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Panel 10. Searching for the Metaverse: Mapping and disentangling the imaginaries of VR-MR

Convenors:

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Keywords: Metaverse; Imaginaries; Narratives of VR/MR; History of VR/MR; Politics of VR/MR

After gaining momentum in 2021 with Mark Zuckerberg's letter announcing META, the idea of the metaverse as an interconnected and interoperable system has been replaced by different trends in technological development and market strategies involving multiple human and non-human actors, applications, sociotechnical cultures, and a vast array of potential uses and "misuses" of emerging Virtual and Mixed Reality technologies (VR/MR).

From the original vision of a large, interoperable metaverse, we are now witnessing a stage of interpretative flexibility in which the final goals and alleged uses of VR/MR are constantly challenged, discussed, and renegotiated by various actors at both global and national levels. For instance, the Chinese Three-Year Action Plan for the Innovative Development of the Metaverse Industry (2023-2025) and the EU Initiatives on Virtual Worlds sharply contrast with the original concept of the metaverse as portrayed by META, offering a concrete alternative imaginary of VR- MR. Meanwhile, META itself is shifting its narrative and strategy, broadening the types of devices and environments that future users might buy and inhabit.

Simultaneously, the proliferation of devices and projects developed by companies and institutional actors contributes to a new form of "balkanization" of VR-MR environments, creating a complex and fragmented archipelago of "reality media" that parallels the ongoing competition among companies, states, and relevant groups in the digital market.

In line with the diverse and non-networked dimensions of contemporary imaginaries of the metaverse, this panel aims to gather researchers from various disciplines and geographical areas to discuss the narratives, social practices, and emerging uses and misuses surrounding past and current VR/MR technologies. To disentangle the imaginaries of VR/MR, we invite submissions addressing (but not limited to) the following topics:

- The relationships between past and current narratives of VR-MR at global and national levels;
- Practices and design of usable spaces in VR-MR, focusing on the logic of interoperability and cooperation among tech-makers and users of VR-MR artefacts and environments;
- Recurring tropes, fiction/non-fiction narratives, and the sociotechnical construction of VR/MR applications, devices, and environments;
- Empirical and ehnographic research in situated VR/MR environments and communities;
- Struggles, conflicts, and or cooperation between the visions and expectations of corporations, companies, institutions, and user communities;
- VR/MR imaginaries/narratives and marginalized groups or communities;
- Forms of resistance to VR/MR as tools of surveillance and control.

In addition to standard academic presentations, we invite submissions presenting artistic and ongoing projects and representations of metaversal-VR/MR technologies, narratives, and futures, as well as examples and experiences of co-production of VR/MR technologies, applications, and environments involving diverse actors such as online communities, startups, grassroots movements, civic organizations, and NGOs.

12 JUNE 2025 09.00 - 11.00 SESSION 1

ID 431 - Beyond definitions: How news media are approaching the metaverse

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Keywords: metaverse, news media, experimentations, digital journalism, gaming platforms

Although there is no comprehensive and generalized consensus on what the metaverse is (Park and Kim, 2022; Dolata & Schwabe, 2023), industry leaders and professionals initially expected it to be the next technological revolution (Harley, 2022). This aligns with a growing interest in virtual worlds, driven by the momentum of digital technology adoption during the confinements associated with the Covid-19 pandemic, which accelerated the acceptance of digital interactions (Dolata & Schwabe, 2023; Anderson & Ranie, 2022). In journalism, the metaverse was seen as a potential trend, creating new challenges and opportunities for news media to connect, entertain and inform audiences (Newman, 2022). Moreover, the news sector was being urged to adapt in light of this technological potentiality, prompting calls for empirical work on the implementation of metaverse-related technologies (Crespo Pereira et al., 2023; Dolata & Schwabe, 2023). Addressing this call, this paper is based on a exploratory study conducted for the Media Innovation Initiative in Switzerland. It examines how news organizations in Europe and abroad approach the so-called metaverse.

