vol 10, no 2 (2025)

digitcult

@ Scientific Journal on Digital Cultures

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vol 10, no 2 (2025)

tab edizioni

tab edizioni

viale Manzoni 24/c
00185 Roma
www.tabedizioni.it

Prima edizione dicembre 2025
eISBN open access 979-12-5669-294-1

eISSN: 2531-5994

DigitCult is an academic journal of international scope, double-blind peer-reviewed, and open access, aiming to value international research and to present current debate on digital culture, technological innovation, and social change.

DigitCult, taking into account the increasingly pervasive diffusion of digital cultures and their social impacts, intends to study the processes of transformation and innovation within different disciplinary traditions, also in relation to the design of new digital models, both in the field of Social Sciences and Media Studies as well as in that of Library and Information Science and Digital Humanities. DigitCult aims to discuss key issues on both theoretical and empirical research.

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DOI 10.36158/97912566929411

This special issue of *DigitCult* engages the research and practitioner communities in a dialogue surrounding the concept of Future Screens. Rather than offering a definitive definition, we propose this term as a working concept that could serve as a catalyst for innovation and critique. The rapid proliferation of screen technologies in recent years has reached such an extent that they often become invisible to us, a phenomenon that has historically characterized our relationship with media. As technology evolves, we tend to absorb its presence into our daily lives, rendering it almost unnoticed. This notion resonates with information technology pioneer Ted Nelson, who noted in the 1970s, «We live in media, as fish live in water» (Wardrip-Fruin & Montford, 2003, p. 302).

In parallel, the technological landscape of screens has rapidly diversified. From extended reality (XR), including augmented and virtual realities, to wearable devices, immersive dome visualizations, and large-scale video mapping, the variety of forms and functions is becoming integral to our everyday experiences. These advancements not only push the boundaries of technical possibilities but also fundamentally redefine the role of media in our lives.

Examining the future of these technologies allows us to capture early signals across various domains, including immersive media, film, narrative and game design, as well as music and performing arts. This exploration can illuminate how Future Screens have the potential to reshape the cultural sector, particularly within entertainment and the creative and cultural industries.

This collection of articles embarks on an in-depth exploration of the theme of Future Screens, investigating their intersections with performance, film, immersive technologies, and digital spaces. We invited contributions on this cross-disciplinary topic to serve as a catalyst for rethinking immersive media, narrative design, game development, and broader sectors of creative and cultural industries and entertainment.

When we announced the call for papers for this special issue, the focus was on three key areas of impact. First, audience engagement and experience are being redefined as

Figure 1. *Screens of the Future* (2017). Universal Everything-Media Art Studio. https://www.universaleverything.com/media-art/screens-of-the-future.

immersive technologies enable deeper, more personalised interactions, while also expanding opportunities for collective experiences in both physical and virtual realms. Second, spatial transformation examines how these new screen technologies are reshaping our relationship to both urban and virtual environments, creating hybrid spaces for new forms of community and collective engagement. Third, creative practices and industrial impact explore how emerging screen technologies are driving innovation in artistic fields, challenging traditional narrative structures, and reshaping media industries and new value chains.

As we navigate the burgeoning landscape of screen technologies, it is crucial to acknowledge that both big tech and creative industries often herald emerging technologies as the next transformative milestone. However, the discourse surrounding screen futures is not new. The evolution of the concept of future screens reflects a significant journey from the utopian and experimental origins found within video art, expanded cinema, and media art to a context shaped by research funding agendas and creative industry focused shaped by technological advancements. Early explorations in these artistic forms laid the groundwork for understanding immersive experiences, emphasising immersion, interaction and the potential for transforming narrative engagement. While we do not have the time to elucidate a history from the expanded cinema context of the 1960s and 70s, through video art, media art and beyond, to the contemporary mainstream experiences found in installations like *TeamLab, Atelier De Lumier*, and *Outernet* and perhaps most spectacular (not always a good thing) The Sphere, in Las Vegas, a few key tendencies can be identified. For example, miniturisation, mainstream adoption, increasing levels of liveness and participation, imbrication of the virtual and real – and the complications and opportunities that arise from this.

With advancements in technology, innovations in miniaturisation and the mainstreaming of devices like the Oculus Rift, HTC Vive and introduction of products like Apple Vision Pro marked a pivotal shift, bringing immersive technologies into everyday life

DOI 10.36158/97912566929411

and making them accessible to a broader audience. Projects like the collaboration between the Royal Shakespeare Company and Marshmallow Laser Feast, *Dream*, further exemplify this trend, combining immersive technology with traditional performance art to enhance viewer engagement and deepen emotional connections.

This shift highlights a commitment to inclusivity and community engagement, ensuring that advancements in immersive technologies are viewed not merely as technological marvels, but as meaningful tools for storytelling and social connection. As we move forward along this progressive trajectory, Future Screens are becoming integral to cultural production, reshaping the narrative landscape to address complex contemporary societal issues. Buckminster Fuller, the American architect, futurist, and inventor of the geodesic dome – which shapes modern immersive media spaces like the Sphere in Las Vegas – remarked, «There is nothing in a caterpillar that tells you it's going to be a butterfly» (Fuller, 1970, p. 30). This raises the question of whether today's screens will similarly transform into something new and unexpectedly beautiful, akin to how cinema, the eighth art form, emerged, or whether they will remain in their current "caterpillar" state. Through this special issue, we aim to present a range of perspectives that will help trace this evolving narrative.

The articles within this volume present a tapestry of insights. Federica Patti's work, *The Fifth Wall – Digital Performance and the Metaverse*, explores the evolution of digital performance and its burgeoning significance in our digital age. Complementing this, the article by Stefano Brilli, Laura Gemini, and Francesca Giuliani, *Experiences of Online Theatre Performance*, examines digital space in performance from a spectatorship perspective, utilising interviews to enrich their discussion. Both works demonstrate how digital technologies dissolve the traditional boundaries between performer and audience, creating opportunities for communal interaction and the collective construction of meaning.

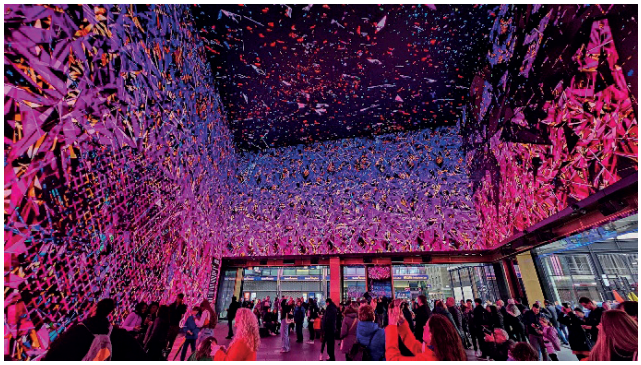

Figure 2. https://www.outernet.com. London 2025.

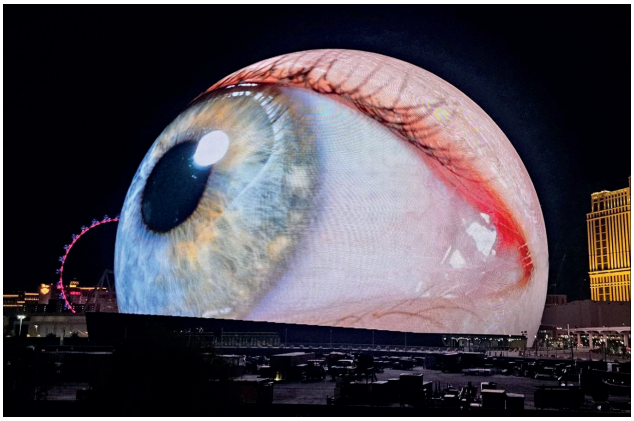

Figure 3. https://www.thesphere.com. Las Vegas.

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At the convergence of film and immersive technologies, Vanessa Vozzo's piece on *Expanded Realities* illustrates the evolution of documentary practices to accommodate immersive environments. In contrast, Dani Landau and Diego Zamora's *Volumetric Video with Skateboarders* investigate the potential of volumetric video through the lens of skateboarding culture, showing how innovative digital technologies can expand the possibilities of documentary filmmaking. Their distinct approaches – Vozzo's focus on interactivity and Landau and Zamora's emphasis on observational techniques – underline the transformative nature of emerging technologies in shaping narratives. Skateboarding, as a focal point, serves as a potent metaphor for the adaptability of urban environments. Skaters transform ordinary public spaces into arenas of exploration and innovation, reflecting a historical narrative of filmmaking that engages with mobility and spatial reimagining.

Significantly, a special section *Artistic Dialogues* features the work of Katerina Athanasopoulou et al. in *The Ring – A Conversation through Projection*, which chronicles a circular sharing process among artists during the Covid lockdown. By facilitating site-specific projections of their works, the artists recontextualise and transform each piece in dialogue with others. This collaborative framework challenges conventional notions of screen engagement and reimagines future screens as inherently local and participatory.

Conversely, Yuming Chen and Gianni Corino's *Emotive Immersion* shifts attention to sensory experiences within immersive dome environments, integrating affective computing and generative AI to propose a new paradigm for future screens. Their interactive installation, Coids, captures emotional states through EEG technology, enabling dynamic audiovisual experiences that emphasise the relational interplay between human emotion and machine perception.

James Sweeting's *Digital Resistance Against the Lasting Manipulation of Capitalism* critiques AI through cyberpunk tropes, illuminating the complexities of labor and resistance within contemporary socio-economic structures. Michele Varini's ethnographic study of *Cyberpunk 2077's Night City* complements this by examining how immersive digital landscapes influence storytelling and community interactions.

Emma Taylor's exploration of *The Gamification of Online Dating* further broadens this thematic spectrum by analysing how game-like elements on dating platforms shape identity and interpersonal dynamics. Together, these texts present a multifaceted narrative on how emerging technologies redefine individual experiences and societal constructs in contemporary digital contexts.

Collectively, these articles converge to articulate the thematic essence of digital and immersive environments, urging us to critically examine their implications for future screen experiences. This anthology reveals a complex interplay where performance, media, technology, and narrative converge, illustrating the rich tapestry of our interactions with digital spaces in artistic and cultural practices.

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DOI 10.36158/97912566929411

The Fifth Wall. Digital Performance and the Metaverse

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| abstract

Since the late 1990s, the Internet has fostered the emergence of virtual communities and participatory cultures, inviting users to become co-authors of collective creative experiences (Jenkins, 2006). As an evolution of the Web, the metaverse (Ball, 2022) has emerged as a performative, interactive, and community-based ecosystem that redefines current notions of "being online", reshaping the boundaries between physical and virtual, private and collective, human and more-than-human (Barad, 2013; Braidotti, 2013). Before and after the pandemic, metaversal environments have served as public spaces, hosting social interactions, artistic experimentation, and collaborative creative processes. This paper investigates whether the metaverse can be understood as a fifth wall (Steyerl, 2021) or a digital *théatron* (Del Gaudio, 2020): a Future Screen, where performance is staged through experiential, relational, and participatory interfaces.

Through the analysis of selected case studies – from Giacomo Verde's early telematic experiments (Monteverdi, 2023) and the online happenings of Second Front, to more recent productions supported by the *Residenze Digitali* project – this article explores how chat systems, avatar embodiment, and UX design operate as dramaturgical vectors that structure participation, relational presence, and distributed authorship (Norman, 2013; Dixon, 2007). These performative affordances configure what Floridi (2022) defines as extended experience, wherein interaction unfolds through embodied relationality, sensory immersion, and affective responsiveness, exceeding the bidimensional logic of traditional screen interfaces. In this framework, metaverses emerge as performative environments rather than mere representational spaces – sites of post-screen performativity and metaversal dramaturgy, where liveness, presence, and co-authorship are collectively negotiated in real time. These so-called OTONI (Boccia Artieri, 2023) reveal a new empathic pact between performer and viewer, shaped by real-time interaction, digital presence, and affective interfaces. Finally, the paper reflects on whether these metaversal performances may represent, as Youngblood (2020) suggests, new "gymnasia" for the collective construction of critical and conscious digital communities.

DOI 10.36158/97912566929412

1. OTONI in the Metaverse

In 2007, Steve Dixon defined digital performance as a specific field of artistic production and research in which the technological gesture is the protagonist and co-author of the creation of increasingly augmented, hyper-connected, decentralised and collaborative works. Before and after the pandemic, online platforms, video

games and virtual environments served as crucial sites for social experiences, facilitating conversations, creative projects, collective efforts and commercial exchanges. Metaversal environments, including sandbox platforms, open-world games, and massively multiplayer online worlds, are thus inhabited as complex ecosystemic stages shaped by specific affordances: avatar embodiment, spatialised co-presence, real-time collaboration, and persistent environments. These affordances enable forms of extended experience (Floridi, 2022), unfolding as sensory, performative, and relational interactions that transcend the bidimensionality of the screen interface, generating immersive, and community-driven modalities of engagement. Rather than reproducing theatre on screen, these environments generate new dramaturgical structures – what may be defined as metaversal dramaturgy – where narrative, spatiality, embodiment, and participation are dynamically negotiated among human and non-human agents. These virtual worlds operate as sophisticated expanded stages, where performativity emerges from the interplay between technological affordances, relational presence, and collective creativity.

In this context, Boccia Artieri recently described online theatrical experiments as «unidentified online theatrical objects» (OTONI), which are online performative actions in (proto-)metaverses that can be framed within the time span from the second half of the 1990s to the present day. In issue 6 of the magazine Connessioni Remote (Remote Connections), Boccia Artieri identifies artistic forms that exploit the potential and limitations of metaverses as the subject of the investigation: «OTONI has to deal with an audience confined to their own (usually domestic) physical space. They experience the performance through their own screen device, deciding whether to watch on a smartphone, tablet, computer or smart TV. Each viewer has a different rectangular view. They run the risk of remaining bound by the limitations of the usual ways they consume the screen for work, study or entertainment» (Boccia Artieri, 2023).

However, in OTONI, the pervasiveness of technological change manifests itself in affordances (van Dijck et al., 2018) that generate characterising dimensions:

- reactivity of the virtual world;
- phygital and remote spatiality;
- constant, uninterrupted connection and liveness (Gemini & Brilli, 2023);
- immersive and pervasive embodiment mediated by an avatar body;
- the multiplication of interaction screens and the metamorphosis of physical and sensory interfaces;
- the choral nature of the experience.

OTONI are in video, but not video; these dimensions extend the experience, connoting it as embodied, engaging and communal. This distinguishes it from watching a film, playing a video game or making an online call, which are all two-dimensional experiences. Furthermore, the streaming infrastructure creates an inherent tension between presence and absence: the performer addresses an audience that is invisible yet experientially present. Though OTONI may be recorded or archived in video form, they cannot be reduced to video artefacts, as their defining characteristic lies in their temporality, performativity, and co-produced liveness. Even when performances incorporate asynchronous elements, their mode of production – and reception – remains inherently anchored to the logic of live broadcast, affective co-presence, and iterative audience interaction.

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2. From Web Theatre to Extended Experience in the Metaverse

Today, the Metaverse is defined as a large-scale, interoperable network of real-time, 3D-rendered virtual environments which can be experienced online either synchronously or persistently by a limited number of users. These users have a sense of individual presence, and the network maintains continuity of data such as identity, history, credentials, objects, communications, and payments (Ball, 2022). The evolution of the Internet is extending the online experience beyond the screen, enhanced by the Internet of Things and an increasingly widespread network of sensors. Above all, this evolution is driven by the interactivity and interconnection of online communities: as Turkle states, «When we penetrate the reflective screen, we increasingly find other people there» (Turkle, 2011). Building on the concept of users' hedonistic experiences (Hassenzahl, 2003), this article presents case studies of OTONI in metaverses, exploring user interaction with technology, and their understanding, perception and description of the experience. How did artists design these systems to create performative actions and theatrical experiences? How can the user environment, form of use and on-screen experience be customised? Can these spaces, dynamics and user experiences generate dramaturgy?

User experience (UX) design encompasses and extends traditional human-computer interaction (HCI) design, addressing all aspects of the product or service as perceived by the user. UX can be described as the sum total of a user's feelings, perceptions, motivations, preferences, beliefs, attitudes, and emotional responses resulting from their interaction with an interactive technological artefact at a given moment and in a given context (Hussain et al., 2021). UX encompasses every aspect of a person's interaction with a computer system, including the interface, graphics, industrial design and physical and manual interaction. User experience evaluation can focus on methods that provide a qualitative overview of the experience of performing a particular task or using a system. The UX classification system is based on users' emotions, preferences, attitudes and emotional responses. According to Norman (2013), users develop a mental model of how they think the system works through interacting with it. This model is then used to reason about the system, anticipate its behaviour and explain its reactions. In contrast, designers transform their mental model of a project, such as a computer system, into a system model. This model then becomes the only means of communicating their mental model to the user. Despite its emotional connotations, the importance of user experience design in online digital performance has yet to be widely recognised.

