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SOCIAL RESEARCH IN THE METAVERSE
Innovations, implications and ethical challenges

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Abstract

This article contributes to the academic debate on the Metaverse as both an object and a tool of social research, analyzing its potential, critical aspects, and the broader transformations it introduces into the discipline. In particular, the paper examines the new sociological questions emerging from the spread of the Metaverse, considering its implications for social structures, identity construction, and collective behavior. The paper then explores its applications in social research. This includes an analysis of how the Metaverse can enhance research methodologies by enabling the simulation of social phenomena, real-time manipulation of variables, and novel forms of data collection. The article also highlights significant challenges, particularly concerning accessibility, external validity, and the ethical dilemmas of conducting research in a digital space where identity, privacy, and informed consent take on new and complex dimensions. Given the Metaverse's evolving nature, it is crucial to examine how social research can navigate the balance amongst technological innovation, inclusivity, and ethical responsibility, ensuring that these emerging digital environments function as equitable, transparent, and scientifically rigorous spaces for social research.

Keywords

Metaverse, digital sociology, social research, methodology, web 3.0

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1. INTRODUCTION

In recent decades, the digital landscape has undergone an unprecedented transformation, driven in part by the proliferation of advanced technologies such as Artificial Intelligence (AI), blockchain, and, more recently, the Metaverse. These technologies have fostered the development of a decentralized digital ecosystem characterized by interactive environments that challenge traditional conceptions of physical and digital reality (Gadekallu et al., 2023). In particular, the Metaverse is gaining increasing attention in contemporary society for its ability to offer users immersive three-dimensional experiences, accessible through devices such as headsets.

According to Ball (2022), the Metaverse can be conceived as a network of interconnected and persistent digital worlds that allow users to share experiences. These virtual environments range from realistic to highly stylized and imaginative, combining elements traceable to the physical world with novel digital simulations (Riva and Wiederhold, 2022). Augmented reality plays a crucial role in this context by overlaying digital objects and information onto what is seen and perceived, thus creating "hybrid" experiences that integrate physical and virtual dimensions (Brown and Drakeley, 2023).

In this ever-evolving scenario, new horizons are emerging for theoretical and methodological reflection in the field of social research. The Metaverse not only introduces novel sociological questions concerning identity, interaction, and social structures in digital environments but it also has methodological implications that encourage a reconsideration of certain research protocols. As it becomes increasingly integrated into social and economic structures, it is necessary to examine how it may transform traditional approaches to social research, offering advantages in terms of data collection, experimental possibilities, and interactive methodologies. At the same time, its role in facilitating the study of social behaviors and interactions needs to be analyzed in relation to the challenges it presents, particularly concerning methodological rigor, data validity, and the risks of bias introduced by the specific nature of digital environments. Furthermore, conducting research in a space where personal identity, privacy, and informed consent take on new and complex dimensions raises significant ethical concerns that also require careful consideration.

This article aims to contribute to the academic debate on the Metaverse as both an object and a new space for the social research by

analyzing its potential, critical aspects, and the broader transformations it introduces into the discipline. The paper is structured into several sections that focus on key themes related to the use of the Metaverse in social research. The first part provides an overview of the Metaverse, highlighting its role as a key component of Web 3.0 and its interaction with other emerging technologies. The discussion then focuses on the new sociological questions raised by the spread of the Metaverse. Following this, the applications of the Metaverse in social research are examined, with an analysis of its advantages for both quantitative and qualitative studies and the complexities it introduces. The challenges associated with its use are then discussed, with particular attention to issues related to data collection, validity, and potential biases. Finally, the ethical implications of managing personal data in virtual environments are explored, alongside a reflection on the future prospects of using the Metaverse as an environment for social research.