The study is based on an inventory of initiatives publicly framed as metaverse-related, specifically those taking place in persistent virtual spaces, launched by news media, journalist associations, and news agencies between 2020 and 2023 at the international level. Initiatives were identified through web and social media searches in multiple languages. We then developed an inductive typology based on their key characteristics. Additionally, we conducted nine semi-structured interviews with European experts and media professionals to explore the challenges and future prospects of news media concerning the metaverse. Interviews transcripts were analyzed using inductive thematic analysis (Braun & Clarke, 2012).

Results show that media experimentations primarily take place on gaming platforms, which are seen as key drivers of metaverse development, and offer an opportunity to connect with (young) audiences. News organizations explore the social dimension of these platforms by creating virtual spaces and organizing events, with shared emotional experiences being considered key. To a lesser extent, news media explore immersive narrative formats, that allow audiences to experience journalistic content. However, news organization's approach to the metaverse is characterized caution and a wait-and-see attitude. Furthermore, they move forward without always having a clearly defined strategy for investing in the metaverse. This mainly stems from uncertainties regarding the return on investment in these spaces, especially at a time of economic difficulties for the sector.

More broadly, these experiments renew with questions that have arisen with previous digital innovations, in particular social media, and for which news organizations are still looking for answers. This prudent investment through metaverse-related initiatives also suggests a will to develop greater autonomy from big tech companies. This study contributes to the broader discussion on the imaginaries of the metaverse, highlighting journalism's role in shaping and contesting its future development.

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ID 281 - Making virtual environments for exposure therapy in the field of mental health.

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Elsa Forner, Ecole des hautes études en sciences sociales

Keywords: virtual reality, exposure therapy, mental health, expertise, scripts

Virtual reality exposure therapy (VRET) has been developing in the field of mental health since the mid-1990s. Exposure is one of the techniques commonly used in cognitive and behavioral therapies to treat

anxiety, phobias, addictions, or post-traumatic stress disorder. It consists in repeatedly and progressively placing a person in a problematic situation. This strategy is adopted to modify emotions through desensitization, re-equip thoughts by learning cognitive strategies and reconfigure behavioral reactions through training. TERV consists in transposing into the virtual realm situational scenarios usually carried out in vivo or in the imaginary world.

To support this transposition, it is necessary to bring together technical and medical expertise. More precisely, we are interested in this encounter as it takes place to produce virtual exposure "scripts" (Akrich, 1987). After identifying the different frameworks in which medical and technical expertise meet (person-border, interdisciplinary collaboration as part of an academic research project, market attachment of one expertise to the other as part of a start-up), we will focus on the case of CareVR, a start-up currently dominating the market for virtual reality applications in the service of mental health in France.

We rely on an observational survey (10 days in an addictology department of a Parisian hospital routinely using TERV) and interviews (N=32) with various players: CareVR employees; researchers in psychology, psychiatry, addictology or virtual reality who are or have been involved in an academic research project and/or in setting up a clinical study in partnership with CareVR, and some of whom have set up a start-up; clinicians who use a virtual reality solution marketed by CareVR, in hospital or private practice settings.

First, we will analyze the conditions under which virtual exposure scripts are produced by CareVR, which was created from technical expertise with the aim of adding medical expertise. We will then look at the content of the scripts, identifying areas of friction between expertises.

Several works emphasize that the design of virtual reality solutions gives rise to friction between different expertises on ways of representing reality (Brandt, 2013; Suchman, 2016; Messeri, 2024). In these works, one issue structures the tensions in a central way: how do actors think about virtual simulation, according to what criteria of resemblance to the real (verisimilitude of situations, graphic beauty) and with regard to what purposes (entertaining, making empathetic, training, caring)? We'd like to explore this question using the case of the making of virtual environments for exposure therapy.

We intend to unfold the questioning of actors around what needs to be simulated to stimulate what, by articulating the issues of realism, verisimilitude and effectiveness. We will attempt to identify three issues. 1. How does the question of the social enter into discussions between actors to produce plausible situations? 2. How is the importance of realism relativized in discussions between actors to design virtual environments? 3. How does the question of therapists' control over the virtual situation arise in the co-production of scripts?