Giacomo Verde's Connessione Remota (2001) is widely regarded as one of the earliest examples of live-streamed performance. Although it did not take place in a metaverse, it is emblematic of the early experimentation with digital performance and web theatre. In Connessione Remota, viewers connected from afar could gather in a virtual space, watch the performance online, and interact with each other and the performer in real time. The virtual space was a completely flat, open-source screen, entirely modelled by Verde. The user experience was also designed by Verde and was intended to encourage voyeurism and dialogic interaction at a distance via chat. Once connected, users could message Verde and observe him performing short actions using one of the first Sony headsets. Real-time chat integration facilitated audience participation and interaction, creating a sense of community, closeness, and shared experience. Before 2000, the network speed was 56 KB, and it took a long time to load a whole page,

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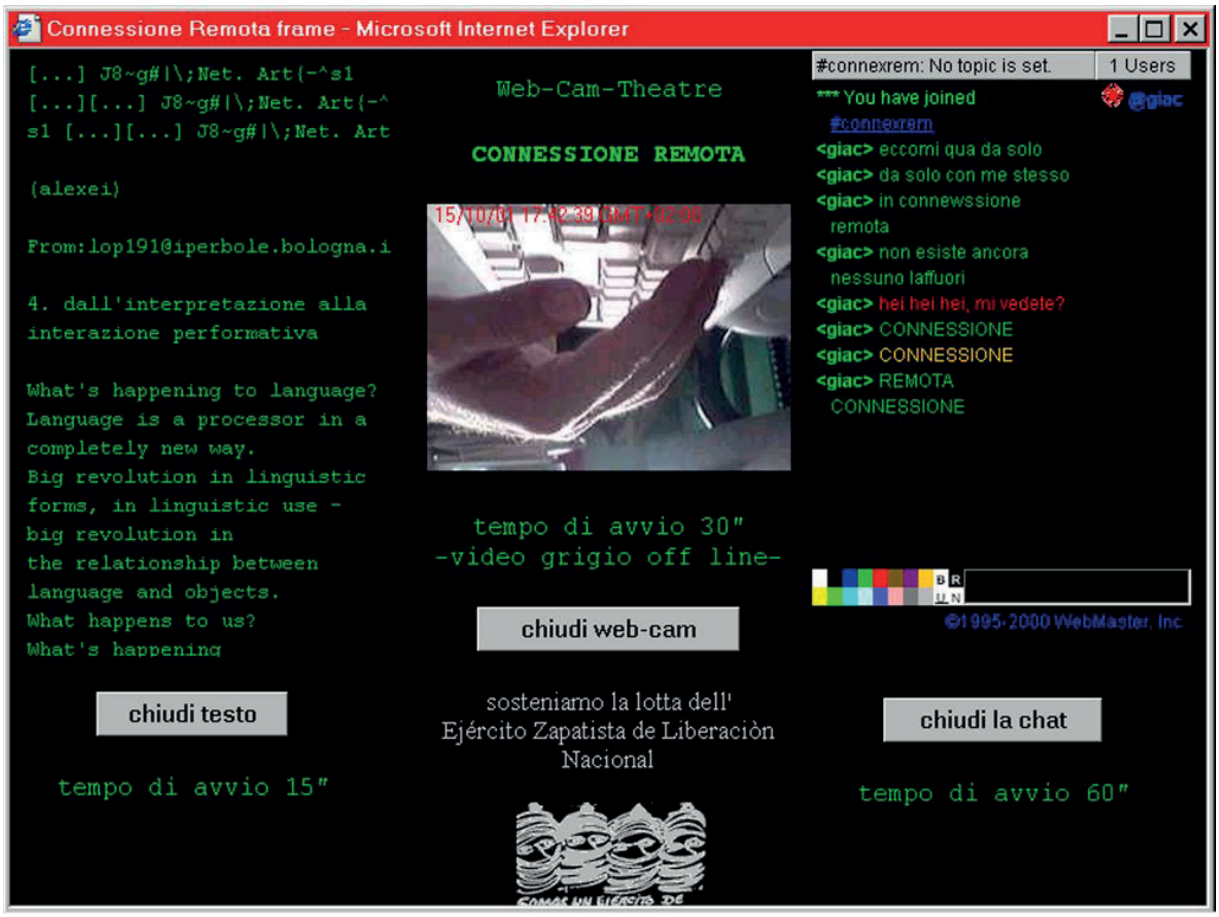

Figure 1. Giacomo Verde, 2001, *Connessione Remota*. © Archivio Giacomo Verde.

costing the equivalent of a long-distance call to an Internet Service Provider. After 1 January 2000, the introduction of the ADSL system – with broadband exceeding the 144 kbps threshold – made surfing the Internet with one of the first telematic services a viable option. Despite these difficulties, Verde's general poetics and those of *Connessione Remota* in particular prevailed: the idea of the Net as an art form and a generator of connective social relations. This idea was later put into practice by many other artists and underground collectives through hacking and disseminated by theorists (Bazzichelli, 2006). Once connected to the webcamtheatre.org website, a typical ASCII screen divided into three columns could be seen. One of these columns contained introductory text entitled *From interpretation to performative interaction*. The second column was connected to the webcam, showing Verde's performance in real time. The third column hosted a chat between users and Verde himself. Verde used this chat to give users written instructions such as "Start at 15" and "Start one thing at a time" (Monteverdi, 2001). Given the experimental nature of the project, it was important to facilitate the user experience through explicit instructions. For this reason, buttons to close and reopen the content of each column were located at the bottom of all three columns. Although minimal by today's standards, the level of interactivity was advanced for its time, even if it was limited to opening and closing content in columns and commenting live on the entire experience via chat. Verde incorporated the interactive philosophy typical of his artistic and theatrical style into the open-source, graphical interface of the screen, realising the potential for real-time feedback and thus helping to shape the quality of the user experience.

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Figure 2. Second Front, *Breaking News*, 2006. Performance in Second Life. © Second Front. Source: www.secondfront.org/Performances/Breaking_News.html (last opened: 23/11/2025).

Initially founded in 2002 by Linden Lab CEO Philip Rosedale (aka Philip Linden) as a commercial platform, Second Life (SL) was one of the first 3D virtual online spaces for developing specific social interaction projects. It was accessible via a device screen. It particularly favoured chat and, from the mid-2000s onwards, the first user feedback systems emerged, such as skins and emoticons. Once logged in, SL residents could customise their avatars and engage in surreal yet routine activities. For the first time, this metaverse's native functionalities focused on easily customising the user's avatar. Then, using the WASD keys, users could explore environments without a specific purpose and interact using languages borrowed from real life (IRL), such as verbal, aesthetic-symbolic, musical and movement languages, as well as languages invented by the users themselves. As it is open source, the possibilities for interaction and participation in developing the platform have spread rapidly through coding and compatibility with external software, virtual objects, gadgets, and even entire buildings and cities.

Since 2006, Second Front (SF) has been an international performance art group working exclusively in SL. Consisting of artists, curators and academics, the group has sought to explore the performative potential of a public, pre-existing yet collaborative and modifiable virtual space which is expanding rapidly and is already home to communication agencies, shops, products, brands and inhabitants – in other words, a large, diverse community. SF has grown rapidly to reach its current configuration of seven members, including Gazira Babeli (Italy), Yael Gilks (London), Bibbe Hansen (New York), Doug Jarvis (Victoria), Scott Kildall (San Francisco), Patrick Lichty (Chicago) and Liz Solo (St John's). Drawing inspiration from diverse sources such as Dada, Fluxus, the Situa-

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tionist International, and contemporary performance artists like Laurie Anderson and Marina Abramovic, SF has staged events, flash mobs, performances, and choreographic interventions within Second Life environments over the years.

These works challenged conventional notions of performance and virtual identity, exploring different ways of presenting their bodies and works to art audiences and the virtual SL community. From their inception, the group set out to question the native functionality and conceptual model behind SL and investigate what it means to be a virtual being in that space, as evidenced by their statements and actions that made them famous. The notion of non-pragmatic (or non-utilitarian) hedonic qualities, including pleasure, enjoyment, excitement, fun, happiness, novelty and social interactivity in the context of technology (Stelmaszewska & Fields, 2004), emerged from consumer research and was applied to interactive products by Hassenzahl (2003). According to this view, instrumental, task-oriented, and pragmatic attributes ("useful" and "controllable", for example) are primarily related to behavioural goals. In contrast, hedonic attributes emphasise psychological well-being through non-instrumental, user-oriented product attributes. When hedonics was first introduced, Hassenzahl proposed an "extended concept of usability" that focused on user satisfaction. This challenged the common notion at the time that computers were merely serious tools and was in line with gamification. The emotional impact of contrasting and manipulating hedonic qualities is one of the most widely studied effects. Studies have consistently demonstrated that hedonic experiences elicit more positive emotions than less hedonic/more pragmatic products (Diefenbach et al., 2014).

Figure 3. Babeli, Gazira, *Second Soup. You love Pop Art – Pop Art hates you.* 2006. Performance in Second Life. © The artist. Source: http://gazirababeli.com/secondsoup.php (last opened: 23/11/2025).

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Gazira Babeli has lived and worked as an artist, performer and filmmaker in SL since spring 2006. In September 2006, she posted recordings of several unauthorised performances created in and for this metaverse online, attracting the attention of art critics and artists. During this period, she joined SF, and in April 2007, she held an exhibition called Collateral Damage. This exhibition brought together a year's worth of work and experience and was visited by over a thousand people. Most of Gazira Babeli's work is currently archived in the Locusolus region of Second Life.

She gained fame online through her performances in unconventional virtual environments, such as squares, streets, and open spaces, in front of unsuspecting audiences who typically reacted negatively. While Steve Jobs unveiled the first iPhone, Gazira presented her first retrospective at the ExhibitA gallery in SL in spring 2007. This retrospective presented many of the performative actions that the artist had created in SL the previous year, reimagined as interactive virtual installations. The most famous of these was *Second Soup*, an experience in which giant cans of Campbell's soup were activated and became aggressive in response to users' avatars passing by. The experience was deliberately designed to be accessible, fun and irreverent; as with everything in SL, it had no purpose, functionality or credibility. The experience was entirely user-centric: the virtual space in which it took place was anonymous and the only personalised element was the interactive Campbell's soup cans, which were activated simply by the passage of an avatar. The performance was created solely by the avatars' passage, and the user experience (UX) was designed to maximise the emotional impact of the interaction. Like all the SF group, Babeli has created performances and choreographic interventions that amplify the native UX and fundamental assumptions of SL. These works explore what it means to be a virtual being in this space. Not only has Babeli reinterpreted works from art history and contemporary performance by recording them and placing them in a virtual environment, he has also reinvented them according to the irreverent and interactive mood typical of SL. This exploits the Situationist and hedonistic, non-activity-oriented UX (Diefenbach et al., 2014) that is typical of SL. The performative action focuses on the variety of possibilities and responses to interactions within the large community that inhabits these public spaces freely. According to critics and curators who have analysed the community on the platform (Flimflam, 2007), the UX of SL has made each inhabitant a kind of Dadaist or Situationist performer simply by inhabiting and interacting with a collective virtual space through visualised and interpreted codes and instructions in the form of objects, images and movements. This is a kind of collective, simultaneous, real-time happening. It could be said that SL's UX has become the mental model for most social platforms of mass interaction in the intervening years.

Roblox is a popular massively multiplayer online game that enables its users to create and share content within virtual worlds. Since its launch in 2006, it has rapidly become one of the world's most popular games, boasting millions of daily active users. These users primarily aim to create a diverse range of environments and related activities, including genres such as adventure, role-playing, simulations, and massively multiplayer experiences. These creations are facilitated through the use of Roblox Studio, a complimentary in-house development software. Similar to the mental models of social platforms and metaverses that emerged following the advent of Second Life, multiplayer games such as Roblox and Minecraft prioritise avatar customisation for a fee, followed by promoting and facilitating communication through emotes (small avatar animations) and customising movements, environments, and objects. Emotes enable users

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Figure 4. Kamilia Kard, *Toxic Garden – Dance Dance Dance*. Participatory performance on Roblox. © The artist.

to express themselves through more complex gestures and facial expressions, such as dancing to show satisfaction or shrugging to show disappointment.

A preliminary analysis of Roblox's user experience (UX) suggests that it prioritises hedonic principles, emphasising user satisfaction and the rapid transmission of user sentiment. However, a more nuanced perspective reveals that the hedonic experience pervades all aspects of the platform, not just the task-oriented dimensions. It is in the apparent absurdity of the experience that the keys to findability, credibility and usefulness can be found. This UX philosophy is not exclusive to Roblox. In the wake of Second Life, most densely populated social platforms focus their UX proposition on maximising desirability and usability simplicity, seemingly diminishing the importance of other dimensions. This phenomenon can be interpreted as a marketing strategy, whereby platforms are positioned as brands, technologies and values, with the pleasure derived from their offerings becoming a key selling point.

Toxic Garden – Dance Dance Dance (TGDDD) by Kamilia Kard is a participatory performance created on Roblox in 2022 following a residency programme supported by the artist as tutor. The performance is set in a "toxic" map created by the artist for this purpose. In the first part of the performance, spectators can explore the space as they would in open-world games such as Assassin's Creed and Grand Theft Auto. The second part of the performance features improvised avatar crews engaging in choreographed group dances using contemporary dance motion capture (mocap) libraries. These dances are automatically synchronised with the movements of the artist's avatar, KKlovesU4E. This combination of avatars, communication and dance seamlessly intertwines the textual nature of chat with the expressiveness of the body – albeit digital and often stylised – in real time.

The spatial environment modelled by Kard is reminiscent of a poisonous garden – a metaphor for toxic human relationships. The theme of TGDDD is manifested through interactions between avatars and confrontation with uploaded content on the map. The garden is notable for its vibrant colours and exaggerated architectural features. To en-

DOI 10.36158/97912566929412

hance the immersive experience, Kard used motion capture and AI systems to meticulously model the avatars' movements and interactions. This process results in the virtualisation of dance steps as discrete symbolic units representing feelings and attitudes linked to toxic relationships.

TGDDD focuses on the affordances of Roblox, a platform developed to engage children and adolescents in mass social and virtual interactions through a hedonic user experience (UX). Dance, social interaction and music are central to both Roblox and TGDDD. This formula is extensively employed in numerous Roblox maps, which evolve into venues for social interaction and exchange, characterised by rudimentary graphics. Here, avatars congregate to make acquaintances and form modest dance groups. A notable distinction between Roblox and TGDDD is that TGDDD does not offer any customisation options for avatars. Upon entering a Kard-designed environment, users are assigned a generic avatar that is randomly selected and shared among all other users. This results in the loss of individual uniqueness. One of the central aspects of Kard's experience for Roblox users is the inability to customise their avatar once they enter the map. Kard disrupts the game's natural flow by assigning participants random, predefined skins that she has designed. This intervention disrupts Roblox's native UX, thereby establishing this alteration as the focal point of the performance. In addition to creating an environment that encourages users to navigate a garden of metaphorical poisonous plants, the artist directs their focus towards utilising and interpreting movements from a curated library as opposed to drawing upon external sources, such as the Internet. By curtailing Roblox's personalisation features, she effectively curtails its pleasant and emotional effects, relegating them to a dimension more akin to brand and marketing enhancement. The TGDDD UX completely subverts the mental model underlying the Roblox UX. Even the toxic relationship metaphor derives from this inversion.

In 2023, as part of the *Residenze Digitali* project, I closely followed the creation, development and documentation of Martin Romeo's *Humanverse* (HV) performance on the Spatial platform. What distinguishes HV from previous case studies is that it can be enjoyed on both a desktop and a VR headset, with the latter offering a more immersive experience. Guided by an artificial voice, five anonymous travellers establish a virtual relationship by performing simple group actions and augmented gestures (such as flying). They collaborate at a distance and learn to move together in virtual space. Users are invited to explore spaces designed by Romeo and reflect on their virtual physicality and the "average emptiness" of a platform like Spatial.

The story aims to demonstrate the potential and limitations of the virtual dimension by enabling five participants to interact freely within a pre-established ecosystem, overcoming the limitations of the physical body, experiencing the sensation of falling without consequence, and observing their own and others' bodies from an external perspective, "more than human". Using the visor better connects the digital and physical bodies, synchronising them when movements and actions happen simultaneously in both dimensions. However, it also creates discrepancies: to climb the mountain, you have to go around it; in physical space, on the other hand, you have to physically move to move your avatar and reach the virtual peak. When jumping from different virtual heights while wearing the visor, the physical body tends to close in on itself as if to dampen the force applied and protect itself from the unknown. The performance enables all participants to become aware of their surroundings and to reflect on the stated issues.