2. THE METAVERSE

The concept of the "Metaverse" is not entirely new. Although the term has gained widespread popularity in recent years, its foundations can be traced back to early virtual worlds that sought to create immersive digital environments. One of the most notable precursors was *Second Life*, launched in the early 2000s as an online platform where users could develop their digital identities within a persistent, user-generated world (Messinger et al., 2009). While *Second Life* did not fully realize the vision of a seamlessly interconnected Metaverse, it introduced key principles that continue to shape contemporary developments, such as social immersion, virtual economies, and digital self-representation. The early solutions laid the groundwork for what has now become a more complex, technologically advanced, and economically viable digital ecosystem. Unlike the earlier virtual worlds, which largely operated as self-contained experiences, today's Metaverse is envisioned as an expansive and interoperable network of platforms, where virtual and physical realities converge through technological advancements.

Over the years, the technological infrastructure supporting digital environments has evolved significantly, driven by multiple factors. A crucial turning point in this development was the Covid-19 pandemic, which accelerated the adoption of digital spaces as alternatives to in-person interactions. The necessity to overcome restrictions on travel and physical gatherings spurred a surge in demand for more immersive and interactive

online experiences (Anderson and Rainie, 2022; Monaco, 2021). During this period, virtual reality (VR), augmented reality (AR), and spatial computing technologies saw increased investment, as businesses, educational institutions, and social groups sought new ways to replicate physical interactions in digital spaces. The pandemic thus acted as a catalyst, highlighting both the potential and the limitations of existing virtual platforms and prompting renewed interest in the development of a fully functional Metaverse.

At the same time, major technology companies—including *Google*, *Microsoft*, and *Nvidia*—have invested heavily in the development of Metaverse-related technologies. In particular, *Meta*, which rebranded from *Facebook* in 2021 to reflect its strategic focus on immersive digital environments, has played a central role in this transformation. Beyond its flagship social media platform, *Meta* encompasses a broader ecosystem, including *Instagram*, *WhatsApp*, *Messenger*, and *Oculus*, positioning itself at the forefront of Metaverse development. The company has dedicated significant resources to developing VR and AR devices, such as the *Meta Quest* series, and has introduced virtual collaboration tools like *Horizon Workrooms*, designed to facilitate remote work in virtual environments. Other major players, such as *Apple* and *Tencent*, have also entered the race to shape the future of the Metaverse, each bringing distinct technological innovations and business models to the evolving landscape (Mosco, 2023).

These investments reflect a broader shift in consumer behavior, where digital engagement increasingly transcends traditional boundaries among goods, services, and social interactions.

Some gaming platforms, such as *Fortnite* and *Roblox*, have also played a crucial role in making the Metaverse more accessible and familiar to a broad audience (Yoo et al., 2023; Yu, 2022). Online games, initially developed as entertainment environments, quickly became social spaces where players began to interact, work, and even participate in virtual concerts and events. For example, in 2020, *Fortnite* hosted a virtual concert by rapper Travis Scott, attracting millions of viewers and demonstrating the platform's potential to engage a large audience beyond the "real world" (Korsgaard and Jirsa, 2023). Over time, the use of avatars and participation in immersive virtual environments have been normalized, paving the way for the broader adoption of the Metaverse as a space where people not only play but also spend a significant part of their digital lives.

For instance, the Metaverse is also opening new possibilities in education and skills development. Some educational institutions are beginning to experiment with its use to create immersive learning

environments, where students can engage in realistic and interactive simulations. In doing so, learners can literally "immerse" themselves in content and interact with educational materials (Beck et al., 2023; Dahan et al., 2022).

The Metaverse also has impacts on the economy. Users can engage in various virtual activities that enable real-world earnings. Jobs range from designing virtual spaces and creating digital products to organizing events and managing online businesses (Park & Kim, 2022). Notably, several fashion brands are already experimenting with selling "digital clothing" that users can purchase for their avatars, suggesting that the Metaverse could become an integral part of future marketing and commerce strategies (Dionisio et al., 2013). One of the most evident developments in the economic field is the virtual real estate market. Similarly to the physical space, virtual structures in the Metaverse—such as land or buildings—are bought and sold. Demand for properties in virtual areas considered prestigious—due to high user traffic—has driven up prices, reflecting dynamics similar to those of the traditional real estate market (Singla et al., 2024; Yang, 2024). Moreover, through blockchain technology, users can own and exchange digital assets such as Non-Fungible Tokens (NFTs), ensuring the uniqueness and ownership of these items within the virtual world (Edwards, 2022). Nonetheless, this new economy also raises ethical and social justice issues. Since many economic activities in the Metaverse remain unregulated, workers and consumers may find themselves without adequate protections, exposed to uncertain working conditions or not entirely transparent transactions (De Stefano, 2016).