12 JUNE 2025 09.00 - 11.00 **SESSION 1**

ID 338 - Observing virtual worlds: ecosystems, cases and skills

Philip Boucher, European Commission

Keywords: virtual worlds, EU policy, digital skills and competences, industrial ecosystems

Virtual worlds (VWs) are poised to have a significant impact on their users' interactions with each other and the increasingly blended digital and physical spaces they inhabit. In 2023 The European Commission (EC) organised a European Citizens' Panel on VWs, and followed up with a communication – 'An EU initiative on Web 4.0 and VWs' – which sets out a strategy for shaping the development of VWs to reflect EU values, principles and fundamental rights. Meanwhile, several other EU digital policies such as the General Data Protection Regulation (GDPR), Digital Services Act (DSA) and Digital Markets Act (DMA) already apply to those aspects of VWs that fall under EU jurisdiction. The present project was recently launched with the aim of observing the emergence of VWs in this context. It has three key objectives. First, to analyse VW activities and their distribution across industrial ecosystems to better understand the positioning of European actors within the global picture. Second, to identify and systematically analyse a wide range of use cases of VWs to build a picture of technical, social, legal, ethics and sectoral issues that are faced. And third, to examine VWs through the lens of digital skills and competences, to understand which skills are in demand and how they correspond to training initiatives. The presentation will set out the latest findings.

12 JUNE 2025 09.00 - 11.00 SESSION 1

ID 141 - Mapping the Imaginaries of VR/MR: Narratives, Practices, and Politics in the Evolving Metaverse

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Keywords: Metaverse, VR/MR Imaginaries, Immersive Technologies, Ethical Design, Narrative Construction

The metaverse has transitioned from a vision of seamless interconnected virtual environments to a complex, fragmented reality shaped by diverse technological advancements, market strategies, and sociotechnical practices. Virtual Reality (VR) and Mixed Reality (MR) technologies, central to this evolution, have fundamentally redefined communication and interaction paradigms. This study investigates the imaginaries surrounding VR/MR, their narratives, and the political and technological forces shaping their adoption and integration.

Amidst the proliferation of metaverse ecosystems, the study examines the interpretive flexibility of VR/MR technologies, exploring their transformative potential and the tensions that emerge among global actors. From the Chinese Three-Year Action Plan for the Metaverse to the European Union's virtual world initiatives, distinct and often competing imaginaries highlight the interplay between localized visions and global ambitions. These variations reflect broader geopolitical, cultural, and economic dynamics influencing the development and application of VR/MR. Focusing on immersive storytelling and communication practices, the research addresses how VR/MR environments redefine user engagement, emphasizing interactivity, emotional connection, and experiential depth. The ability of VR/MR technologies to ""blur"" the boundaries between storytelling and story-living is analyzed, with attention to their capacity for fostering empathy and enhancing the communicative experience. The role of generational shifts, particularly among Generation Z, in adopting and shaping these technologies is also explored, highlighting their impact on media practices and communication norms.

This study further evaluates the sociotechnical construction of VR/MR environments, analyzing the opportunities and challenges they present for inclusivity and ethical design. It considers the implications of immersive technologies for marginalized communities and explores mechanisms of resistance to their potential use as tools for surveillance and control. Adopting a mixed-methods approach, the research incorporates ethnographic observations, content analysis, and experimental simulations to capture the multifaceted impacts of VR/MR. Through these methodologies, the study reveals how these technologies can both enhance engagement and pose ethical dilemmas, particularly in contexts like crisis management, media storytelling, and public communication. The findings underscore the need for participatory approaches in VR/MR development, involving diverse stakeholders to ensure ethical accountability and equitable outcomes.

By disentangling the imaginaries of VR/MR, this research contributes to the broader understanding of how these technologies influence communication, media practices, and societal structures. The study provides a framework for evaluating the transformative potential of VR/MR while advocating for strategies that prioritize user-centered design, ethical considerations, and inclusivity. In doing so, it advances the ongoing discourse on the role of immersive technologies in shaping the future of communication and interaction."