Humanverse allows us to explore the metaverse's narrative, interactive, multi-sensory and performative potential. The main objective is to analyse the role and expansion of

DOI 10.36158/97912566929412

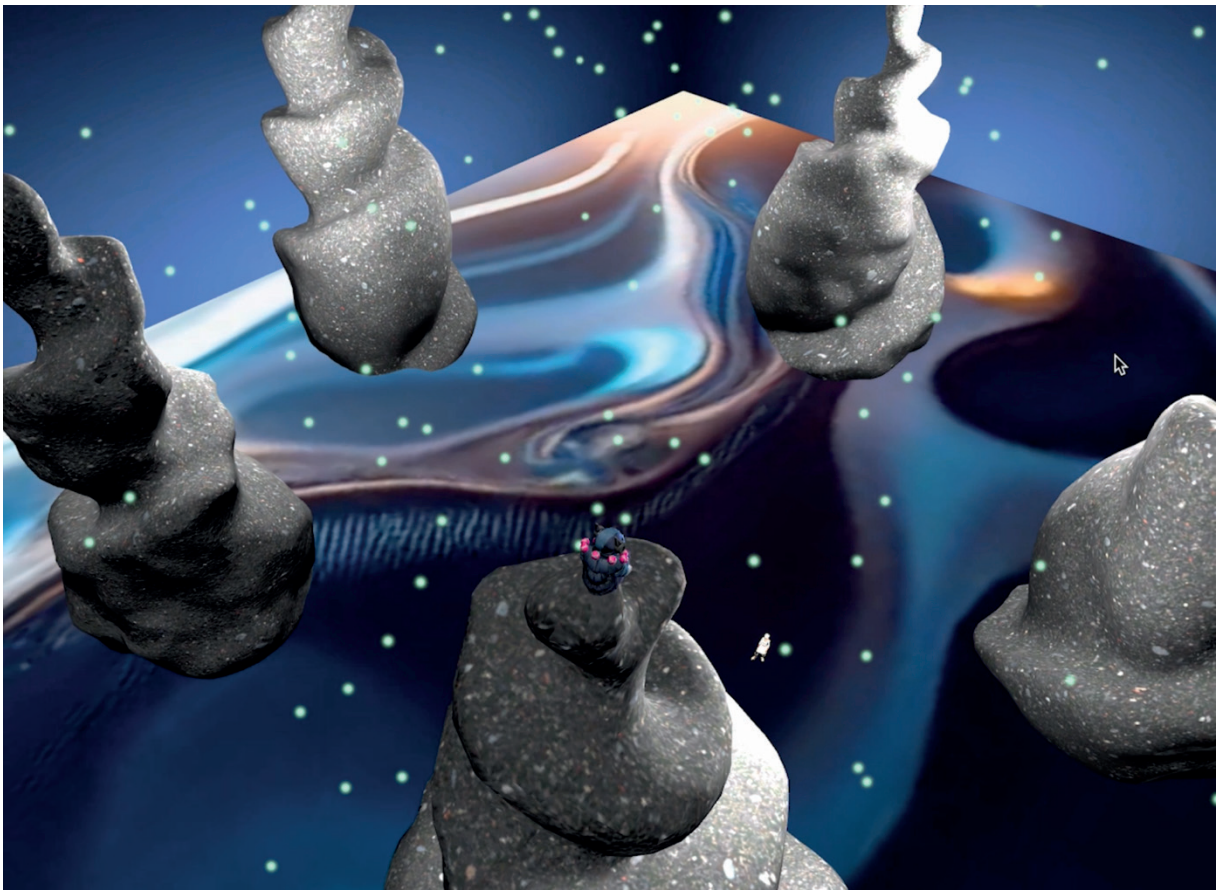

Figure 5. Martin Romeo, *Humanverse*, Participatory performance on Spatial. © The author.

the body in the digital dimension. The environment evolves based on the movements of avatars, which spectators can control using a visor or keyboard. Rather than focusing on the individual, the experience highlights the multiple possibilities of a group of bodies in the virtual environment, which is perceived as a receptor of sensations and permeable to interactions.

Humanverse can be seen as a metaphor for Dante's *Divine Comedy*: while the narrator's voice provides guidance, he ensures that the group remains united. Users are invited to learn how to move, listen, collaborate and recognise each other, overcoming any initial embarrassment, in order to explore the spaces modelled by Romeo together. The aim is to overcome initial embarrassment, listen to each other, work together, form a group and follow a pre-established route. Compared to Spatial's standard native functionality, groups and collective dynamics are new. It should be noted that, as a 3D space, Spatial is a new metaphor in itself, as it does not refer to previous standards. This makes it difficult for users to interact with it for the first time. In other words, the mental and conceptual models do not coincide (Norman, 2013). The buttons are not very intuitive, and the functionality requires a medium-to-high learning curve, resulting in low usability and learnability.

I hypothesised that Romeo's innovative choices emphasised Spatial's native system and disrupted its conceptual model. I argued that these choices were fundamental to the dramaturgy. According to user feedback, user satisfaction during this participatory performance compensates for poor usability, along with a strong incentive for exploration, creativity, and collaboration. Even if interaction is initially challenging, the group

DOI 10.36158/97912566929412

dynamics and originality of the experience make it satisfying and overcome any sense of unease. These factors contribute to achieving the desired dramaturgical effect: hedonistic sensations encourage the discovery of the virtual capacities of a virtual body in a 3D environment, uniting the group and prompting them to explore virtual spaces extensively, even flying.

3. Conclusion

On the occasion of the opening of the digital stage HAU4 at the Hebbel am Ufer in Berlin in 2021, the artist Hito Steyerl composed *The Fifth Wall*, a poem-denunciation in which she proposes a further imaginative level of interpretation for the performing arts and the dynamics of digital theatre:

> The fifth wall opens up to a sea of pixels.
>
> The fifth wall is elsewhere [...] The fifth wall does not e
> close a theatre of cruelty, but a theatre of extraction.
> The fifth wall does not reveal an audience but hides a user.
> The fifth wall does not create a V-effect, but a VR sensation.
> The fifth wall replaces the soufflé cook's stand with a monopolistic platform.
> In front of the fifth wall, everyone is a stage.
> (Steyerl, 2021)[1]

As discussed in this paper, contemporary experimentation in digital live performance has given rise to new forms of performance that exploit the capabilities and limitations of digital platforms. This has generated new aesthetics, practices and ways of being present that transcend the traditional logic of the screen. These productions articulate a reconfigured empathetic pact between performers and spectators based on deterritorialised, asynchronous and relationally constructed forms of liveness. In this context, presence is not strictly bound to co-location, but is instead enacted through interaction, affect and mediated sensory participation. In this context, liveness manifests as an expanded, gradient condition: a construct integrating temporal simultaneity, affective intensity, and digitally mediated co-presence.

The metaverse, still in its formative stage, embodies this shift by creating performative environments characterised by continuous synchronisation, interoperability, agency, and collaborative authorship. As Ball (2022) observes, the metaverse is not merely a virtual space, but an emerging socio-technical ecosystem structured around interactivity, affective interfaces, and community-based participation. Its dramaturgical potential lies not only in its spatial simulation, but also in its capacity to facilitate metaversal dramaturgy: a reconfigured performative architecture in which dramaturgical agency is dynamically distributed among human and non-human agents, interfaces, communicative systems and spatialised digital environments. This shift can also be theorised through the lens of the "post-screen", in which the screen evolves from a static frame of representation into a relational, interactive and experiential interface – a "Future Screen" capable of hosting immersive dramaturgies, affective exchanges and embodied forms

1. https://www.hebbel-am-ufer.de/en/hau3000/hito-steyerl-the-fifth-wall (last opened: 26/03/2025).

DOI 10.36158/97912566929412

of co-authorship. The metaverse thus functions as an experiential system in which user experience (UX), interaction design and dramaturgical structures co-produce presence, agency and emotional resonance (Norman, 2013; Diefenbach et al., 2014). The case studies examined, ranging from Verde's telematic performances and Second Front's interventions in Second Life to Kard's participatory Roblox choreographies and Romeo's multi-sensory explorations in Spatial, demonstrate how metaversal performance is articulated not only through representation, but also through experiential design. These works use avatars, chat systems, spatial navigation and embodied interaction as dramaturgical tools, turning platforms into social environments where community, authorship and presence are co-created. Institutions such as HAU4 embody these evolving practices by positioning themselves as post-screen theatrical infrastructures, curatorial and dramaturgical ecosystems rather than traditional venues, hosting live streaming, interactive experiences and explorable 3D environments as spaces for performative experimentation and the creation of collective meaning (Del Gaudio, 2020). This confirms that the performing arts remain a privileged arena for observing how digital technologies reshape notions of embodiment, authorship, dramaturgy and presence.

Ultimately, as Youngblood (1970) suggests, metaversal performance can be understood as a space for critical engagement, collective imagination and re-socialisation. Here, artistic practice becomes a laboratory for exploring shared experiences, ethical considerations and emerging forms of digital community. These are not mere adaptations of performance for the digital space; they are active sites of cultural, technological and aesthetic transformation, where the future screen becomes both stage and interface, dramaturgical medium and social process.

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DOI 10.36158/97912566929412

Spectators' Experiences of Online Theatre Performance

From Necessity to "Digital-Site-Specific" Audiences

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| abstract

During the pandemic, the Internet and social media became the sole interfaces between the theatre sector and its audiences. This period brought the mediatization of the performing arts into mainstream visibility for a broad, non-specialist audience, as screen-based digital performances shifted from niche to widespread consumption. Yet after the pandemic, most theatre companies, organisations, and festivals that had explored innovative digital formats abandoned these experiments. This article examines how audiences experienced live, screen-based theatre during – and especially after – the pandemic through a multi-year qualitative study of *Residenze Digitali* (2021-2024). Drawing on interviews and focus groups, we observe the practices and attitudes audiences adopted to interpret and engage with screen-based performances. In terms of spectatorial practices, material constraints, degrees of interaction with performers, and relations with other spectators, they constitute an artistic form that requires spectators to imagine and enact their role anew each time. This effort can entail fatigue, experienced as a limit, but it also underpins a distinctive pleasure in exploration. In this sense, digital space does not function as a simple "transmitter" of the performing arts. Instead, we propose understanding these works as digital site-specific performances: unfamiliar yet stimulating environments that demand special efforts from both organisers and spectators.

DOI 10.36158/97912566929413

1. Introduction

For several months during the pandemic, Internet and social media served as the only interfaces between the theatre sector and its audiences. As a result, the mediatization of performing arts became visible to a broad, non-specialist public (Gemini et al., 2020), as screen-based digital performances shifted from niche consumption into the mainstream. Scholars and artists began to debate whether this would spark a shift in the role of digital technologies in performing arts or remain merely a "temporary disruption" (Hylland, 2022).

These experiments enabled new forms of knowledge and relationships to emerge among artists (Brilli et al., 2022) and stimulated the development of best practices and guidelines for integrating digital tools into theatre (Aebischer & Nicholas, 2020).

Artist residencies, which serve as key sites for artistic research (Lehman, 2017), also found themselves affected by this shift. Some initiatives sought to reframe the "art-

ist-in-residence" concept beyond physical space, imagining it as a distinctive mode of exchange among artists, organisers, scholars, and spectators – one that could also take place online. In this regard, digital artist residencies have represented a threefold state of liminality: the work-in-progress nature inherent to residencies, the suspended time of the pandemic, and the (for many) exceptional space of digital performance.

Nevertheless, most theatre companies, organisations, and festivals that experimented with innovative digital approaches discontinued these efforts after the pandemic. Although audiences' interest in digital artistic performances appears to have waned, it has not entirely disappeared. It is therefore worthwhile to investigate under what conditions this interest might persist or even re-emerge.

Our study examines the difficulties and pleasures spectators encounter when engaging with screen-based live performances, particularly after their widespread peak during the lockdowns. Accordingly, we ask: Which spectatorial practices and roles did audiences adopt when participating in digital performances during and after the pandemic?

To answer this research question, we analysed the case of *Residenze Digitali* (RD). Launched in April 2020, RD has now reached its fifth edition and is a rare example (in the Italian context) of a digital performance programme that came into being during Covid and is continuing today. It thus makes it possible to study the transformation of digital theatre audiences. RD selects and funds each year about six online performance projects by artists or companies from the contemporary theatre scene. The winning projects are monitored by the organisers, through meetings between partners, artists and academic tutors. During the five years in which this experimental residency programme was developed, the initial strong interest waned in the most recent editions, especially in terms of audience participation. While in the first year, RD received 398 applications and reached about 600 individual spectators, in 2022, it received 110 applications and the number of estimated spectators dropped to around 100; in subsequent years, the number of proposals stabilized between 50 and 60.

Through a qualitative analysis based on interviews and focus groups with spectators, this research seeks to understand how people engage with this performative practice and the differences they perceive in experiencing a live performance on screen. The study also aims to deepen our understanding of the dynamics of mediatization and the transformation of liveness. While it is widely acknowledged that we live in an era where "live" performative forms are no longer confined to traditional physical theatre or concert spaces, much remains to be explored about how audiences navigate and make sense of their role in relation to mediatized live events. To this end, it is first essential to clarify the mediatization framework, which provides many of the conceptual tools underpinning this research.

2. The Mediatization Approach

Adopting the mediatization perspective (Boccia Artieri, 2015; Couldry & Hepp, 2017) in examining socio-technological transformations, including those within performing arts (Gemini & Brilli, 2023), invites to analyse the impact of media on contemporary society without resorting to technological determinism. This approach conceptualizes media as processes emerging from the interplay between technological materiality and social practices, where individuals, groups, and institutions

DOI 10.36158/97912566929413

actively shape meanings, communication models, usage expectations, and imaginaries. Mediatization, therefore, does not imply an external and deterministic influence of media logics on social processes; rather, it explores how individual and collective agency can be enacted through these logics.

In the field of artistic and cultural performances, however, the mediatization perspective remains relatively marginal. Despite significant theoretical and practical interest from theatre artists, scholars, and organisers regarding media, there is often a lack of clarity about their broader influence on the performing arts as a social domain. Although theoretical reflections on theatrical intermediality have accompanied these practices since their origins more than one century ago (Giesekam, 2007), such analyses have typically concentrated on media logics of staging or documenting performances. Less attention has been given to how mediatization shapes the *common-sense* underlying production, distribution, promotion, and audience reception practices.

The term "mediatization" has been employed in Theatre and Performance Studies since the late 1980s (Georgi, 2014), but its usage primarily denotes technological mediation of theatre, or – drawing from Debord and Baudrillard – the penetration of mass media spectacle ideology into artistic and political spheres. Although insightful, this view proves insufficient for fully grasping the contemporary societal role of live performance and how the concept of "live" sheds light on shifts in communicative patterns and relational expectations.

Here, the starting point is to integrate a sociological approach to mediatization with an analysis of the media-specific traits and intermedial ecologies of performance. This framework calls for a few clarifications beyond the more common ways media are conceptualized in the performing arts.

Firstly, mediatization highlights that media influence extends beyond their physical use to include formats, practices, and protocols developed in other media contexts.

Secondly, it allows overcoming the notion of a singular "media logic" (Altheide & Snow, 1979), traditionally understood as a strategy for gaining media visibility, favouring instead an analysis of multiple media logics not necessarily tied to circulation potential.

Thirdly, it necessitates observing media logics not only within staged performances but also across the interconnected, yet distinct routines of production, distribution, archiving, and promotion practiced by artists.

Fourthly, it moves beyond perspectives focused primarily on hybridization and boundary-crossing, emphasizing instead how media contribute to establishing new categorical distinctions (Boccia Artieri, Gemini, 2019).

Three core trajectories of the mediatization process can be singled out (Gemini, Brilli, 2020): the mediatization of *presence*, of the *performative text*, and of *communicative roles*. These dynamics illustrate how media technologies, formats, imaginaries, and expectations shape both the design and reception of live performance, modifying the sense-making distinctions that define a performative event and its boundaries.

The mediatization of presence concerns the boundary between presence and absence of the performance's agents, manifested by technologies that extend the performance across space and time or introduce new performing agents (avatars, robots, algorithms, holograms), thereby altering how spectators perceive presence.

The mediatization of the performative text transforms the relationship between text and para-texts (Gray, 2010; Conner, 2013), redefining the boundaries of when a performance begins or ends. Notable examples include the transmedia expansion of perfor-

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mances and the growing importance of promotional materials in shaping an event's meaning.

The mediatization of communicative roles affects the boundary between performer and audience, transforming the channels and relational expectations between these poles.

3. The Audiences of Digital Performance

The relationship between theatre and digital media has a history that long predates the pandemic crisis. The dialogue between theatre and digital technologies is at the core of a vast literature that we can broadly categorise around three axes:

- *Digital performance*: the use of digital technologies for the performance construction and how they enrich the theatrical aesthetic repertoire in the creation of intermedial- (Masura, 2020), mixed-reality- (Benford & Giannachi, 2011), or cyber-performances (Papagiannouli, 2016).
- *Digitisation of theatre*: the use of digital channels for theatre dissemination, for example, in event cinema and livecasting (AEA Consulting, 2016; Sullivan, 2020).
- *Digital communication of theatre*: the impact of digital media on the communication of the performing arts (Hadley, 2017), which involves innovative dynamics of interaction with spectators helpful in audience development (Walmsley, 2019), fosters spectators' expectations of complicity, co-creation and prosumerism (Australia Council for the Arts, 2021) but it also imply a new significant amount of relational labour (Baym, 2018).

A fourth theme that cuts across these three areas is how digitisation affects theatre audiences' experiences and attitudes. The "participatory condition" (Barney, et al., 2016), stimulated by social media platforms, seems to foster expectations of complicity, co-creation and prosumerism on the part of spectators (Australia Council for the Arts, 2021), which opens new potentials and drawbacks, such as the penetration of work responsibilities into leisure time (Harvie, 2013).