Beyond its economic implications, the Metaverse has also brought about significant socio-cultural changes. Like other platforms—such as social networks—the Metaverse allows people to connect and interact with others, overcoming geographical and physical limitations. However, unlike traditional forms of online interaction, which rely primarily on textual or verbal communication, the social experiences offered by the Metaverse appear richer and more participatory. The use of avatars and the existence of virtual environments enhance the sense of presence and immersion in interactions (Oh et al., 2023). This has the potential to strengthen virtual social networks and create new forms of sociality, belonging, and community with unique characteristics (Wang et al., 2022).

3. BETWEEN RECONCEPTUALIZATIONS AND NEW SOCIOLOGICAL QUESTIONS

The evolution of the Metaverse is prompting sociology to expand its horizons, directing social research toward emerging phenomena. In particular, the Metaverse offers a unique opportunity to investigate new issues, such as the relationship amongst technology, identity, and social relationships. More specifically, the interactive experience through customizable avatars provides a space for experimentation and self-representation, challenging traditional sociological conceptions of identity. Avatars, unbound by the actual characteristics of the user, allow for the creation of alternative versions of oneself, introducing a new dynamic to the relationship between real and digital identity. This possibility invites sociology to study how individuals construct their self-image in digital contexts, focusing on the motivations behind aesthetic and behavioral choices. In this regard, one of the key questions might concern the level of disconnection or overlap between the identities expressed in the physical world and those present in the Metaverse. The adoption of an avatar that does not reflect the user's real characteristics—such as gender, ethnicity, or social status—opens new research perspectives on the motivations behind these decisions. Avatar customization could reflect a form of emancipation from the real world, enabling individuals to overcome perceived limitations or, conversely, could represent conformity to dominant social and cultural norms within the Metaverse.

Similarly, empirical research could clarify how and to what extent the identity dynamics that develop in the Metaverse influence behaviors and actions in the real world. Some studies (Lee & Kim, 2023; Manfredi & Gabbiadini, 2023) have highlighted that various individuals tend to conform to the roles and expectations tied to the avatars they create, even after the virtual experience. This phenomenon, known as "Proteus," is suggesting that digital identities can influence individuals' actions and decisions.

Sociological research could also focus on the construction of communities and intra- and inter-group relationships. Digital environments facilitate the creation of social networks that transcend geographic and cultural boundaries, allowing users to connect based on shared interests rather than territorial constraints (Bibri, 2022). The experience of "virtual presence," where users perceive themselves as genuinely situated in a shared space with others, can impact the sense of community and solidarity. Thus, it becomes sociologically relevant to analyze how these phenomena influence behaviors and attitudes in the physical world, as well

as to examine whether virtual interactions foster more inclusive communities or, conversely, reinforce existing divisions.

The potential for forming virtual communities also brings forth complex dynamics of inclusion and exclusion. While the Metaverse provides opportunities for greater connectivity and participation, it may simultaneously generate new forms of inequality or replicate and even amplify existing power hierarchies from the physical world. This raises fundamental sociological and ethical questions about access, representation, and governance in virtual spaces. As platforms within the Metaverse are often controlled by private corporations or decentralized organizations, issues of decision-making power, rule enforcement, and digital governance become central to analyzing the social order in these environments. Social research must critically examine who establishes the norms and regulations within virtual communities, what mechanisms regulate power relations, and how control is exercised over user behavior (Coeckelbergh, 2020; Turner, 2023). Analyzing these aspects requires a transdisciplinary perspective, integrating insights from political science, philosophy, law, and technology studies to assess how digital governance frameworks shape virtual interactions and whether they reinforce or challenge existing social and economic inequalities.