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ID 337 - Reading the Imaginary of the Metaverse through Chinese Academic Discourse

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Paolo Bory, Politecnico di Milano

Keywords: Metaverse, China, Imaginary, Academic discourse

In 2023, the Chinese government formalized its willingness to develop the Metaverse, approving a Three-year Action Plan with the aim of encouraging private companies to invest and make China globally competitive in this sector. However, the Chinese government's interest in this new technology had already emerged in previous years, as local municipalities undertook virtual reality development projects, such as the Beijing Urban Sub-Center Metaverse Innovation Development Action Plan 2022–2024 (北京城市副中心元宇宙创新发展行动计划2022–2024年), to be implemented in the Tongzhou district, and the Shanghai Action Plan for Cultivating a New Track of 'Metaverse' 2022–2025 (上海市培育“元宇宙”新赛道行动方案 2022–2025年).

Meanwhile, an intellectual debate was taking shape, involving scholars and experts eager to evaluate both the potential and risks associated with a Chinese Metaverse. This debate was supported by the establishment of Metaverse laboratories, such as the Qinghua University Metaverse Lab (清华大学元宇宙文化实验室) in Beijing and the Joint Research Institute of Metaverse and Virtual-Real Interaction (元宇宙与虚实交互联合研究院) at Fudan University in Shanghai, which aimed to organize events open to the business sector and produce scientific reports.

As a result, an academic discourse surrounding the Metaverse emerged, giving rise to an imaginary composed of an intricate web of symbols and references, both political and cultural. This imaginary is socially constructed around the complexity and diversity of opinions about the Metaverse, which, on the one hand, is portrayed as a potential driver of economic growth, a tool for bolstering national identity, and a means to shape global governance standards, while, on the other hand, it is seen as a potential threat to political stability, as it could act as a gateway to ideas and values that deviate from the "orthodox" framework promoted by the state.

To unveil such dual imaginary, this study relies on an analysis of Chinese academic literature, carrying on a qualitative analysis of the recurring tropes and idiomatic formulas within these texts. The study aims to uncover the defining features of the Chinese imaginary surrounding the Metaverse as reflected in narratives that follow a twofold trajectory: on the one hand, the Metaverse as a space of freedom and positive social evolution, with the potential to benefit Chinese society and strengthen the nation; on the other, the metaverse as a space of social regression, necessitating centralized control to prevent the ideological invasion of Western values.

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ID 723 - MetaJust: Shaping Justice in the Metaverse

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Keywords: Justice, Metaverse, PA, Italy

The intersection of immersive reality, new digital devices, and emerging technologies in the Metaverse transforms economic, social, and legal systems, raising crucial questions about digital governance and justice. This paper presents insights from the MetaJust project, which investigates the role of technologies such as extended reality (XR), blockchain, and AI in proposing solutions for the digitalisation of public and justice services.

Within the framework of datafication (Dijck, 2019) and immersive technologies, the project analyses the social dynamics in the Metaverse and their impact on public and judicial services. It explores how integrating advanced technologies is redefining the boundaries between physical and digital realities, creating new forms of social experience and interaction. These processes will be examined through the implementation of a digitised public service based on Metaverse technology, specifically the development of a virtual court that replicates a real courtroom. This virtual court can be used for mock hearings, training legal professionals, and testing processes related to the "virtualisation" of public and judicial services.

Additionally, the study will explore the ethical and legal implications of using Metaverse technologies, focusing on digital data management, the influence of big tech companies, and the redefinition of digital identity through avatars. In line with theories on digital infrastructure (Planting et al., 2018) and algorithmic governance (Pasquale, 2015), this contribution opens a critical reflection on how the evolution of the Metaverse might impact existing inequalities and foster more horizontal relationships, offering a fresh perspective on the future of digital justice. This intervention invites a deep consideration of how legal and social systems can adapt and innovate to meet the challenges posed by these emerging technologies.