However, compared to research centred on the artistic and technical innovations of digital performance, studies addressing the audience experience remain relatively scarce. In fact, during the pandemic years, various cultural organisations and non-academic groups launched extensive inquiries into how people were following performing arts online. Yet these inquiries showed several shortcomings: (1) they were carried out without comparative frameworks and in a fragmented manner; (2) they often relied on self-selected samples drawn from the promoters' own networks; (3) they were motivated by short-term, tactical aims to evaluate audiences' willingness to return to physical venues; (4) they were based on self-reported consumption frequency; and (5) they devoted limited attention to the nuances of spectatorship or to qualitative investigation.

Among the large-scale studies employing appropriate methodologies, one point on which many analyses concur is that online performing arts have enabled multiple sectors to maintain their relationships with audiences. Instead of causing a substitution effect, this phenomenon seems to function in a complementary way: following theatre and performance online is seen as a form of engagement in its own right, potentially

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promoting more frequent in-person participation (Creative Australia 2023; Leguina et al., 2025). At the same time, it has not produced a meaningful expansion of the overall spectator base. One of the most extensive studies on how the pandemic affected cultural life in the UK (Walmsley et al., 2022) notes that digital performance content has improved accessibility and, in some cases, even boosted theatre consumption when compared to pre-pandemic levels, but only among those already interested in the performing arts. The same study also highlights that the most effective audience engagement has been achieved by connecting digital offerings to local contexts, for example by involving schools and community networks in viewing and discussing performances online.

While age might initially seem to be a barrier, it does not appear to have been decisive. Aebischer and Nicholas (2020) observe that the age profile of those who attended theatrical performances in person before the pandemic, and then via Zoom in 2020, shows no sharp divisions: in and of itself, digital viewing does not seem to deter dedicated theatregoers of different age groups. Instead, what varies is the type of benefit sought. As indicated by *Audience Development… In a Hybrid World* (The Audience Agency 2021), the tendency to watch performances online is not strongly influenced by age, whereas the inclination to engage in participatory activities is notably higher for those under 35.

It is still essential to recognize that the pleasures and behaviours tied to digital engagement also depend on the performance type. One of the few studies on online audiences conducted after 2022 (Creative Australia 2023) draws a noteworthy distinction between "online theatre" – theatrical plays streamed online – and "digital theatre", defined as a live theatre performance that incorporates digital technology as an essential part of the show (the format our case study deals with). Regarding online theatre, respondents often feel that the experience cannot rival the quality of a live event, particularly in emotional and social terms. With digital theatre, that perception is less pronounced, but participants express concerns about devices distracting from onstage action, as well as uncertainty about preparing for a more interactive, technology-driven experience.

4. Methods

In order to address the research questions previously outlined, this study spans four years: 2021 (when some restrictions on theatres were still in place), 2022, 2023, and 2024. Throughout these years, we followed every stage of the project by attending organisational meetings, tutoring sessions with the artists, and events involving the audience, all in the role of observers.

We conducted 52 interviews with spectators, using different sampling strategies in the early and later editions. In 2021 we ran 15 semi-structured interviews, followed by 9 in 2022. The sample was mostly female (19 women, 5 men), and many participants were closely connected to the project (11 were friends, relatives, or sector professionals). Although this may suggest a sampling bias, the organisers confirmed that it mirrors the actual RD audience. To widen profiles in later years, we sought participants less close to the project. In 2023 we held two focus groups with 16 students from a dance-focused high school who attended RD as part of a school initiative. In 2024 we organised three focus groups with 12 participants in ad hoc "viewing groups", mainly young adults aged 20–30 with higher education. The interview guide was consistent across all phases and focused on three areas: (1) the viewing experience; (2) the role of digital tools and spaces in the performing arts; and (3) each interviewee's spectator profile.

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Additionally, we conducted 8 interviews with the project's organisers and 16 with the participating artists. Although the findings of these interviews lie beyond the scope of this article, they contributed to the contextualization and interpretation of the audience interviews.

5. Engaging with Digital Performance: Analysis of the Interviews

5.1. *The Viewing Context*

The first major point in examining the relationship with digital performance concerns how the audience has managed the viewing context. At RD, the digital performances are showcased to the audience during the Digital Residency Week, a seven-day period typically scheduled between October and November. This week is structured as an actual online festival, with appointments set for live viewing or time windows allowing asynchronous access to some of the works. This occurs in a generally non-holiday period, with events spread across the week rather than concentrated on weekends.

This scheduling setup has remained mostly unchanged across the various RD editions, except for a minority of projects that included a part of physical-space performance. Yet, audiences have responded to this temporal structure differently over time.

In the 2020 and 2021 editions, shaped by venue closures and lockdowns, spectators apparently invested more effort in crafting their experiential framework. Engaging with a screen-based performance demanded setting up a spatial, temporal, and relational environment to focus on the event and set it apart from overlapping digital obligations and distractions. Unable to attend a physical theatre, people's homes or classrooms (where some pieces were watched) had to acquire that "sacredness" often associated with a theatrical space.

> I used my computer at home in the evening, turned off the lights as advised, and wore headphones. I was pretty isolated, though my dad briefly distracted me by trying to see what I was watching. (RD2021)[1]

> I watched both shows alone in my room, on my bed or armchair, via laptop with earbuds. The lights were dimmed. (RD2021)

> The vibe was spot-on; we turned off the classroom lights, and the sound system was solid – breaths, whispers, water, the gate creaking, all the sound effects came through vividly. (RD2021)

Initially, spectators employed rituals and adjustments to segment the digital stream, ensuring the performance didn't blur into work or entertainment content. This ritualistic effort fades in later editions, particularly among returning RD attendees, for whom preparing a dedicated "site" becomes less critical and more casual.

1. For each transcript, we indicate in parentheses the year of the RD edition to which it refers.

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> Last year's experience struck me more than this year's. Maybe because we were locked down, I dove in deeper. This year, the "wow, let's check it out" vibe was gone, and I watched more passively. (RD2022)

A live, on-screen performance is no longer a novelty in itself and tends to be perceived as "just another piece of digital content". This is reflected not only in spectators' waning efforts to shape a "home stage" but also in their reduced openness to fully embracing the artists' suggested modes of engagement.

> I didn't prep much – watched on my computer at home with someone else, which was a slight distraction. Still, I was engaged, though with Radio Pentothal [a 2024 performance], a radio-style show, it felt natural to drift off momentarily before tuning back in. (RD2024)

> I watched alone in my room on the computer, no headphones despite the suggestion – can't recall why I skipped them. A bit of connection anxiety, but I saw it all without much setup. (RD2024)

Thus, in this case, there is no clear emergence of shared, codified audience practices specific to digital performance. Unlike artists and organisers – who experienced an increase in digital abilities and reflexivity in participating in similar projects (Brilli et al., 2023) – RD audiences do not mention any recurring patterns that have carried over across multiple online performances, nor from their pandemic experiences. The fluidity and the freedom of the reception context for live screen performances thus stands out as a hallmark of this aesthetic form.

5.2. *Experiencing Material Constraints*

A second significant issue relates to the material constraints encountered by viewers during the project: registration systems for platforms, unclear levels of interactivity, chat functions, the requirement to download software, and so on. For some spectators – especially those with a solid theatrical background – online viewing is already in itself a hurdle, and active resistance emerges in certain cases.

> I watched alone on my outdated PC, which limited my view. Not sure if it's my fault for not knowing computers – this online thing was my first and last try. (RD2022)

> I shared the invite, and some found even simple platform access less than straightforward. (RD2021)

> I tried out the video game as well, but it asked me to register, and I didn't want to. It's not that I was unwilling… Actually, I think I just wasn't prepared for that kind of format. (RD2022)

For many, these difficulties are not caused by unforeseen mishaps or exclusive niche technology but by the wide array of access and interaction modes proposed. In some situations, interactivity shifts from being perceived as an enhancement of audience agency to being seen as a binding commitment or even a form of fatigue.

> In my view, we have to acknowledge that these new forms of artistic communication require more attention and active engagement from the participating audience if they are to be effective. (RD2021)

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> I attended the performance at 9:00 p.m. I was home alone, finishing dinner when it started, so I was taken aback when I realized it wouldn't just be a matter of watching, but also taking part. At that point, I really tried to focus completely on the performance and the experience. (RD2022)

> I couldn't quite keep up, or follow the chat. I did write something, but it was moving so fast that I didn't have time to think of a prompt that made sense. [...] Apart from that small hitch, it was interesting – maybe not the one that left me with the biggest impression, but certainly the one that had me rushing the most. (RD2024)

This highlights a balance between experimentation and accessibility, an issue extending beyond RD to online performances at large (Creative Australia 2023; Brilli et al., 2023). Each digital project shapes its own setting with distinct affordances: on one hand, spectators can feel disoriented by the sheer variety of access modes and rules of engagement; on the other, standardizing such environments too strictly could dampen the spirit of experimentation with the medium, a core element of this artistic approach. The opacity of digital environments – the struggle to instantly grasp their affordances – isn't always a flaw; it can become a defining trait, lending digital performances allure by leaving room for discovery.

> It's a situation that allows me to get used to a not-so-obvious language, and I find this potential fusion really useful. Being a spectator of this kind of content isn't something you grasp right away. (RD2021)

Furthermore, a private screen – compared to projection in a large hall – can offer a constraint that sharpens focus in ways otherwise unattainable. Although perspectives and viewing methods vary, several spectators appreciate the specificity of a "close-up screen", which is less immersive but better at funnelling one's gaze.

> Computer viewing clarified things – if I'd been there live, I might not have focused on the projection from afar. Online, it held my attention, even if I didn't catch every detail. (RD2022)

> A dirt-covered stage would be tough to show live. Some effects only work this way – you notice things because your focus narrows. (RD2022)

> Theatre doesn't let you see from multiple angles. You can shift seats – stalls, gallery, boxes – but not stand among performers or backstage unless you're one. That's a physical-world limit. (RD2023)

One could argue that each digital performance might establish its own distinctive visual connection among viewer, screen, and performer, which would mean that the various audience accounts cannot be traced to a single "specific" digital performance quality but rather to the uniqueness of each artistic endeavour. This argument holds only to a degree. Unlike theatrical constraints, which are mostly social, digital ones impose material limits with greater arbitrariness: user freedom hinges on the creators' design. For instance, if a text chat is enabled, the audience cannot send images or sounds. They can approximate visuals through textual characters, but they remain bound to that material condition.

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By comparison, while the audience's actions in physical space are certainly constrained, it is largely by social conventions rather than technical limitations. In a theatre, the audience has the material ability to distract the actors, move closer to them, praise or heckle out loud, yet social norms and expectations channel these possibilities.

5.3. *The Perceptions of Interaction Levels*

If digital performance is shaped by the arbitrary nature of material constraints, it follows that the level of interaction available to users arises from a combination of the "dramaturgy of interaction" devised by artists (Pizzo, 2017) and the affordances of the platforms used. In the piece *Teatropostaggio da un milione di dollari*, for instance, which takes place in a Telegram chat, the direction alternates moments where the audience is prompted to contribute to the chat flow – through text, images, memes, emojis, and polls – and segments in which viewers passively observe the performers' exchanges.

Figure 1. MALTE & Collettivo ØNAR – *Il teatropostaggio da un milione di dollari* (*Residenze Digitali* 2023). Screenshot from the performance on Telegram. Since 2025, *Teatropostaggio* has been a Pallaksch production.

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As is also evident from the other examples mentioned by interviewees, the wide variety of performative devices in RD's projects means that each time, the audience must explore anew the extent of available actions. From an affective point of view, experiencing this condition swings between excitement and amusement on the one hand, and a sense of overload or disorientation on the other.

> I posted in the chat, throwing off what the performers were attempting to do, which meant maybe I enjoyed the performance itself a bit less. Sometimes I paid less attention, busy thinking about what to say. So that got me pondering the two sides of audience interaction – spectators must participate somewhat yet also be guided. No real exchange happened among participants, maybe because we didn't know exactly what was going on, or what was happening with the chats. (RD2021)

> One thing that came to mind during *Them* is that once I started choosing songs, it distracted me from watching the ballet, because it was fun – I wanted to test all the songs that were available. Going back and forth between Spotify and the video eventually pulled me away from the performance. (RD2022)

As many interviewees point out, this relationship with interactivity tends to be fluid. Two broad spectator stances, in particular, tend to take shape: one oriented toward *accountability* for the performance, in which interactive behaviour aims to ensure the success of the performance:

> I recall Nicola Galli's (RD2020), a dance piece where the outcome was influenced by your choices. That part was stimulating because you got pulled into the work, you were there with him, and there was this mutual exchange. That, in a way, is an intriguing element that lends a certain rationale to a digital piece. (RD2021)

> Having to decide on behalf of this new human really shook me; it was an enormous responsibility, and I definitely felt it. (RD2024)

Then there is a more *playful* stance, which happens when exploring or even challenging the boundaries of what is possible within that environment. Both stances may even manifest in the same viewer at different points in a performance; hence, they do not directly align with the spectator's identity but rather with the role they assume at various moments.

> I found *Non Player Human* fun because you can interact and decide what to do, and it even amused me to watch myself doing it, in the sense that I found it funny how sometimes I tried to be logical – like, "He has a headache, so let's have him put on a sweater to keep warm". Those were the kinds of thoughts I had. But sometimes I'd say, "No, let's give him something crazy to do". I don't remember all the specific options, but sometimes I kept it somewhat realistic, and at other times I just said, "Oh well, let's play around more" (RD2024).

One particularly noteworthy example is the live Twitch performance of *Non Player Human* (2024). Drawing on the "NPC" format, the audience can vote on what the performer does next. During one of the performances, the choices included making the protagonist change outfits, leading to the artists' Twitch channel being banned and forcing

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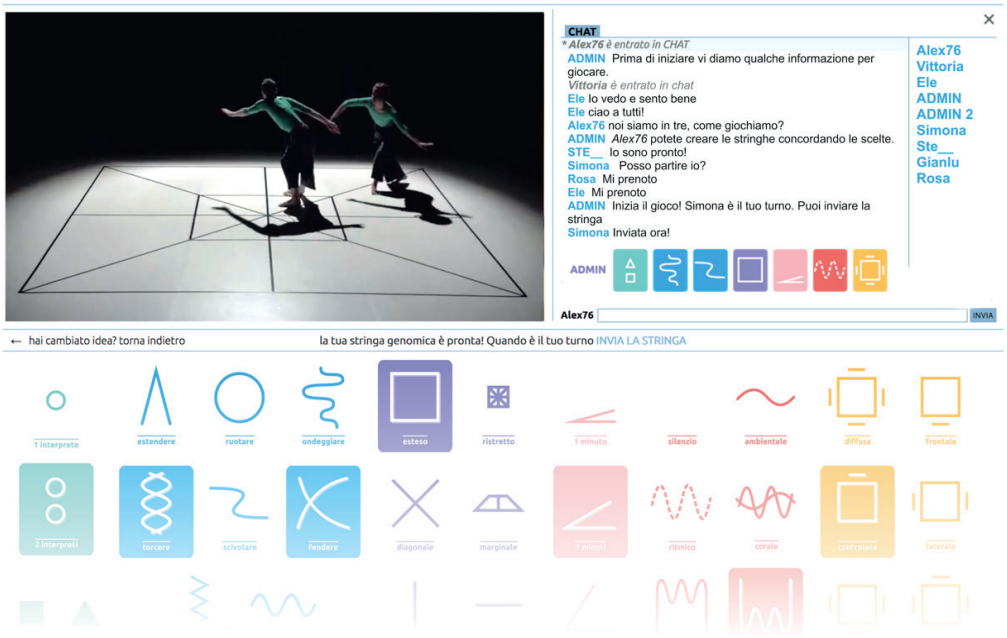

Figure 2. Nicola Galli – Genoma scenico | dispositivo digitale (*Residenze Digitali* 2020). Screenshot from the online performance.

them to continue the show in another Twitch channel. As one spectator recounts, the event was met with both guilt and acceptance, because pushing the platform's limits was understood not merely as personal gratification but as an integral part of the digital performance:

> I'm one of the culprits who ended up getting the channel banned. So at first there was definitely some regret, because we had no idea how things would continue. But on the other hand, I thought, "Well, we kinda asked for it". That's part of the game. Obviously, I think the guys who worked on it might have thought ahead a bit more, but I also figure that was the point – to discover the platform's limits and see what it means to be online, that there are also restrictions. So after all that, I accepted it. The show got cut off that way because of our own choice. (RD2024)

Not all projects make the terms of engagement equally transparent. In some, guidelines on how to interact are established; in others, certain behaviours are implied; still others deliberately leave the degrees of participation unclear, encouraging the audience to experiment with their own agency. Nevertheless, even for viewers who have never witnessed similar performances, stepping into an "interactive spectator" role appears relatively straightforward.

> It felt like the virtual screen generated this constant urge to "over-interact" almost as a way to compensate for not physically being there like we normally would be. It's as if everyone felt compelled to reaffirm their presence through the channels they had, so they all responded to every prompt, seized every moment for an input – stuff that obviously wouldn't happen in person. (RD2024)

This does not mean interaction can't be experienced with frustration or embarrassment; rather, screen-based performance calls for the spectator to "lean in" by carrying out visually or textually perceptible actions that compensate for the absence of shared physical space.