Furthermore, as the Metaverse evolves, it is crucial to consider the ethical and political implications of algorithmic governance and automated decision-making in these spaces. Algorithms play an increasing role in moderating content, filtering interactions, and enforcing community standards, raising concerns about transparency, bias, and accountability. The reliance on AI-driven governance within virtual communities prompts important questions regarding who designs these systems, what ethical frameworks guide their implementation, and how algorithmic power may shape user experiences and reinforce social stratification. The intersection between AI ethics and digital sociology becomes particularly relevant in studying how these automated governance structures impact democratic participation, freedom of expression, and collective agency in the Metaverse.

In an environment where interactions are mediated by avatars and the boundaries between real and digital identities are often blurred, deviant behavior can take on new and complex forms. Acts of cyberbullying, virtual fraud, and other manifestations of digital deviance may proliferate in spaces where social norms and sanctions remain fluid and not yet well-defined. The governance of social behavior within the Metaverse thus becomes a critical area of study, requiring interdisciplinary contributions from sociology, criminology, digital ethics, and law. Addressing the

challenge of regulating digital spaces while preserving the principles of fairness, inclusivity, and individual rights demands the development of novel frameworks for social control that balance user autonomy with the need for security and community well-being (Wu et al., 2023).

The concept of "gig work" also requires specific attention from sociology, as it contributes to a redefinition of consumption, labor, and production. Far from being exclusively a space for pure entertainment, the Metaverse appears as a context where the boundary between work and consumption is highly fluid. Participants in this ecosystem are not only workers but also users who actively contribute to the creation of economic value (Levytska, 2024). This scenario opens new avenues of investigation into consumer behavior and the perceived value of virtual goods compared to physical ones. In particular, the sociology of consumption could analyze how the desires and motivations that drive users to purchase virtual goods differ from or reflect the dynamics of traditional consumption. The growing trend of investing real money in virtual goods and properties raises fundamental questions about the nature of value and economic dynamics within the Metaverse. New forms of digital consumption could also influence social hierarchies, creating new forms of distinction based on the possession of prestigious virtual goods or access to exclusive spaces within the Metaverse. Moreover, the concentration of ownership of production and distribution means in the hands of a few major tech companies represents a new form of digital capitalism, in which platforms exercise near-total control over economic dynamics (Zhang, 2023). On the one hand, the Metaverse appears to offer opportunities for greater individual control over one's work. On the other hand, dependence on digital platforms to access these markets can result in a new form of subordination. Furthermore, according to some authors (Andrejevic, 2022; Doctorow, 2020), work in the Metaverse can be seen as a way for platforms to learn behavioral patterns and develop new business models, exposing users to the risk of being unknowingly commodified. Within this framework, sociology is called upon to analyze how forms of economic control influence power relations between workers and platforms.

Another area of sociological interest concerns the precariousness of work in the Metaverse, amplified by the absence of contracts, lack of access to social benefits, and variable earnings conditions often tied to market fluctuations and demand for virtual services. Additionally, access to resources and work opportunities in the Metaverse is not distributed equitably. Platforms that dominate the Metaverse can establish economic conditions that favor only certain segments of the population. For instance, access to advanced content creation tools or participation in high-level virtual markets

may be limited by economic or technical barriers, excluding large segments of potential workers. This could lead to a new form of digital social stratification, where only people with the necessary resources can benefit from new economic opportunities (Esen et al., 2023).

Consequently, there is a need for a critical and contemporary reinterpretation of some central concepts in the sociological reflection on labor, such as precariousness, autonomy, worker protection, and alienation.