12 JUNE 2025 11.30 - 13.00 SESSION 2

ID 470 - VTubers: Streaming Identity and Performing Authenticity through the Avatar

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Keywords: Live streaming, avatar, VTubing, self-representation, virtual performance

VTubers (also known as 'virtual YouTubers') are a widely popular category of live streamers, entertainers, and content creators on digital platforms who use virtual avatars rather than their physical appearances to represent themselves to online audiences. Real-time motion capture software and technology are used to capture the streamer's bodily movements and facial expressions, which are rendered onto two- or three-dimensional and often highly animated models or avatars. Originating in East Asia in the 2010s, generally on YouTube, VTubers have also become increasingly popular on other digital platforms, such as Twitch, X, Niconico, and Bilibili. Subsequently, specialized professional agencies and commercial partnerships as well as large fan communities have emerged around such virtual celebrities.

VTubers can be seen as an important predecessor and current competitor to the rise of AI-generated personae on digital platforms as well as AI chatbots. However, an important distinction is that VTubers are openly presented and widely understood to be more-or-less direct mediations of human(s), even if the human-behind-the-avatar may remain anonymous or indeed employ AI. Moreover, VTubers not only appear to succeed at emulating the sincerity and authenticity that is generally seen as driving the popularity of 'fleshtubers' (i.e., semi- or non-anonymized live streamers), but they do so through the creation of imaginative, playful, and even fantastical identities as well as entire life narratives. What is more, the large fandom communities that emerge around popular VTubers demonstrate a deep and multilayered complexity in terms of their understanding of authentic and inauthentic performances, knowledge of the streamer and the self as viewer, and expressions of identity and identification. As such, they present an interesting case for examining how sociality and machinic or virtual representation are currently co-constructed in digital spaces.

The use of virtual avatars, by human live streamers rather than AI, gives rise to several important questions, particularly about self-representation, performativity, and authenticity and their variable elaboration through digital practice, experimentation, and play. Although virtual avatars and the anonymity and forms of privacy they enable – not to mention the conscious construction of self-referential 'fictional' identities and 'life' details or 'lore' – might seem to preclude the establishment of authenticity, emotional engagement, and social connection with followers, the actual practices of VTubers and their popularity indicate quite the opposite. Indeed, this particular example of Internet culture offers one possible way of examining the emergence of networked communities and their respective conceptualisations of forms of (in)justice and 'the good'.

This paper analyzes three specific case studies of prominent VTubers and their fandoms that, we argue, can be taken to represent an overview of the various socio-technical infrastructures, processes, issues, and negotiations found in the VTuber community as well as its sociality, complexity, and diversity. In doing so, we draw from literature in STS, media studies, and disability studies in order to discuss how these affective digital spaces and personae can foster as well as problematize identity formation and community making, and offer one potential route for virtual sociality.

12 JUNE 2025 11.30 - 13.00 SESSION 2

ID 381 - Leveraging Metaverses for Cultural Heritage Dissemination: Exploring MR Technologies and Youth Media Practices

Julián De La Fuente Prieto, Universidad de Alcalá

Keywords: Metaverses, Cultural Heritage, Youth Practices, Emergent Design, Mixed Reality (MR)

This proposal explores the potential of metaverses for the dissemination of Cultural Heritage, leveraging emerging Mixed Reality (MR) technologies to create immersive and interactive experiences that bring cultural narratives and artifacts to life. The study examines the emergent design of metaverses, tracing their evolution from conception to current state (De la Fuente, 2022), and analyzes platforms popular among young people, such as TikTok, Google Arts & Culture, Twitch, and Minecraft, to understand their interfaces and narrative dimensions. By focusing on the narrative potential of metaverses as metaleptic interfaces (Ryan, 2014), the research highlights how these environments can communicate actions between real and virtual worlds, enhancing the preservation and engagement with cultural heritage. The analysis includes the application of augmented reality filters on social media, the use of lifelogging technologies for real-time interaction, and the representation of cultural content in mirror worlds. Additionally, the study discusses the creation of virtual worlds in platforms like Minecraft, emphasizing the importance of user-generated content and community engagement. The research employs a qualitative methodology (Hammersley, 2022), combining emergent design and digital anthropology to analyze youth practices and the sociotechnical construction of MR environments. The findings suggest that metaverses offer a unique opportunity to blend real and virtual elements, creating a continuum that enhances the accessibility and interactivity of cultural heritage. By fostering collaboration and creativity, metaverses can serve as powerful tools for cultural dissemination, allowing diverse actors, including online communities, startups, and civic organizations, to co-produce and share cultural narratives. This proposal aims to contribute to the ongoing discourse on the role of MR in cultural heritage, providing a comprehensive analysis of the potential and limitations of these technologies in creating inclusive and engaging cultural experiences.