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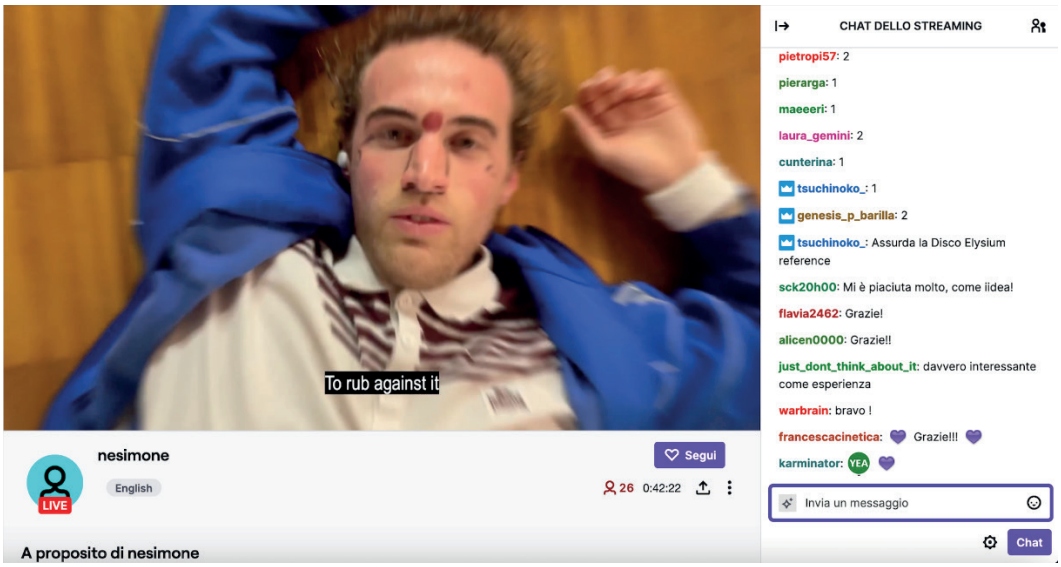

Figure 3. Simone Arganini and Rocco Punghellini – Non Player Human (*Residenze Digitali* 2024). Screenshot from the performance on Twitch.

5.4. *The Relations with Other Spectators*

Another facet of audience experience in live screen-based digital performances is interaction with fellow spectators. While acknowledging that each performance's setup yields different modes of interactivity, there are still recurring experiences and perceptions among spectators, even across multiple editions. Several accounts describe a more direct connection with the performer – sometimes more intimate than in a traditional theatre setting – but accompanied by a lesser sense of shared presence with other audience members.

> If I'm watching it in my room or living room – basically, at home – I feel less judged. And the start and finish of the show, and the in-between, all feel different, even something as simple as not having applause. Sure, some people might miss that, but for me, it actually helps me dive deeper into the performance, reflect more. (RD2024)

It's worth noting that most of these performances explicitly ask for and make other spectators' participation visible. Yet the textual presence of others differs from physical presence; it is not necessarily "less intense", but one can withdraw from it more easily. This point is well illustrated by a spectator's remark:

> In *Non Player Human*, I watched the others' responses – everyone was typing 1-2-1-2 – and when I'd see a lot of 1s, I'd be like, "Ugh, but I chose 2". It kinda bugged me, because I didn't want to be too influenced. So even though I was watching alone, I saw that almost as a stimulus. (RD2024)

On one hand, there is relief in being free of "others' gaze", giving a feeling of being able to form a more personal and less inhibited bond with what one sees. On the other hand, the emotional tension that derives from collectively sharing a performance is reduced. Experiencing these contrasting dynamics with the audience also prompts reflection on in-person live performance's distinctiveness.

DOI 10.36158/97912566929413

> Personally, I didn't have much trouble focusing; in fact, I might say that being in a comfortable, familiar setting allowed me to pay more attention to the show's themes. I found the real issue to be a drop in the intensity of the experience, not a distraction problem, because I realized what it means to watch a performance surrounded by people and just how significant that is. They're not just other folks consuming the same thing as you, but part of the environment you're in at the moment you're watching a performance. Being alone in front of the screen without their feedback – without their emotional tension – made the show feel a little more cinematic, almost like I was watching something happening without truly participating. And that's interesting, because it might highlight something fundamentally important to our experience of theatre but which we rarely focus on, likely because that withdrawal of the audience – of all the other spectators – just doesn't happen when you go to a real theatre. (RD2024)

As this spectator acutely articulates, merely knowing that the viewing is shared does not recreate the collective nature of theatre attendance. At RD, the audience might be *simultaneous* but is not *co-present* (Gemini and Brilli, 2023)[2], lacking the potential for physical, reciprocal impact. However, that doesn't necessarily dilute the experience; in fact, for some viewers, it represents a liberation from the constraints of shared presence, opening a kind of closeness reminiscent of one-to-one performances (Heddon et al. 2012) or confessional dynamics typical of social networks' digital intimacy.

5.5. *Testing as a Spectatorial Posture*

A final thread in spectatorial practices before digital performance is the audience's analytical attitude. Spectators of varying backgrounds and experience levels often adopt a stance akin to "user testing". This trend is partly tied to RD's nature as an artistic residency program, casting the audience as evaluators of works in progress. The research method – gathering last edition's interviewees into a viewing group – further amplifies this critical, exploratory attitude. Nonetheless, it emerges that this approach goes beyond assessing the artistic content, pushing spectators to pay close attention to the technological implementation and to the devices themselves. Exploring affordances takes on the character of "unboxing" the performative device.

> I wanted to figure out how the space was set up, because it all looked like one continuous setting, but on each screen, you'd see just one aspect, and sometimes you'd see someone moving from one area into another. So I was trying to understand the floor plan of the place they were in – I thought it was pretty interesting. (RD2024)

This testing mode challenges spectators to balance experimenting with the device against a more conventional spectating posture that follows a dramaturgical flow. Some interviewees explicitly mention that, in their experience, "the device is the content".

2. We use the term physical co-presence without restricting it to a solid, three-dimensional setting. A performance in a digitally generated environment – where the audience is present by proxy through avatars and can act in ways that affect others' virtual presence – can still be considered co-presence, as long as a form of mutual physical influence is enabled. This is therefore not an impossible scenario for a digital performance, but rather a still underexplored avenue in such projects.

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> I approached it like an investigation, because at first I didn't understand what was happening. Then at some point, I pinned the AI's whiteboard onto my screen and tried to read everything written there, seeing if it matched what they were saying or what they weren't saying. Occasionally, I focused more on what they were saying and how it differed from what was on the whiteboard – even the lyrics of the songs they sang. I really liked that sense of discovery, of figuring out what I wasn't getting. (RD2024)

Occasionally, this experimentation transcends the performative device, becoming a chance to explore unfamiliar platforms and tech.

> I tried out Twitch a bit while watching these performances, and I liked finally having a reason to do so, because I'd never used it before and discovered it's fun. So for certain performances, it was even the most interesting aspect, in my opinion. For example, with *Non Player Human*, I was more curious about how the interactivity worked, which is basically the content in itself. So for me, in some performances, that aspect was what sold me the most. And *Metabolo*, that first phase where you enter the world and can move around and explore – I think it's only possible with these kinds of technologies. I find it really cool and immersive, which is crucial. I love being able to enter a world via a computer or device. (RD2024)

> I definitely felt the impact of the technology in the play that got banned live on Twitch; that's basically technology at its core. Then there was that piece with artificial intelligence, with its frenetic writing, which definitely gave me a sense of something technical, because in the end, technology and our frantic rhythms are somewhat connected. (RD2024)

In the digital performance context, artistic experience can drive the acquisition of new types of knowledge, from specific skills to a broader grasp of the broader socio-technical environment. This understanding does not necessarily require explicit thematization by the performance; rather, it often emerges from engaging with the medium itself.

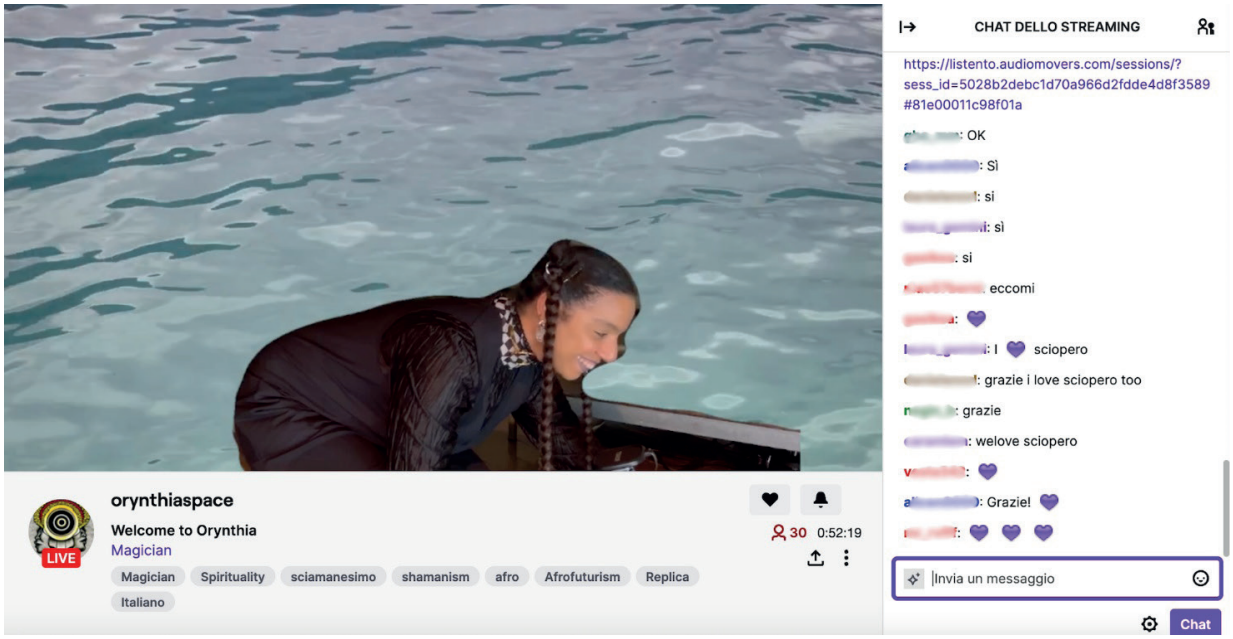

Figure 4. Valerie Tameu – Metabolo II: Orynthia (*Residenze Digitali* 2024). Screenshot from the performance on Twitch.

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6. Conclusions

Returning to our initial research question, we find no well-established or broadly shared spectator practices that can be defined as "specific" to digital performance. Nonetheless, certain patterns do emerge in how audiences experience live screen-based digital performances. Despite the variety of projects analysed, the diversity of their contexts, and the differing personal backgrounds of spectators, one theme cuts across them all: a willingness to experiment with an unfamiliar kind of spectatorship – one that merges theatrical and screen-based modes of entertainment with the logic of technological trial.

This stance poses a challenge for spectators, who may struggle to navigate the shifting modes of engagement, lacking a shared set of conventions to guide how and to what extent they should interact, where to direct their focus, or what responsibility they bear for the performance's success. Yet, this disorientation also unlocks creative possibilities and freedoms not typically found in other artistic or entertainment forms. Though the experience can be demanding, its broad acceptance among interviewees points to a mediatization of the roles of performer and spectator, mirroring the mediatization of presence and performative text. In other words, despite the difficulties, spectators manage to weave their traditional theatrical experience into the skills and practices of digital life.

In digital performances, being an audience member is a role relearned with each encounter. The spectatorial relationship that artists and organisers seek to establish is not predetermined but emerges through experimentation. This openness to creative potential, however, clashes with the demands of promotion and reaching a wide audience. Here, the fallacy of simplistic myths – particularly prevalent during the pandemic – that envisioned digital platforms as a "theatre with an infinite audience" becomes apparent. While live digital performances do reduce transportation costs compared to physical ones (though not eliminating them entirely), it is misleading to assume this automatically lowers the effort and resources needed to attract viewers. Digital theatre may overcome physical distances, but it widens network distances: the challenge shifts from drawing people to a theatre to embedding the theatre within users' digital streams, where competition for attention is far more intense than in spatially bounded settings.

Much like a site-specific project, guiding audiences to a digital space – one they would not typically frequent – requires significant resources and effort. In the post-pandemic context, digital performance should be understood as a form of *digital site-specific performance*. From this viewpoint, organisers must foster networks of trust that encourage audiences to engage with proposals spanning *trans-medially* (across channels and platforms), *trans-materially* (between digital and physical realms), and *trans-temporally* (linking different stages of the work).

In this sense, research on Future Screens finds a particularly fertile field of inquiry in digital site-specific performances. Although they certainly do not dominate contemporary media consumption, they foreground the changing relationship with screens within the spectator's experience, as audiences are asked to think through – and reflexively enact – a mode of spectatorship suited to on-screen liveness.

DOI 10.36158/97912566929413

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DOI 10.36158/97912566929413

Expanded Realities

Interactivity, Immersiveness and Co-creation at the Convergence of Documentary and Media Art

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| abstract

What is meant by *interactive documentary*? What experiences emerge from the combination of documentary and active participatory practices within a certain segment of media art that bears labels such as *expanded cinema*? What is *immersive journalism* and how does it fit within these practices? This article outlines some of the historical and influential artistic and academic tendencies underpinning recent practices at the intersection of documentary and media art. These practices invite the direct and active involvement of the spectators, who find themselves, whether individually or collectively, in the position of doers rather than mere observers. Key concepts such as interactivity, immersiveness, representation, and interpretation are examined, highlighting their relevance to this analysis. The objective is to map an inductive area where diverse practices from documentary and media art can come together, engage with one another, and coexist. Central to this exploration is the concept of interactivity, which redefines the viewer's role from passive observer to active participant. Interactive documentaries utilize digital technologies to offer audiences agency, allowing them to navigate through narratives, explore different perspectives, and contribute to the content itself. This challenges traditional documentary paradigms by empowering audiences to shape their own experience. The analysis will examine how this shift towards interactivity affects the representation of reality in documentary and influences the audience's interpretation of events and their construction of meaning. The notion of immersiveness is also crucial, particularly in relation to the use of technologies like Virtual Reality (VR) and Augmented Reality (AR) in documentary contexts. These technologies offer the potential to create a sense of presence and emotional connection, fostering empathy and deeper understanding in the spectator, but many doubts also surround them. Ultimately this article outlines an open space of convergence between open/interactive documentary and media art. Both challenge traditional paradigms of knowledge acquisition and creation. Rather than a one-way transfer from creator to spectator, they both promote knowledge as a shared process in which meanings are co-created, debated, and continually refined and redefined. This space of convergence encourages a new perspective on how documentary and media art can engage spectators, fostering critical thinking and action while opening documentary to innovative aesthetic and narrative forms.

DOI 10.36158/97912566929414

1. From Interactive to Open Documentary: Some Definitions

This section introduces the concept of interactive documentary, situating it within the historical and theoretical evolution of the documentary genre. From its foundations in linear forms to the experimental work of institutions and practitioners, the interactive documentary is framed as a new and distinct field that reshapes the relationship between reality, interpretation, and participation.

1.1. *Reality, Truth and Facts*

The relationship between documentary and reality has long been central to debates on how cinema represents, interprets, and constructs truth. This Section begins with that discussion, which provides the basis for understanding why interactive documentary is a variable and continuously evolving genre. Among the many possible perspectives, this analysis focuses on a few authors who, in different ways and with particular depth, have investigated the relationship between reality, truth, and facts: Werner Herzog, with his provocative distinction between fact and truth; Bill Nichols, who translates this tension into theoretical terms related to interaction; John Grierson, who offers a foundational vision of interpretation as the task of documentary; Sandra Gaudenzi, who updates this debate within the digital and interactive context. The choice of these authors is motivated by their capacity to mark turning points and to highlight how documentary cannot be reduced to a mere objective testimony of reality but must instead be understood as a space of interpretation and co-creation.

Werner Herzog exemplifies the questioning of the conception of documentary as an objective recording of reality. In his *Minnesota Declaration,* presented at the Walker Art Center, he argued that «there's something ultimately and deeply wrong about the concept of what constitutes fact and what constitutes truth in documentaries» (Herzog, 1999). For Herzog, reality is not exhausted in a literal representation of events, but emerges from the filmmaker's research process, narrative construction, and the aesthetic power of images or editing. Famous is his statement: «Fact creates norms and truth illumination», distinguishing surface data from what he called *poetic, ecstatic truth,* attainable only through imagination, stylization, and fabrication. His critique of *cinéma-vérité* reflects this stance:

> Cinéma-vérité confounds fact and truth and thus plows only stones. And yet, facts sometimes have a strange and bizarre power that makes their inherent truth seem unbelievable. (Herzog, 1999)

On a theoretical level, Bill Nichols (2001) takes up Herzog's provocation but reformulates it analytically. Whereas Herzog emphasizes the poetic and imaginative dimensions of truth, Nichols focuses on relational dynamics: truth in documentary is never absolute, but rather the *truth of an encounter*. The camera makes visible the negotiation between filmmaker and subject, producing an interaction that could not exist outside the act of filming:

> What we see is what we can see only when a camera, or filmmaker, is there instead of ourselves. (Nichols, 2001, p. 118)

DOI 10.36158/97912566929414

A complementary and earlier approach is offered by John Grierson, widely regarded as a foundational figure of documentary. If Herzog destabilizes the dichotomy between fact and truth and Nichols reframes it in relational terms, Grierson insists on the centrality of interpretation. For him, documentary should not be confined to reproducing reality, but must render it meaningful for human experience. As cited in Dayna Galloway[1] (2013, p. 13), Grierson maintained that a documentary is «only good if its interpretation is a real interpretation, that is to say one which lights up the fact, which brings it alive, which indicates precisely and deeply our human relation to it».