Finally, an area of research could focus on the consequences of Metaverse abuse on people's lives and well-being. For instance, the use of mobile devices often requires maintaining the same posture for extended periods, which can lead to issues such as "Text Neck Syndrome" (Neupane et al., 2017). This is a postural disorder caused by the continuous downward tilting of the neck to look at a screen, leading to tension and pain in the cervical area and shoulders, often accompanied by eye strain and headaches. The widespread use of the Metaverse could amplify such effects, given the time spent within immersive virtual activities. Moreover, highly engaging experiences in the Metaverse may result in overstimulation, hindering the relaxation necessary for proper rest. This can interfere with normal circadian rhythms, compromise sleep, and contribute to sleep deprivation. The blue light emitted by digital device screens, which reduces melatonin production, may further aggravate this issue, making it even more difficult for users to relax and fall asleep after prolonged sessions.

Beyond sleep-related effects, active participation in the Metaverse is often accompanied by real-life sedentary behavior, as opportunities for movement and physical activity are limited (Bale et al., 2022). This behavior, associated with prolonged Metaverse use, can lead to related health problems, such as being overweight and other metabolic complications. It is therefore crucial for social research to focus on developing strategies to raise awareness among users about the importance of taking regular breaks and integrating physical activities during online sessions, thus balancing immobility with moments of exercise and physical well-being.

Some studies have also already highlighted how prolonged use of the Metaverse can also impact individuals' interpersonal skills (Belk, 2024; Yasuda, 2024). Interaction through avatars, mediated by digital representations, can limit the development of face-to-face communication skills, reducing individuals' ability to pick up on non-verbal cues, facial expressions, and body language. Reduced real-world interaction practice may result in a loss of essential relational skills, with potential negative effects on interpersonal and professional relationships in the physical world. Another relevant phenomenon is the tendency of some individuals to

prioritize interactions in the Metaverse at the expense of meaningful connections with friends, family, or colleagues, reducing their sense of belonging and social participation. Digital isolation could be particularly problematic for people already experiencing marginalization or social difficulties in the physical world, as they may see the Metaverse as a sort of refuge. Sociology can play a crucial role in studying these phenomena, analyzing how prolonged interaction in the Metaverse influences social dynamics and individual identities. Researchers could investigate how the virtual nature of the Metaverse impacts individuals' relational capacities, also examining the dynamics of dependency that may arise. Based on empirical evidence, researchers could contribute to the development of intervention strategies aimed at promoting a more mindful use of the Metaverse. This might include raising awareness about the importance of maintaining a balance between virtual and real life, reinforcing the necessity of actively participating in community life, and building meaningful relationships.

4. CONDUCTING SOCIAL RESEARCH IN THE METAVERSE

Conducting social research in the Metaverse opens up a range of unprecedented possibilities, allowing researchers to overcome some of the practical and logistical barriers encountered in the real world while introducing new challenges that the scientific community must critically address. One of the primary advantages is the reduction of costs and time. Traditional social research often requires significant resources to cover expenses such as renting facilities for in-person interactions, travel and accommodation costs for participants and researchers, and other logistical expenses. In the Metaverse, these needs are significantly reduced or eliminated altogether. Researchers do not need to rent rooms, laboratories or organize travel, and logistical constraints become less restrictive since interactions occur within a single virtual environment. This ease of access broadens the possibility of involving participants from different geographic areas, regardless of their location, and facilitates the inclusion of individuals with mobility impairments. As a result, the Metaverse appears particularly useful for research requiring large and diverse samples, promoting inclusivity in ways that traditional settings often fail to achieve (Zallio and Clarkson, 2022). Nevertheless, access to the technologies necessary to use the Metaverse remains uneven, potentially reinforcing existing digital inequalities. Economic and geographic factors may limit participation, leading to the exclusion of some segments of the population, such as individuals with low incomes or those living in areas with

insufficient internet infrastructure. In social research, this digital divide raises concerns about sample heterogeneity, as studies conducted exclusively within the Metaverse might not accurately reflect broader social realities (Monaco and Sacchi, 2023).