References:

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12 JUNE 2025 11.30 - 13.00 SESSION 2

ID 293 - Worlding the Metaverse: A Comparative Study of Metaverse Creators and Users in Italy

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Marcus Pingitore, Università di Napoli Federico II

Keywords: Worlding, Metaverse, Italy, Creators, Users

In a recent promotional video, Mark Zuckerberg describes the metaverse as "an embodied internet where you're in the experience, not just looking at it". Framed this way, the Metaverse (with a capital M) emerges not merely as a digital extension of social life but as an explicit act of world-making—an engineered space that, in Zuckerberg's terms, requires its own ""norm setting"" to govern interaction. While Meta's ambition for a universal metaverse reflects aspirations of planetary scope, its realisation remains uncertain, hindered by cultural and technical bottlenecks. Yet, despite premature declarations of its demise, the metaverse is far from dead. What we are witnessing, instead, is the proliferation of metaverses in the plural—a constellation of localised experiments that, rather than converging into a singular paradigm, diverge in form, purpose, and scale.

Against the grain of Meta's singularising vision, our study shifts focus to the Italian context, where these synthetic worlds are actively reconfigured through the situated practices, discourses, and aspirations of local users and creators. Drawing on empirical material—including in-depth interviews and participatory observations—this research expands existing critical scholarship, which has largely focused on dominant actors such as Apple and Meta. Through a comparative, case-based approach, we examine the frictions, overlaps, and divergences that emerge as Italian users and creators co-produce metaverses on their own terms, shaping a fragmented landscape where competing models of digital sociality take form. In doing so, they do not merely engage with metaverses as predefined technological constructs but reimagine the very terms of their existence—as material and speculative spaces that invite all sorts of socio-political projections.

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ID 658 - Demonstrating "The Metaverse"? A Multi-sited Video Ethnography

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Alexandra Pittiglio, Ecole Polytechnique Fédérale de Lausanne

Keywords: Metaverse, mixed reality, video demonstrations, technology testing, social plausibility

What is "The Metaverse"? In his recent book, and after two chapters of introductory qualifications, technology journalist Michael Ball defines it as follows: "Here, then, is what I mean when I write about the the Metaverse: 'A massively scaledand interoperable network of real-time rendered 3D virtual worlds that can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments" (Ball 2022:29; emphasis in original). In turn, this paper draws on a multi-sited video ethnography of how different teams in a range of interdisciplinary projects – spanning mixed reality-performance research, critical disability-interface testing, and augmented reality-construction robotics – engage in and position their technological demonstrations with respect to "the metaverse," respectively its all-encompassing definition (see also Meta 2021). In particular, the paper describes, compares, and reflects on how the teams in question use video demonstrations to make the case for the prototypical technologies they develop, as "metaverse" contributions and/or critiques thereof, and how these video demonstrations enhance the social plausibility of the shown technologies – in short, as "diegetic prototypes" (Kirby 2010). Taken together, the investigated cases bring to bear the renewed STS interest in technology testing and demonstrating (e.g., Marres & Stark 2020; Rosental 2021; Sormani 2023) on current research in "virtual reality" at large (Carter & Egliston 2024), while probing the "sociotechnical imaginaries" (Kim & Jasanoff 2015) that such research enables and, at times, challenges.