This principle is consistent with his manifesto, where Grierson also emphasized the formal properties of cinema:

> The arbitrary rectangle of the screen reveals and enhances movements, giving them maximum effectiveness in space and time. It should be added that the documentary can achieve a deeper understanding of reality. (Grierson, 1946/1960, p. 44)

He further noted:

> One photographs "real" life but also gives an interpretation, carefully juxtaposing the details contained within it. (Grierson, 1946/1960, p. 46)

Along these lines, Dayna Galloway shows how even the earliest examples of documentary, such as Robert Flaherty's *Nanook of the North* (1922), were built on semi-fictional treatments of their subjects (2013, p. 8). This confirms that, from its very origins, documentary has never been a simple record of facts, but rather a field in which reality is constantly mediated.

This never-ending debate, spanning filmmakers and theorists across different eras, gained new relevance with the advent of digital media in cinema. Around 2007, the genre of interactive documentary emerged through the work of a network of researchers and practitioners who sought to distinguish it both from linear documentary and from earlier experiments in interactivity. This network included academics and professionals working within institutions such as the MIT Open Documentary Lab in the United States and the IDFA DocLab in Amsterdam, which became key spaces for theorizing and experimenting with interactive forms. Sandra Gaudenzi, a key figure in this field, has underlined how this shift towards interactivity redefined the genre itself, noting that «the interaction afforded by digital media has blurred the distinction between author and user/viewer/reader/player» (Gaudenzi, 2013b, p. 22). With this redefinition, the debate on truth and reality takes a further step forward, opening the way to practices that radically transform how documentaries can represent, interpret, and co-create reality.

1.2. *Towards a Definition of Interactive Documentary*

The definition of interactive documentary was discussed at the *i-Docs* Symposium held on 25 March 2011, organized by the Digital Cultures Research Centre (DCRC) at the

1. Dayna Galloway is Head of Division of Games and Arts within the School of Design and Informatics at Abertay University in Scotland. Dayna's research focuses on the structures, dynamics and aesthetics of video games and, in particular, on the emergence of new interactive forms and experimental game design practices.

DOI 10.36158/97912566929414

University of the West of England[2]. In that context, the genre was re-examined in light of emerging artistic practices and new forms of inquiry.

Sandra Gaudenzi, one of the curators of the Symposium (together with Judith Aston and Mandy Rose)[3] and a researcher in the field of interactive documentary, presented the origins of this genre, emphasizing that in 2007 there were very few academic publications on the subject. According to Gaudenzi, this was partly because many new media artists did not consider themselves documentary filmmakers and therefore did not perceive their work as interactive documentaries (Gaudenzi 2013a, p. 26).

The first definitions came mainly from filmmakers and writers in cinema and documentary, who tended to see interactive documentary as a continuation of linear documentary into the digital realm, assuming that it had to be primarily video-based and that «interactivity was just a way to navigate through its visual content» (Gaudenzi, 2013a, p. 27).

This initial understanding, however, differed significantly from Gaudenzi's own perspective. As she declared at the opening of *i-Docs*, interactive documentary is not an evolution of linear documentary, but an independent genre that emerged around 2008. Indeed, the genre also encompasses games, participatory experiences, web-based projects and installations (DCRC 2011). The breadth and openness of the genre were further confirmed by the variety of speakers invited to the *i-Docs* Symposia, coming from diverse fields such as media art, cinema and documentary.

Following the inaugural *i-Docs*, Aston and Gaudenzi published an article (2012) that elaborated on some of the concepts discussed at the Symposium. Their definition highlighted the openness of the genre:

> In order to begin the discussion, a definition of i-Docs is needed. The position taken in this article is that any project that starts with an intention to document the "real" and that uses digital interactive technology to realize this intention can be considered an interactive documentary. This is a deliberately broad definition of i-Docs, which is not tied to any specific platform. (Aston & Gaudenzi, 2012, pp. 125-126)

In the same article, the two authors also specify, to avoid misunderstandings, that interactivity in this context is «a means through which the viewer is positioned within the artefact itself, demanding him or her to play an active role in the negotiation of the "reality" being conveyed through the *i-Doc*» (Aston & Gaudenzi, 2012, p. 126).

Gaudenzi, in a further clarification of what she means by interactivity, also draws on the theorizing of Humberto R. Maturana and Francisco J. Varela and their particular emphasis on the concept of interaction in their seminal book *Autopoiesis and Cognition,* from which she cites:

> It is the circularity of its organization that makes a living system a unit of interactions and it is this circularity that it must maintain in order to remain a living system and to retain its identity through different interactions. (Gaudenzi, 2013a, p. 80)

2. The Symposium was hosted by Bristol's Watershed Media Center (www.watershed.co.uk/) with a follow up stage at Pervasive Media Studio (www.pmstudio.co.uk, i-docs.org/about-interactive-documentary-idocs/i-docs-symposium/).

3. Sandra Gaudenzi teaches at the University of Westminster and at UCL (University College London). She is one of the conveners and creative director of the *i-Docs* Symposium in Bristol (one of the leading centers in Europe for research into evolving documentary practices). She has a background in television production, but now she mostly works in the field of interactive narrative and digital stories in documentary. Judith Aston is Associate Professor and Wallscourt Fellow in Film & Digital Arts at UWE Bristol. She is a Founding Director and curator of *i-Docs*. Mandy Rose is Professor in Documentary & Digital Cultures at UWE Bristol. She is one of the curators of *i-Docs*.

DOI 10.36158/97912566929414

Thus, Gaudenzi situates the concept of interactivity within the broader notion of living systems (and humans as living systems), which, thanks to their self-making, self-organizing and adaptive capacities, are in constant interactive and circular relations with other living systems and with the environment. From this perspective, interactivity is understood as inter-activity, that is «our fundamental way of being, our way of relating and existing through doing». Returning to interactive documentary, she concludes: «If we extend this logic to interactive artefacts, such as interactive documentaries, then our interacting with them is a way to relate and construct our world» (2013b, p. 21).

The interactive documentary is therefore variable, modular (Manovich, 2001), and in constant transformation. Gaudenzi describes it as a "living documentary" in the pure biological sense, where the word *living* is chosen because «it relates to the idea of "being alive"» (Gaudenzi, 2013b, p. 25) and «put the emphasis on becoming, rather than explaining» (2013b, p. 26).

In addition to these definitions, institutions such as the IDFA DocLab in Amsterdam and the MIT Open Documentary Lab have played a key role in the development of the genre. The ODL was founded in 2012 at the MIT Media Lab, within the context of the *New Arts of Documentary Summit*, thanks to the initiative of William Uricchio, professor in the Department of Comparative Media Studies/Writing at MIT. The mission of the laboratory was to fully explore issues of authorship and narration and to stimulate participation and co-creation in emerging forms of documentary. Its goal is to bring together narrative designers, technologists and scholars, with a particular focus on collaborative, interactive and immersive narratives.

As the official website states:

> The Lab understands documentary as a project rather than as a genre bound to a particular medium: documentary offers ways of exploring, representing and critically engaging the world. It explores the potential of emerging technologies and techniques to enhance the documentary project by including new voices, telling new stories and reaching new publics. (MIT Open Documentary Lab, n.d.)

The word *open* is not included in the laboratory's title by chance. It is a term that seems particularly appropriate and that bears multiple meanings. Indeed, with respect to the i-Docs group, the ODL favors a different approach. While Aston and Gaudenzi aim to define the interactive documentary as projects documenting reality with a focus on interactivity, the MIT Open Documentary Lab emphasizes concepts such as participation, co-creation, community, network and extended culture, even explicitly embracing the open courseware and open source software movements with which it shares purposes and methods (MIT Open Documentary Lab, n.d.).

The lab's name appears to explicitly reference Umberto Eco's *Open Work*, a 1962 essay of great significance to the field of art. During an online speech for The Early Visual Media Lab[4], Uricchio clearly stated that the ODL conducts projects, events and research that revolve around culturally established concepts such as participation, inclusivity and community, through communication systems and social rituals that use contemporary tools and platforms.

Uricchio, in the same context, discusses the concept of co-creation as a key feature of the ODL. Co-creation may be understood in a broad sense as an implicit cultural charac-

4. This is a cross-disciplinary research lab focused on the study of visual media heritage, based in Lisbon, Portugal.

DOI 10.36158/97912566929414

teristic of the human species, but also as a contemporary production method that allows us to "embrace complexity" (Uricchio, 2022) more functionally and effectively, especially in relation to issues such as power and inequality. In an article with the significant title *Not media about, but media with. Co-creation for activism*, citing an interview with filmmaker Kat Cizek, Mandy Rose (already mentioned as curator of *i-Docs*) argues that participation «is only one specific methodology that is appropriate for certain contexts and not others. [...]. Co-creation is about having a broader sense of the co-design and the spirit behind making something» (Rose, 2017, p. 51).

And in the conclusions of her doctoral thesis, Gaudenzi again states:

> Opening content to users, allowing the documentary to grow and change as a living organism, seemed to indicate the beginning of a new era of documentary production where co-creation of reality, rather than representation and documentation of it, was the raison d'être of such new form. (Gaudenzi, 2013a, p. 252)

While the ODL aligns with the principles of interactive documentaries and, as Uricchio (2019) emphasizes, interactivity is central to this form, the laboratory's creative approach extends further, incorporating not only interactivity but also a distinctly social and participatory dimension.

It is interesting to note how this approach brings us back to the concept of *living documentary* proposed by Gaudenzi, already introduced earlier. It highlights a transformative process in which interactivity, openness, participation, and co-creation become constitutive forces. From this perspective, both Gaudenzi and the ODL point toward convergent, organic, and open approaches, in which the interactive documentary increasingly takes shape as a space of collective osmosis.

Within this framework, the interactive documentary emerges as *an evolving genre*, capable of redefining the relationship between reality, interpretation, and participation. At the same time, this theoretical reflection resonates with practices developed in the field of media art, practices that will be further examined in Section 3. of this article, where the dialogue between documentary and artistic experimentation will reveal additional intersections and shared dynamics.

1.3. *Immersive Journalism*

To conclude this Section, it is useful to introduce the definition of immersive journalism as a form of interactive documentary that, through new media, strengthens the involvement of the viewer, offering a different perspective on facts and a new approach to reality. In this sense, it connects to the discussion raised in Section 1.1., situating it within a broader inquiry into reality, factuality, and representation.

This definition was first introduced by journalist Nonny de la Peña[5], in a 2010 article, where immersive journalism is not presented as a mere technological variation of documentary but as a specific theoretical proposal within the interactive genre: a way of conceiving the relationship with facts and reality through embodied and engaging experiences, made possible by new media. For de la Peña, immersive journalism is:

5. Nonny de la Peña is a journalist and a pioneer/founder of immersive journalism. She is the director of Arizona State University's Narrative and Emerging Media program, a best-in-class research and graduate program with a focus on new narratives developed using emerging media technologies in the areas of arts, culture and nonfiction. She is the founder and CEO of Emblematic Group and has won many prizes in the field of immersive journalism.

DOI 10.36158/97912566929414

> *the production of news in a form in which people can gain first-person experiences of the events or situation described in news stories.* (de la Peña et al., 2010, p. 291)

This form of journalism employs immersive environments and embodied narratives to engage the user in current socio-political issues, by «combining virtual reality technologies with strong storytelling techniques» (de la Peña, 2017, p. 209) thereby «drawing on the emotional power of presence and direct participation» (de la Peña, 2017, p. 209).

To ensure an effective experience, the immersive environment must not only provide a realistic representation of the simulated worlds, but also meet criteria such as the *sense of presence* or *place illusion*, the *plausibility illusion*, and identification with the virtual body and its behavior (de la Peña et al. 2010, p. 294). Mel Slater[6], one of the co-authors of the article on *immersive journalism* with de la Peña and a leading researcher in the field, defines place illusion as «the strong illusion of being in a place despite the sure knowledge that you are not there» (Slater, 2009, p. 3551), while plausibility illusion is «the illusion that what is apparently happening is really happening (even though you know for sure that it is not)» (Slater, 2009, p. 3553). De la Peña et al. further emphasize that «a body representation is necessary for the completion of both PI (Place Illusion) and Psi (Plausibility Illusion)» (de la Peña et al., 2010, p. 295).

According to the theory and practice of immersive journalism, as articulated by de la Peña, the combination of these three principles – place illusion, plausibility illusion, and identification with the virtual body – engages the viewer from a first-person perspective, generating a profound empathetic effect. While this approach undoubtedly reinforces the experiential dimension of interactive documentary, it also reopens the broader and more complex issue of how reality and representation are mediated through immersive forms. In particular, it highlights how interactivity and immersivity, far from being neutral technical features, represent theoretical and aesthetic challenges that directly concern the evolving nature of documentary itself.

2. Interactivity and Immersiveness at the Convergence of Documentary and Media Art

Building on these considerations, the purpose of this Section is to pause and examine more closely the two key concepts introduced so far: interactivity and immersivity. Rather than approaching them as mere tools, I propose to reconsider them as theoretical categories that, by mutually reinforcing each other, can generate a combination capable of opening fascinating experiential pathways (Murray, 2012, p. 102). Placed in dialogue, these categories can also help to outline a possible space of convergence with practices developed within media art. While this step may seem to reiterate points already made, it functions as a necessary moment of clarification before moving forward.

6. Mel Slater is a Distinguished Investigator at the University of Barcelona and a Professor of Virtual Environments at University College London. He is a highly respected researcher in the field of virtual reality (VR). Slater's work often intersects with psychology, computer science and engineering and includes understanding the impact of virtual reality experiences on attitudes, beliefs and behavior.

DOI 10.36158/97912566929414

2.1. *Interactivity*

The concept of interactivity deserves closer attention here. As discussed in Section 1.2, Sandra Gaudenzi offered a structural definition, emphasizing how it assigns an active role to the user:

> Interactivity gives an agency to the user – the power to physically "do something", whether that be clicking on a link, sending a video or re-mixing content – and therefore creates a series of relations that form an ecosystem in which all parts are interdependent and dynamically linked. (Gaudenzi, 2013a, p. 3)

In her thesis, Gaudenzi expanded this vision by drawing on Second Order Cybernetics[7]: interactivity is a constitutive part of the digital artifact, which should not simply be observed, but should transform those who use it. Interaction is therefore the «ensemble of transformations that occur to the artifact's components as a result of the human-machine inter-action» (Gaudenzi, 2013a, p. 75).

Thus, Gaudenzi conceives interactivity as an open process that produces continuous transformations and not as a simple action/reaction system. To clarify this aspect, Gaudenzi refers to Umberto Eco's seminal book *Open Work*, where it is stated that: «Openness is only possible if the author allows the participator to enter in the creative process. This logic of creation is a participatory logic rather than a representational one» (Gaudenzi, 2013a, p. 77).

For Eco, all works of art are interpretable, therefore "open"; they are never like a road sign that, unless it is transfigured, «can be seen unambiguously in only one way»[8] (Eco, 1962/1997, p. 34). Nevertheless, as Eco claims, some contemporary works of art are more intentionally open: «such awareness is present above all in the artist who, rather than submitting to "openness" as an inevitable fact, chooses it as a work program and even presents the work in a way that fosters the greatest possible openness»[9] (Eco, 1962/1997, p. 36).

This concept, to which Gaudenzi attributes particular importance, was also a point of reference for several media theorists of the 1990s, such as Janet Murray and Lev Manovich. Authors who redefined interactivity in terms of openness and transformation, in parallel with the development of interactive media arts and digital technologies, significantly influencing the field of media art.

Manovich, in particular, with his concept of variability, noted that

> a new media object is not something fixed once for all, but something that can exist in different, potentially infinite versions. [...] Other terms [...] that might serve as appropriate synonyms of variable are mutable and liquid. (Manovich, 2001, p. 36)

7. «Cybernetics had from the beginning been interested in the similarities between autonomous, living systems and machines. In this post-war era, the fascination with the new control and computer technologies tended to focus attention on the engineering approach, where it is the system designer who determines what the system will do. However, after the control engineering and computer science disciplines had become fully independent, the remaining cyberneticists felt the need to clearly distinguish themselves from these more mechanistic approaches, by emphasizing autonomy, self-organization, cognition and the role of the observer in modeling a system. In the early 1970s this movement became known as second-order cybernetic» (Heylighen and Joslyn, 2001, p. 3).

8. Original text: «Può essere visto inequivocabilmente in un solo senso».

9. Original text: «Una tale consapevolezza è presente anzitutto nell'artista il quale, anziché subire l''apertura' come dato di fatto inevitabile, la elegge a programma produttivo, ed anzi offre l'opera in modo da promuovere la massima apertura possibile».