Compared to traditional methods of data collection, such as face-to-face or videoconferencing-based interviews, interactions in the Metaverse can offer a greater sense of presence, reducing the perceived distance between researchers and participants. The ability to use customized avatars allows subjects to represent themselves in ways that may enhance comfort and openness, making them feel more at ease during interviews or focus groups (Osborne and Jones, 2022). Additionally, interacting with a virtual environment while responding to research questions fosters a level of engagement that would be difficult to replicate in other settings (Rzeszewski et al., 2024). However, despite its immersive nature, the Metaverse remains an artificial environment that, in some cases, may influence user responses and challenge the validity of findings when applied to real-world contexts. The degree of detachment from physical reality, combined with the digitally constructed nature of interactions, may lead participants to adopt behaviors that differ from those they would exhibit in offline settings. Additionally, the Metaverse offers a high degree of freedom in avatar customization, allowing users to shape their digital identities in ways that may not necessarily reflect their real-world characteristics. This flexibility in self-representation can significantly impact behavior, interactions, and self-perception, introducing additional layers of complexity in the analysis of data. Researchers must carefully account for these factors, considering how digital identity construction influences social dynamics and the potential discrepancies between online and offline data.

The Metaverse can also serve as a fully digital laboratory for conducting experiments, offering researchers the ability to manipulate independent variables, isolate subjects from unwanted external influences, and replicate studies under controlled conditions to verify the validity of results. In contrast to the traditional laboratory settings, which are often constrained by logistical, financial, or ethical considerations, virtual environments provide unparalleled flexibility in designing and executing social experiments according to the specific needs of a research project. For instance, researchers can create digital settings that simulate economic crises, environmental disasters, or the introduction of technological innovations. Unlike traditional surveys or role-playing exercises, where participants must rely on imagination to envision such situations, the Metaverse enables the direct experience of these scenarios, potentially yielding

richer and more ecologically valid data. The ability to modify environmental factors instantaneously, introduce controlled stimuli, and analyze behavioral responses in real time significantly expands the scope of experimental possibilities within social research. Another significant advantage of conducting experimental research in the Metaverse is the possibility to create and manage control groups with greater efficiency than in traditional experiments. Within virtual environments, participants can be randomly assigned to different experimental conditions, reducing selection biases and ensuring a more balanced distribution of variables. Researchers can systematically monitor environmental and behavioral factors with high precision, facilitating the collection of accurate and reliable data. This level of control enhances the ability to isolate causal relationships by minimizing external interferences that often compromise real-world experiments. Despite these advantages, conducting experimental research in the Metaverse is not without challenges. One major concern is external validity—whether behaviors observed in virtual environments accurately reflect those in the physical world. Additionally, awareness of being part of an experiment may introduce reactivity effects, where participants alter their responses due to the experimental setting. Ethical concerns also emerge when designing experiments in the Metaverse. The ability to manipulate digital environments and create controlled scenarios raises new dilemmas, particularly in studies that simulate extreme social conditions or expose participants to distressing situations. While the virtual nature of the Metaverse may provide a safeguard against physical harm, the emotional effects of digital experiences must still be carefully considered. Ensuring that participants are fully aware of the nature of the experiments, the risks involved, and their right to withdraw at any time remains a fundamental responsibility for researchers.

Beyond experimental research, the Metaverse offers significant opportunities for qualitative research, particularly netnography—or digital ethnography—a technique that studies interactions and social dynamics within online communities (Kozinets, 2006). The Metaverse represents an ideal environment for netnographic research, allowing scholars to observe interactions among avatars in real time while directly participating in the digital life of virtual communities. The "illusion of place" (Slater & Wilbur, 2009), which enables users to perceive virtual environments as tangible and immersive, creates a research setting where social behaviors and interactions unfold in a manner that closely resembles real-world experiences. This phenomenon allows researchers to study emergent forms of sociality, cultural expression, and collective identity formation within digital spaces in ways that traditional online ethnography may not

fully capture. However, the disconnection between real and virtual identities may lead to a form of "digital disinhibition," where users feel freer to act in ways that do not necessarily align with their real-world attitudes or social norms. In some cases, this can foster deeper self-expression and engagement, allowing individuals to explore identities they may suppress in the physical world. Yet, it can also lead to the adoption of exaggerated or performative behaviors that complicate data analysis. The fluid nature of digital identity and the potential for anonymity require researchers to critically assess how avatars mediate self-presentation and interaction, taking into account the extent to which virtual behaviors reflect or deviate from offline identities. Furthermore, ethical concerns regarding informed consent and data privacy must be addressed, as users may not always be aware that their interactions are being studied, particularly in publicly accessible virtual spaces.

