education, the Confucian concept of leader and subject continues to be advocated, with the public encouraged to uphold the traditional notion of the leader as a combination of king, teacher, and father.[33] Simultaneously, there is an expectation for leaders to exhibit high moral standards, considered essential for fostering a strong sense of community. Thus, Confucianism highlights the importance of maintaining a harmonious and ongoing connection between the individual and the universe, between the pursuit of knowledge and personal growth, and between the principles governing family structure and the sociopolitical framework. Each person plays various roles in society, from their private responsibilities within their families to their public roles in areas such as politics and the economy. These principles have molded a society that is highly organized and collectivist, marked by significant social expectations in terms of behavior and adherence to cultural norms.

Another factor that influenced the shaping of today's society is Korea's history of struggle in establishing itself as an independent, recognized nation. Initially, this involved breaking free from Chinese political and cultural dominance, and then from Japanese colonization and Western influences. All of this has laid the groundwork for a significant sense of national belonging and a strong sense of identity. Koreans experienced three distressing historical events in the 20th century—the Japanese occupation, the Korean war, and the division of the country—that made nationalism a prominent factor in nation-building. During the 1950s, South Korea was one of the poorest countries in the world, remaining so for more than a decade. The Japanese occupation and the Korean War caused enormous economic losses and huge casualties, but the Korean people focused on their nation's reconstruction and today South Korea is one of the richest, most influential countries in the world. The aftermath of these significant challenges and the need for social redemption, coupled with the desire to break free from the past, has driven the country toward policies aimed at creating a highly competitive society. Individuals of all ages, genders, and social backgrounds orient their lives around enhancing their competitive edge. This inclination is particularly evident in the domains of education and employment, with the younger generation devoting extra hours to private academies in pursuit of admission to prestigious universities and securing positions in leading companies.

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The Korean commitment to self-improvement has indeed spurred rapid progress, but it has also led to heightened exhaustion. In a society characterized by cutthroat competition, a larger number of people encounter setbacks than achieve success. For those grappling with challenges, finding pride in their country's accomplishments can prove to be difficult. Moreover, when people feel that, despite their best efforts, they cannot overcome the limitations imposed by their socioeconomic backgrounds, it can engender a sense of relative deprivation. The fact that the happiness level of South Koreans ranks among the lowest in the world may be intertwined with this demanding social environment. However, as the free market emerged and technology advanced, the limitations on individuals gradually waned, leading to the erosion of village traditions and extended family systems. For many people—especially the young—this transformation has created the need for new forms of socialization.

In South Korea, therefore, the metaverse has proven to be a successful technology because it addresses two opposing social forces: on one hand, the high level of competitiveness that makes innovation more acceptable than in Western countries; and on the other hand, the people's search for new spaces for self-expression, where they can freely build communities beyond social limitations.

Conclusions: Experiencing a Different (Better) World

The case of South Korea underscores the importance of taking social and historical factors into consideration when introducing new technology

into a context. The emergence of the metaverse represents a significant paradigm shift in our interaction with the digital world, bringing forth a plethora of possibilities as well as challenges. While it holds the promise of revolutionizing the way we connect, share, and engage in virtual spaces, it also raises critical concerns that must be addressed to ensure a safe, inclusive, and equitable digital environment. The shortcomings in the current state of the metaverse are glaring, with a lack of proactive measures to safeguard users' safety and privacy and uphold ethical standards. The absence of clear, regulated systems and a lack of consensus on accountability, transparency, and human-centric design further exacerbate these issues. The lack of specific regulations in particular adds to the uncertainty and potential risks associated with the metaverse.[20]

Despite these challenges, the metaverse offers a beacon of hope and a unique opportunity to reshape our digital interactions. It has the potential to foster data sovereignty, empowering users to take control of their personal data, identity, and virtual destiny. The metaverse could also serve as a canvas on which to design a new world, rooted in fairness, justice, and enrichment, that ensures the benefits of the digital age are accessible to all—a human-centric metaverse.[31] Furthermore, the metaverse has the capacity to transcend the limitations of the physical world, providing unlimited spaces and virtual worlds that celebrate diversity and accessibility.[32] This digital utopia could act as an equalizer, eliminating biases related to gender, race, disability, and social status, paving the way for a more inclusive society. The South Korean case demonstrates that the metaverse can be a path to freedom and self-awareness in a society rooted in strong traditional values. It also opens the door for enhanced cultural communication and protections, contributing to the preservation and celebration of humanity's rich tapestry of cultures.

In light of these considerations, we believe it is important to encourage the involvement of key stakeholders, including policymakers, developers, and users, in addressing the existing shortcomings in order to create an attractive and human-centered metaverse that is able to match users' expectations.

The metaverse has the potential to be a space where individuals can explore and create a world that is distinct and improved, surmounting the challenges presented by the real world. Having experienced this enhanced environment, people are likely to be more motivated to incorporate positive actions and behaviors into their lives, spanning both digital and physical realms. C

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