DOI 10.36158/97912566929414

Interactivity thus becomes a principle that brings digital media closer to a condition of mutability and permanent transformation.

If understood in this way, interactivity in documentaries and media art does not merely designate a mechanism based on interactive technological supports. Rather, it implies an openness of the work, where cognitive, psychological, and aesthetic processes converge, and where the focus shifts from the centrality of the "object" to the process in continuous transformation, from the "finite" to the "infinite".

Manovich further adds:

> A classical and even more so modern, art is "interactive" in a number of ways. Ellipses in literary narration, missing details of objects in visual art and other representational "shortcuts" require the user to fill in missing information. (Manovich, 2001, p. 56)

However, he warns:

> When we use the concept of "interactive media" exclusively in relation to computer-based media, there is a danger that we will interpret "interaction" literally, equating it with physical interaction between the user and a media object [...] at the expense of psychological interaction. (Manovich, 2001, p. 57)

Interactivity is therefore not just a tool, but a true interpretative paradigm, capable of redefining the relationship between author, work, and spectator.

2.2. *Immersiveness*

The concept of immersiveness today appears particularly complex, as it intertwines technological, aesthetic, and perceptual dimensions. For this reason, rather than focusing exclusively on its technical aspect, I intend to reinterpret it from an aesthetic perspective, in order to highlight its implications within interactive documentary and media art practices.

In Section 1.3. on *immersive journalism*, I discussed the three components that de la Peña and Slater considered necessary for a truly effective Virtual Reality (VR) immersive experience: *Place Illusion*, *Plausibility Illusion*, and perception/identification with the virtual body. These considerations, although compelling, also raise uncertainties and questions that directly relate to the debate introduced in Section 1.1. concerning the relationship between reality, truth, and facts.

The questions that arise must be seen as part of an evolving reflection: how close can we get to a faithful reproduction of reality? Is VR simply another form of representation, albeit a more "immediate"[10] one (Bolter and Grusin, 2003)? To what extent can the sensation of *feeling as though we were there* deceive our senses, reinforcing the credibility of a virtual event? How far can simulation approximate actual reality, truth, and facts?

10. Here "immediate" refers to "immediacy", a term used by Jay David Bolter and Richard Grusin in their influential work *Remediation: Understanding New Media*. The authors define immediacy as a desire to make the medium disappear in order to create a direct connection between the viewer and the content. According to Bolter and Grusin, the quest for immediacy leads us to continuously update and refine our media technologies. The idea is to create an ever-more immersive experience, where the interface is less noticeable and the user feels more directly connected to the content. Virtual reality is often cited as the epitome of immediacy because it strives to create an environment where the user feels completely immersed in a virtual world, seemingly devoid of any mediation.

DOI 10.36158/97912566929414

What role does the author play in this process? And, is the sense of immersiveness truly proportional to the degree of accuracy with which reality is reproduced?

It is difficult to provide definitive answers to these questions (which remain crucial for contemporary designers in the fields of VR) but they must be posed. For de la Peña, the complexity of this field depends above all on the duality of presence (de la Peña, 2017), since the spectator lives simultaneously in both the real world and the virtual world. Even de la Peña, although aiming to offer the spectator a viscerally authentic *verité moment* (de la Peña, 2017, p. 210), admits that:

> participants know that they remain in the physical location where their body resides but they also feel at the exact same time as if they have been transported to the environment where the scene is unfolding. (de la Peña, 2017, p. 209)

To address this unresolved duality, de la Peña suggests shifting the focus toward what she calls "behavioral realism" (de la Peña, 2017), which does not require a faithful reproduction of reality but instead relies on "strong storytelling techniques" (de la Peña, 2017, p. 209). In her view, this is the most effective way to «support or devolve immersion through its effect on "response-as-if-real"» (de la Peña, 2017, p. 209). This clearly demonstrates how the issue of immersion is connected to the earlier problematization of reality: more than guaranteeing direct access to the real, the immersive experience seems instead to open up new forms of mediation.

But let us take a step back and attempt to offer a definition of the concept of immersiveness from the perspective of some well-known scholars in the field of media art.

Oliver Grau, for example, observes that:

> in the present as in the past, in most cases immersion is mentally absorbing and a process, a change, a passage from one mental state to another. It is characterized by diminishing critical distance to what is shown and increasing emotional involvement in what is happening. (Grau, 2003, p. 13)

According to Grau, unlike de la Peña, immersion is therefore a mental and emotional process, not necessarily tied to real actions. In his view, immersion is not directly associated with the reproduction of reality; the two remain distinct, and immersion can occur through any medium. In this sense, his approach partially aligns with that of Janet Murray, who states that:

> Immersion is experiential and not a function of the size or volume of the stimulus [...] We can also become immersed in old media, in compelling stories that hold our attention to the page or the image, in rhythmic experiences that focus us on music or movement, in puzzles or games that take over our thinking, causing us to lose awareness of the world around us. (Murray, 2012, pp. 101-102)

For Murray, VR represents an alternative modality with new affordances that may develop over time through the collective process of inventing a medium. However, it is not a magical technology and cannot replace reality (Murray, 2020, p. 25).

On this issue, Char Davies, an internationally recognized pioneer for her groundbreaking work in VR in the 1990s, reaches an interesting conclusion while discussing her artworks *Osmose* and *Ephémère*:

DOI 10.36158/97912566929414

> I want to emphasize, however, that the medium's perceptually refreshing potential is possible only to the extent that the virtual environment is designed to be unlike those of our everyday experience [...]. It is only when such environments are constructed in ways that circumvent or subvert the medium's conventions, that immersive virtual space can be used to convey alternative sensibilities and worldviews, potentially functioning as a perceptually and conceptually invigorating philosophical tool. (Davies, 2004, p. 103)

From a perspective that seeks to merge documentary and media art, immersiveness remains a complex issue because it involves narrative, aesthetic, cognitive, and perceptual factors. Nevertheless, it is essential to recognize that, in its current state, immersive reality offers only an *as if* experience, a mode that interrogates rather than resolves the relationship between reality and representation.

3. From Expanded Cinema to the Floating Work of Art in Media Art

This Section highlights and analyzes selected practices within media art that, I argue, intersect with the documentary field as it is framed in this article, thereby opening up new perspectives on the relationship between art, reality, and representation.

3.1. *Expanded Cinema*

In his seminal work, *Expanded Cinema,* written in 1970, Gene Youngblood mentions *cinéma-vérité,* which we examined in Section 1.1., as a starting point for investigating the interplay between art, reality and representation. However, his approach is completely different from that of filmmakers such as Herzog.

Youngblood draws on cinéma-vérité to introduce his own concept of *synaesthetic cinema*. He posits that the primary aim of cinéma-vérité is to document "unstylized reality" because the filmmaker «is never to intrude by directing the action or in any way alter the events taking place», while in synaesthetic cinema on the contrary, «the artist shoots and manipulates his unstylized reality in such a way that the result has style» (Youngblood, 1970, p. 107).

Youngblood considers the crisis in the artist's relationship with the real to be evident, but he does not attribute it to the type of approach, as suggested in Herzog's critique. Rather, he links it to the advent and large-scale dissemination of television a medium that, in his words, «Renders Cinema Obsolete as Communicator of Objective Reality» (a deliberately aphoristic section heading presented in title case in the original text) (Youngblood, 1970, p. 78).

Within this evolving media landscape, contemporary filmmakers have greater capability to imitate reality, but the resulting realism, which often draws on a bastardized form of cinéma-vérité or newsreel-style photography, is merely a pre-stylized, mirror image of reality. Such realism is perceived as more realistic because it replicates the process-level perception of TV watching, where unstylized reality is filtered and shaped through the process of that given medium (Youngblood, 1970, p. 80). Youngblood discerns patterns suggesting that virtually all forms of cinema have been profoundly influenced by television and by a false realism, so we are inexorably being drawn towards a synaesthetic

DOI 10.36158/97912566929414

dimension. This progression is not abrupt but rather consists of transitional phases: «first toward greater "realism", then cinéma-vérité, before the final and total abandon of the notion of reality itself» (Youngblood, 1970, p. 79).

Youngblood outlines a progression towards an extra-objective domain that culminates in synaesthetic cinema, a form that amalgamates subjective, objective and non-objective elements within a space-time continuum. For Youngblood, synaesthesis is «the harmony of different or opposing impulses produced by a work of art. It means the simultaneous perception of harmonic opposites» (Youngblood, 1970, p. 80).

These harmonic opposites are perceived via a syncretic perspective based on «the combination of many different forms into one whole form» (Youngblood, 1970, p. 84) which enables the totality to be understood. Such combining of forms operates on the principle of synergy, whereby the behavior of the overall system is unpredictable, being the outcome of the behavior of its individual parts.

This introduces us into a metaphysical sphere that transcends all traditional forms of representation and narrative. It concerns forces and energies, the fundamental subject of synaesthetic cinema, which cannot be photographed. It is centered on the process and effect of seeing, the phenomenon of experience itself, existing only in the viewer:

> Synaesthetic cinema abandons traditional narrative because events in reality do not move in linear fashion [...]. It is concerned less with facts than with metaphysics and there is no fact that is not also metaphysical. One cannot photograph metaphysical forces. One cannot even "represent" them. (Youngblood, 1970, p. 97)

3.2. *Reality vs. the Representation of Reality*

Some of Youngblood's examples and considerations must be understood in relation to the historical context in which they were developed, since they do not take into account subsequent developments in media and cinema.

Nevertheless, the concept of expanded cinema, which originated in the 1960s from the broader idea of expanded arts, is recognized by a whole movement of audiovisual media artists and filmmakers who, since those years, have undertaken different lines of innovative experimentation along a path that extends to the present day.

These figures include Valie Export[11], who in a 2003 lecture for *The Essential Frame* – Austrian Independent Film 1955-2003 event – identified, among the prerequisites for expanded cinema «the destruction and abstraction of the material, as well as the film projection and participation of the audience» (Export, 2003).

Export, in relation to her work in the field of expanded cinema with the well-known artist and curator Peter Weibel[12], recounts:

> In 1967, Peter Weibel and I developed our "Expanded Cinema" in Vienna. We examined the relationship between reality and the apparatus that registered it. The media of expression and representation were themselves brought into this discourse. (Export, 2003)

11. Valie Export is an influential Austrian artist known for her groundbreaking feminist performance art, experimental films and conceptual artworks that challenge societal norms and perceptions of the female body. Active since the 1960s, her provocative works have made her a pivotal figure in contemporary art.

12. Peter Weibel was a renowned Austrian artist, curator and theorist, particularly known for his work in the field of new media art. He was artistic director of Ars Electronica festival and Chairman and CEO of the ZKM in Karlsruhe, Germany.

DOI 10.36158/97912566929414

This vision obviously arises in a context where there is no boundary between social struggle and art, to the point that Export herself states that expanded cinema also means expanded reality (Export, 2003).

At this point, it is clear that expanded cinema – which was born, I would again underline, in a period (particularly the 1960s) characterized by political and artistic events with strong social impact – brings film and the audiovisual into a new relationship with reality. It is not solely based on representation or identification; rather, it explores diverse forms, some anchored to traditional concepts of screen and film and others pushing boundaries to the extent of contemplating a "film without film". For example, in the artwork *Tapp und TastKino* (*Tap and Touch Cinema* – 1968), Valie Export proposed a version of expanded cinema without celluloid, a mobile outdoor action announced over a loudspeaker by Peter Weibel, which narrowed the boundary between art and life.

Since the 1960s, expanded cinema has been developing and evolving in a very open way, taking on the multiple forms well summarized by Peter Weibel in the section on *Expanded Cinema, Video and Virtual Environments* in his essay *Future Cinema: The Cinematic Imaginary after Film* (2003), which he edited with Jeffrey Shaw[13], another well-known pioneer in the field of media art.

In this work, Weibel outlined the leading experiments in the field of expanded cinema from the 1960s to the 1990s (including works produced using celluloid as a material, or closed-circuit or multi-screen techniques, or an interactive or immersive approach). He concluded by, at last, exploring new types of narratives that behaved "algorithmically" and "rhizomatically", whereby linearity and chronology were set aside in favor of multiple perspectives, wherever possible to be projected on multiple screens. «These new narrative techniques», according to Weibel, served to«render the complexity of social systems lucid» (Weibel, 2003, p. 124), thus allowing audiovisual-based media art to overcome the crisis of representation seen in painting in the 1980s.

In a 1997 essay/catalog on the work of Jeffrey Shaw, Weibel was highly explicit in his treatment of the question of representation:

> Celluloid could be replaced by a length of thread, the projector by a mirror [...]. These permutations of the prevailing film forms also altered the character of filmic representation. A film is usually expected to supply a picture of the world, to reproduce the world. Expanded cinema aimed no longer to reproduce reality but to construct its own reality in the filmic play. The expansion of the technological medium brought with it an expansion of the reality able to be grasped by senses. (Weibel, 1997, p. 2)

Youngblood too delved into the concept of the image within the domain of expanded cinema in a later work, advancing the following compelling claim: «Today cinema represents reality, tomorrow it will be reality» (Youngblood, 1989, p. 30). From the perspective of contemporary discussions on future screens, this statement can be read as anticipating a shift in which cinema no longer functions as a medium of representation but as a medium that actively constructs experiential realities.

Artists navigating this realm prioritize relation, interaction and variability. They strive to create a dynamic space that «*models* rather than represents» as Bourriaud (1998/2010, p. 19) would say, using narratives born from the encounter between reality and virtuality.

13. Jeffrey Shaw is a visual artist and well known as a leading figure and pioneer in media art, especially in the areas of interactive art, virtual, augmented and mixed reality, immersive visualization environments, navigable cinematic systems and interactive narrative.

DOI 10.36158/97912566929414

3.3. *The Floating Work of Art*

In her article, *The Art of Narrative Toward the Floating Work of Art* (2002), professor, curator and art historian, Söke Dinkla, introduces the term *floating work of art* to characterize artistic strategies in media art that are informed by expanded cinema.

According to Dinkla, the floating work of art emerged in the late 1980s from the technological euphoria of the 1970s, during a historical period marked by significant political and social events – most notably the fall of the Berlin Wall – which reshaped the landscape of Europe and led to a new socio-political framework that was no longer based on antagonism and division. The concept of floating work of art could apply to interactive media artworks, which change and evolve based on spectator interaction or algorithmic patterns.

Artists who have experimented with the floating work of art (including pioneers such as Jeffrey Shaw, David Rokeby, Lynn Hershman and others) identify most radically with the digital medium as an aesthetic space that facilitates the logical deconstruction of predetermined systems (Dinkla, 2002, p. 35).

These artists propose new ways to navigate an abstract "floating" reality via different media, styles, genres or conceptual frameworks, seeking to avoid dualism, division and conventional modes of visual representation because this could generate the risk that «behavior also follows established rules, instead of opening up new spaces of experiences» (Dinkla, 2002, p. 36). Indeed, the aim of the floating work of art is to construct experiences in which the spectator, within the cybernetic loop created by the artwork, «realizes that it is he who generates reality with his gaze» (Dinkla, 2002, p. 38).

I believe that the notion of floating work, directly connected with the expanded cinema experiences, is highly salient to this article, as it powerfully aligns with the specific perspective articulated by Gaudenzi/Uricchio in the field of documentary. For Dinkla, the floating work of art «is not an entity but a state transformed by changing influences [...]. The floating work of art is no longer the expression of a collective, but it is the state of a "connective" – a web of influences that are continually reorganized by all participants» (2002, pp. 38-39). This perspective resonates with the thinking of Gaudenzi and Uricchio, particularly in their emphasis on openness, participation and co-creation as defining traits of the interactive documentary. It is here that I locate a key commonality with my own argument: both Dinkla's floating work of art and Gaudenzi/Uricchio's notion of the interactive documentary shift the focus from the artwork as a fixed entity to the processes of transformation and negotiation through which meaning is continually reshaped by the interplay of participants, media, and context.

4. Final Remarks

In this article I outlined an open space of convergence between open/interactive documentary, a genre that arises from reflection on the documentary form itself, and media art. I believe that even though these genres have different roots, both challenge traditional paradigms of knowledge acquisition and creation. Rather than a one-way transfer from creator to consumer, they both promote knowledge as a shared, interactive and immersive process in which meanings are co-created, debated and continually refined and redefined.

Throughout the article, I have attempted to inductively illuminate this space by comparing some of the theories and practices of media art with those of open/inter-

DOI 10.36158/97912566929414

active documentaries and describing their potential areas of strength, contact and overlap. The aim of these investigations and this comparison stems from my deeply held personal conviction that the convergence between interactive documentary and media art generates a relational dynamic that can act as a powerful catalyst for critical thinking and action. As we continue to navigate our interconnected digital future, these practices will be key to cultivating and growing individual and collective engagement and intelligence, thereby empowering individuals and communities to shape their own realities.

Among the many artists who are moving in this direction, I mention here in particular: Blast Theory, Teri Rueb, the artists produced by the National Film Board of Canada, and more recent artists like Lauren Lee McCarthy or Forensic Architecture, who move between the forms of open documentary and those of media art. I myself, as an artist and practitioner, am pursuing this trajectory with projects such as Apnea and *Photosynthetic Me*.