The Metaverse also expands possibilities for autoethnography, a technique in which researchers do not only observe but actively engage in the virtual worlds they study (Wood and Solomon, 2014). Through their avatars, researchers can immerse themselves in the digital environments they want to study, experiencing firsthand the social dynamics, norms, and interactions that shape virtual communities. By directly participating in the Metaverse, researchers can gain a deeper knowledge of the affective and embodied dimensions of virtual engagement, including the ways in which users form attachments to their avatars, establish relationships, and negotiate power structures within digital spaces. In this context methodological reflexivity is essential, as the researcher's own immersion within the Metaverse may influence findings, necessitating transparency in documenting their positionality and subjective experiences. Unlike traditional ethnographic settings, where the researcher's presence is physically visible and interactions occur in real-time, the Metaverse introduces additional layers of mediation that can shape both the researcher's engagement and the behaviors of those being studied. The risk of becoming too integrated within the virtual community must be carefully managed to maintain a critical distance while still achieving meaningful immersion. Moreover, ethical considerations surrounding researcher participation and disclosure remain complex, particularly in environments where the boundaries between public and private interactions are ambiguous. In this kind of research the governance and regulation of virtual environments present further challenges. Unlike traditional research settings, where ethical oversight is well-established through institutional review boards (IRBs) and ethical committees, the decentralized and corporate-controlled nature of many Metaverse platforms raises questions about

who should regulate these research practices. Many virtual worlds are managed by private entities that set their own terms of service, determining how user data is collected, stored, and shared (Floridi, 2014). This raises concerns about whether researchers must seek platform-specific permissions to conduct studies, how to ensure user anonymity in digital spaces that track behavioral data, and how intellectual property laws apply to user-generated content in the Metaverse (Hennin, 2012; Molina and Borgatti, 2021). These governance issues necessitate new ethical frameworks that account for the complexities of researching within corporate-owned virtual spaces while ensuring that fundamental ethical principles—such as respect for privacy, consent, and data protection—are upheld.

A final consideration for social researchers in both qualitative and quantitative studies is the absence of sensory experiences such as touch and smell. While auditory and visual aspects of immersive environments tend to be highly realistic, the lack of other sensory inputs may lead to an incomplete analysis of the phenomena under social analysis. This limitation could influence user interactions and engagement, as sensory deprivation in virtual spaces might affect emotional responses, decision-making processes, and the authenticity of social behaviors. Researchers should account for these constraints when designing studies in the Metaverse, considering how the absence of certain stimuli may impact participants' experiences and the overall validity of findings.

4. CONCLUSIONS

The Metaverse presents itself as a new frontier for social research, offering opportunities to study emerging phenomena related to digitalization and mediated interaction, as well as a unique environment within which to conduct studies and research.

On one hand, the Metaverse represents a new object of study for sociology, tasked with examining phenomena related to identity construction and self-representation. Avatars, which serve as the primary means of interaction, provide individuals with the ability to construct profiles that do not necessarily reflect their real-world characteristics. The choices users make regarding appearance, behavior, and social interactions offer a rich source of data for researchers interested in analyzing how people negotiate their identities in virtual contexts. Studies could also focus on how digital representations reflect or challenge stereotypes related to gender, ethnicity, or socioeconomic status, including their intersections.

From this analytical perspective, the Metaverse also offers an opportunity to study phenomena of "digital disinhibition," where individuals may feel less constrained by real-world social norms. These dynamics deserve particular sociological attention as they can reveal new facets of human behavior, impacting interpersonal relationships and power dynamics.

Moreover, social research must also address problematic behaviors related to excessive use of the Metaverse - such as addiction to virtual environments - raising questions about how people balance their digital lives with their real-world existence. Sociology will need to investigate the psychosocial implications of excessive platform use, including phenomena of isolation and alienation from the physical world, and how these experiences affect individual and collective well-being.

On the other hand, the immersive characteristics of the Metaverse make it an innovative space where researchers can create controlled and customized environments to study complex social dynamics. One of its greatest strengths lies in the ability to use a kind of virtual laboratory, where sociologists can manipulate variables and observe changes in real time. The ability to simulate complex social phenomena in highly customized virtual environments allows researchers to study group dynamics, cooperation, conflicts, and leadership with a level of control that would be impossible in the physical world. Additionally, the use of avatars and the physical distance between researchers and participants reduces the risk of influencing responses and behaviors, thereby improving the quality of collected data and information, with the added benefit of reducing the time and costs associated with traditional research. Another potential of the Metaverse is its ability to facilitate large-scale cross-cultural studies. Shared virtual environments can be used to compare the behavior of participants from different parts of the world, overcoming geographical and cultural barriers.

Despite its advantages, the Metaverse presents several challenges that researchers must carefully consider. First and foremost, the issue of accessibility remains central. Not everyone has access to the technologies required to participate in studies and research conducted in the Metaverse, which can lead to a partial and non-diverse representation of participants. Individuals living in areas with poor connectivity or those lacking the financial means to acquire the necessary technologies may be excluded or underrepresented in these studies. Another critical aspect concerns the ethical dimension. The Metaverse enables the collection of an enormous amount of information, including biometric data, which must be handled with the utmost care to prevent violations or misuse. It is therefore essential for researchers to develop rigorous ethical

guidelines to ensure the protection of users' privacy. A further concern involves the external validity of studies conducted in the Metaverse. Although virtual environments allow for precise manipulation of variables, the realism of simulations may not accurately reflect real-world dynamics. Interactions in the Metaverse, mediated by avatars, do not fully replicate the nonverbal cues, facial expressions, and tactile dynamics that characterize physical interactions. This limitation could undermine the ability to generalize findings from the Metaverse to the real world.

Such limitations can be partially addressed through appropriate strategies. Specifically, to improve external validity, one approach could involve combining research conducted in the Metaverse with field studies or real-world collection of data, allowing for comparisons between findings in different settings. Another strategy could be to view the Metaverse as a kind of "preliminary laboratory," useful for testing hypotheses and developing scenarios that can later be validated in physical contexts. This hybrid approach could help enhance the robustness of results.

In light of the discussion, it is clear that the Metaverse offers significant potential for social research, but fully leveraging it requires a methodologically sound approach. In particular, researchers will need to continue developing tools and strategies to address challenges related to accessibility, external validity, and data protection. Beyond methodological considerations, conducting research in the Metaverse also demands a set of technical and analytical skills that extend beyond traditional social research methodologies. Social researchers must become proficient in navigating virtual environments, designing and managing digital interactions, and utilizing immersive technologies to structure their studies effectively. Moreover, familiarity with data analytics, AI-driven research tools, and blockchain-based systems may become increasingly relevant for handling large datasets, verifying digital identities, and ensuring the security of research processes. Given the interactive and decentralized nature of the Metaverse, researchers will also need to develop competencies in algorithmic literacy. Ethical considerations remain paramount, requiring researchers to acquire expertise in privacy protection, and the management of algorithmic biases that may influence user experiences and data collection. Ultimately, the integration of classical research methodologies with emerging digital tools will be essential for ensuring the rigor, reliability, and ethical integrity of research conducted in the Metaverse. Social researchers must not only adapt their theoretical and methodological frameworks but also cultivate collaborations with other scientists to fully harness the opportunities of this evolving digital landscape. The future of research in the Metaverse necessitates both an

interdisciplinary and transdisciplinary approach, as the complexity of virtual environments requires expertise that transcends traditional disciplinary boundaries. Collaboration between sociologists and experts in fields such as artificial intelligence, cybersecurity, human-computer interaction, and law will be essential not only for the development of innovative tools and technologies that enhance the research process but also for ensuring ethical, secure, and inclusive research practices.

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