Finally, although the theme of narrative has not been explicitly developed in this article, my underlying intent has been to suggest how this convergence calls for a fresh perspective on its role. Narrative, here, is not conceived as mere storytelling, but as a structural principle capable of weaving together interactivity and immersivity, opening new pathways between reality and virtuality, and fostering deeper forms of participation. The search for such narrative forms represents the next step of this research: a fertile ground where aesthetic innovation and critical reflection converge, from which future practices of documentary and media art may draw renewed strength.

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DOI 10.36158/97912566929414

Volumetric Video With Skateboarders

Creative Opportunities of Working With an Emerging Screen Technology Beyond the Studio

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| abstract

Volumetric video is an emerging moving image technology in which each pixel is recorded with a location in three dimensions. Volumetric videos are normally created in studios using rigs made up of multiple cameras with LiDAR sensors and computers that combine the moving images. We took this technology out of the studio to explore variations of this technique in public skateparks. We found that as the technology is still in developing stages it has creative constraints: it can records at a limited distance to the subject, the image is of a relatively low resolution, and there are often glitches in the image. In our creative experiments with the skateboard community, we found we could use these qualities to our advantage. For example, we could create images that emphasise movement over surface texture. In this paper we explore this emerging screen technology through the theoretical lens of *Modes of Existence of Technical Objects* by Gilbert Simondon (2017/1958). Simondon articulates the individuation of novel technologies from *abstract* phases, which are multiple and emergent, towards a metastable phase of *concretisation* when they become consistent and coherent. This paper argues for the valorisation of working with screen technologies in their abstract phases. In this phase and the situation in which the technology is employed can easily shape the techniques, the means of production becomes more readily visible to the viewer, and unintended functionality may be explored for creative outcomes.

DOI 10.36158/97912566929415

1. Introduction

In this article, we examine an emerging screen technology from the perspective of creative media arts practitioners at the intersection with skateboarding. The technology we have worked with has been variously described as volumetric video, spatial video, or motion point cloud (Schreer et al., 2019). This technology involves capturing a series of images in which each pixel is recorded as a defined location in three-dimensional space and, in some cases, an associated colour value. We argue that working with this technology in its developing stage offers unique opportunities for creative practice. Through experimenting with the technology in a situation it was not designed for, new possibilities emerged, leading to adaptations of the technical processes.

We draw upon our experimental work creating volumetric videos with skaters. Although volumetric video is predominantly used in controlled studio environments, our

Figure 1. Still Images from volumetric moving-image recording of skateboarder (2024).

research investigates its potential in a mode closer to observational documentary practice. We explore creative possibilities offered by placing this future screen technology on location, and in contingencies within the skatepark. We chose skating as a subject firstly because skaters explore alternative ways in which public spaces of the city can be inhabited beyond their prescribed usage – a bench or curb becomes a means to explore weights, movements and bodies in the city (Willing and Shearer, 2015). Secondly skater culture has a long history of filming themselves and making innovations in filmmaking (Borden, 2017). This situates our study within research that treats the skateboard as a mobile technology and skateboarding as an embodied practice that reconfigures perception and mobility through continual adaptation of body, board, and environment (Hauser et al. 2013).

In this article we propose an analysis of skateboarding as a way of navigating and appropriating technological dissemination within the urban environment. Skateboarding has been touted as a "techno sport" (Davidson, 1985) and as activity mediated by embodied technology (Hauser et al. 2013). As a community of practice, skaters engage in the appropriation of urban spaces and construct identities through their interaction with the city (Glover et al. 2021; Woolley & Johns, 2001). Urban appropriation and meaning making are not exclusive to skateboarding communities (Campo, 2002). However, skaters, in their pursuit of self-reaffirmation and differentiation, often generate forms of practice and identity that resist more vernacular modes of

urban appropriation and instead strive for individual expression (Valentine, 1996; Woolley & Johns, 2001). Borden (2001, pp. 114-118) demonstrates how skaters appropriate benches, plazas, and ledges, shifting them from conceived spaces of commerce to lived spaces of play and identity.

DOI 10.36158/97912566929415

Skateboarders use spatial practice by turning steps into an embodied site of performance, transforming ordinary spaces into physical experiences through technological capturing (videos, sensors) and a practice rooted on urban exploration. In this way, skaters approach public spaces with a mindset of creative appropriation, viewing the urban landscape as raw material for their activity. Their drive for expression, both individually and collectively, fuels their exploration of urban features finding new possibilities from mundane objects inherent in these spaces, leading to a unique and dynamic relationship with the urban environment.

We explore the developing stages of volumetric video, through the lens of Gilbert Simondon's thesis on the individuation of technical objects (2017/1958, pp. 25-52). Simondon describes how technologies move from primitive phases he terms *abstrac*t in which aspects of the technologies emerge together and are shaped by their situation (milieu), towards *concretisation* phases where the technologies shape the milieu they are in. We describe how we experimented with using volumetric video techniques in their emerging abstract phase in the skateparks, and how we found that by using not yet fully integrated systems such as the Kinect sensor we were able to explore creative possibilities of using volumetric video on location.

2. Brief Genealogy of Low Budget Volumetric Video Technologies

Volumetric video is an emergent technological format that captures moving three-dimensional representations of scenes, objects, and performances, enabling interactive viewing within immersive environments such as virtual and augmented reality or rendering in 2D. Earlier 3D video systems relied on the optical effects of binocular vision – using two coloured or polarising filters to simulate depth by presenting slightly offset images to each eye. Volumetric video, records and maps every pixel within a three-dimensional coordinate system, capturing spatial depth so that scenes can be navigated and rendered from any viewpoint within a digital 3D space. Unlike traditional two-dimensional video, which records images from fixed single camera perspectives, volumetric video can record spatial data simultaneously from multiple viewpoints, integrating them into coherent, interactive 3D models (Schreer et al. 2019). The system records pixels, each containing both XY position and depth (Z coordinate) information. However, when working with a single camera as we did the resulting 3D objects remain incomplete, since the hidden or rear surfaces cannot be captured.

Processing volumetric video requires advanced computational algorithms capable of merging visual and depth data into unified, dynamic 3D models. Innovations in mesh reconstruction, point-cloud processing, texture mapping, and compression have allowed higher-quality real-time rendering of volumetric data, enhancing interactivity and realism (Mateer, 2017). The technological evolution underpinning volumetric sensors and processing from early experimental techniques towards accessible, real-time capture and rendering enabling integration into diverse fields ranging from industrial uses in safety and self-driving cars to virtual collaboration and telepresence. Volumetric video technology has evolved significantly through innovative workflows integrating diverse software and platforms. Central to this practice is the use of point cloud data created with LiDAR sensors. LiDAR sensors use laser, infrared, or structured light emissions to measure the time it takes for reflected signals to return, generating the three-dimen-

DOI 10.36158/97912566929415

sional representations of objects and environments. They are in many mobile phones, cars, and industrial equipment, but their use for creative moving image work is in early stages.

The iterations of the now discontinued Microsoft Kinect sensor series (2010-2023) have been pivotal in the development of volumetric video technology in the DIY space. Initially developed to track user movements in gaming, the Kinect found broader applications due to its effective depth-sensing capabilities. Early Kinect models, the Kinect model 1414 and Kinect model 1473, used structured light technology, projecting an infrared (IR) speckle pattern onto scenes and calculating depth from shifts in these patterns. Researchers demonstrated the Kinect 1414 was most accurate at close distances, while the Kinect 1473 performed better at greater distances (DiFilippo, & Jouaneh, 2015). The introduction of the Kinect for Windows brought improvements, notably the ability to track objects at shorter distances (400 mm compared to 800 mm for previous Xbox models). The Kinect for Windows v2 introduced time-of-flight (ToF) technology, significantly enhancing depth fidelity and image resolution. This model operates by emitting modulated light and measuring reflection time to determine depth, thus providing superior accuracy and spatial resolution for volumetric video applications. The Azure Kinect Development Kit released in 2020 we used had further enhancements, including advanced AI-driven body tracking, improved depth sensing accuracy, and real-time data integration into platforms such as Unity's Visual Effects Graph (VFX Graph). These emerging workflows have provided opportunities for experimental uses in volumetric capture and rendering. Software developers have creatively repurposed these LiDAR sensors to facilitate volumetric video capture. As well as exploring the Kinect and other depth sensing devices. Apple's iPhone Pro modules, integrate LiDAR technology primarily to aid autofocus and face mapping for security. Experimental software such as Record3D by Marek Šimoník enables use of this sensor for volumetric video. The Brekel software by Jasper Brekelman enables recording using various sensors. The community of volumetric video creative users continue to explore software interoperability across platforms such as Blender, Unity, Houdini, and Unreal Engine.

Recent advancements in consumer technology, most notably Apple's Vision Pro headset, released in 2024, introduces Spatial Video which uses LiDAR combined with multiple 2D video cameras within a proprietary, closed system. It employs an exclusive codec that restricts content playback solely to its platform: the MV-HEVC (Multiview High-Efficiency Video Coding), an extension of HEVC, to encode its spatial and immersive videos. This closed approach is intended to ensure a dependably high visual quality within the headset. In contrast, Microsoft's Kinect series arose from gaming-oriented motion sensing. The data it produced was made accessible, which made it possible to explore applications beyond its intended use, this contributed to the emergence of a community of experimental volumetric video. Unlike Kinect's open approach that enables integration with diverse platforms Apple's Vision Pro integrated system maintains control over content creation methods and viewing. These significant differences in accessibility, flexibility, and adaptability, impact community-driven technological evolution within spatial and volumetric media.

DOI 10.36158/97912566929415

3. Experimenting in the Field

Between 2023 and 2024 we worked in three skate parks – Dean Lane in Bristol, Kingsbridge in Devon, and Central Park in Plymouth – partnering with Skate to the Max Community Interest Company who work to promote skateboard safety. We created a portable volumetric video rig adapted from a studio-based system that used the Brekel Pointcloud software. We powered the computer, Kinect, audio, and camera together with portable batteries. The main challenge was power, and the unwieldy nature of the rig. While the rig itself was relatively conventional, using it in this portable way in the unpredictable situation of the skate park to record action is novel. Much previous non-fiction volumetric moving image work has been done in controlled environments of the studio, or at least with static camera. We moved the camera creating an unstable anchor point for the 3D. We then placed this imagery into a stable scan of the locations, produced using the Gaussian Splat method.

This is a constructed documentary mode, but one that includes observational imagery. Rather than attempting a faithful rendition of a stable, pro-filmic reality, figure 2 and figure 5 bring together two different temporalities and modes of recording. This is explicit in the imagery itself due to differing qualities of the images that have been assembled 3D but have differing image textures as a result of the sensors and processing technologies. There is wide discussion on the nature of truth in relation to the real in non-fiction film practices for example, Stella Bruzzi (2006) and Trinh T, Minh-Ha (2014). While a full exposition of this debate is beyond the scope of this article, it is worth noting that experimental work in volumetric video forms part of a wider interest in new modes of digital image creation entering into non-fiction storytelling. For example, *Constant* (2022) by Sasha Litvintseva and Beny Wagner uses point cloud scans and 360 cameras in unusual ways to within a 2D single screen film to tell a critical story about the history of measurement.

Figure 2. Image created by using multiple technologies. Here the skater is rendered from Kinect data recorded in Brekel, rendered in Houdini and combined with Gaussian Splat image of Kingsbridge Skate Park made on another day.

4. Engaging the Community

This article presents on-going research based on the collaboration with Skate to the Max (STTM) CIC. Skate to the Max aims to provide opportunities for learning about skateboarding safety, but also to support the development of its associated activities through understanding potential risks and fostering a sense of community. Here we present media explorations of skateboarding activities in three

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events. Participants were encouraged to experiment with the rig as well as the output of the volumetric camera through the computer screen.

STTM is associated with local groups of practice around the southwest of England. Supported by this company we have been able to engage with skaters on three occasions to explore the workflow for producing the media presented here. This work in progress aims at developing further relationships with skateboarding communities for contesting and challenging the possibilities of the mobile technology at hand. To do so we use images and technology as cultural probes to assess the perception about the technology and the media it generates, serving as speculative probes (Auger, 2012). We treated the rig as a negotiable artefact: participants proposed lines, requested closer following at rail height, and commented on what the Azure Kinect "saw", this interaction is consistent with studies of skateboarding as everyday design through experimentation and adaptation (Hauser et al., 2013).

STTM aims to provide inclusive learning in both skateboard construction and skateboarding skills through hands-on workshops, a concept that resonates with Hauser's notion of technological appropriation within skateboarding (Hauser et al., 2013). Additionally, the initiative seeks to challenge policing practices by challenging the views on skating and the social preconceptions around skate culture.

Our methods involve a co-design approach. Co-design processes are participatory and involve collaboration to generate ideas, prototypes, and futures for technologies, working with creativity and ongoing design rather than fixed outcomes (Sanders et al., 2008; Binder et al., 2008). We brought the nascent media technology into a community of practice – the skate community. We wanted to discover what the community could do with it, and what we could do with the techniques within that context. Taking the technologies out of the studio shaped the techniques themselves.

Exploring volumetric video within the space of the skate park, the location and nature of the activities prompted us to seek creative approaches. For example, volumetric cameras are designed to remain static while action passes in front of them, allowing 3D software to locate objects within a consistent Euclidean geometry. However, when recording a skater or BMX rider in this way, the results were often just a flash of pixels. By instead following the rider with the camera, we produced videos in which the fixed external geometry became unstable, in this way the movement of the individual skater was traced around their position.

Co-design of novel uses of media technologies can be understood through Simondon's philosophy of individuation. Rather than treating media technologies as fixed tools, with Simondon technical objects are metastable (2017/1958, p. 177), always open to further concretisation. In co-design practices, users and designers collaboratively shape techniques beyond pre-given functions. The co-design encounter thus becomes «propagates transductively» (Simondon, 2017/1958, p. 80), wherein technical and social elements individuate together, producing emergent capacities. As Mackenzie (2002, p. 13) notes, media technologies «take shape in the relay between collective practices and technical operations», enabling ongoing modulation. In this sense, novelty in the development of the technique is not imposed externally but arises out of relational practices.

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5. How Nascent Volumetric Video Techniques Differ From Conventional Video. Non-normative Vision

In the following sections we explore how our experience with volumetric video creation and rendering systems offer opportunities for making images that communicate in ways with qualities familiar in some ways to reading 2D photographic video images while differing significantly from an imitation of a normative human vision. Volumetric videos are shortsighted, may render colour differently, there are often glitches in the images produced by unexpected reflections as well as software produced glitches due to inconsistencies between recording and rendering software. We found that the volumetric videos offered novel ways to encounter and record movement in space, but only if the movement was within a few meters of the camera. A recording of a movement involving volumetric video can be spun round so it can be seen from different angles. The reduction in detail due to lower resolutions of volumetric video causes a viewer to concentrate on the movement over the textured detail of surface in the image. In the following sections we discuss how these divergences from a normative video vision can offer creative opportunities.

5.1. *Noise and Glitch*

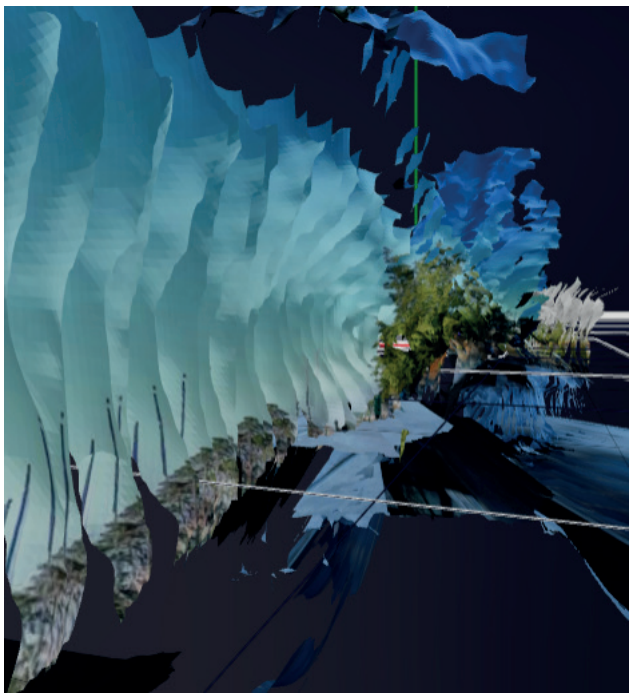

Figure 3. Glitch in volumetric video rendering.

Noise in volumetric video commonly manifests through visual artefacts such as stray pixels, anomalous textures, irregular grid-like patterns, and mirrored images appearing simultaneously on opposite sides of captured objects. Rather than treating these occurrences purely as technical failures or unwanted disturbances, they can be used as expressive images both of the subject and of traces of the recording process itself. Noise in sensing is normally considered as something to be avoided, where we try to ratio of noise to the signal. An alternative is to consider noise as productive. For Malaspina noise is not the negation of signal but the constitutive uncertainty that systems must nego-

DOI 10.36158/97912566929415

tiate enabling «ambiguity and openness» in information rather than merely corrupting it (Malaspina, 2018, p. 57). Mark Nunes argues for a «poetics of noise in exploring the creative potential of the "errant and the unintended outcomes»" (Nunes 2010, p. 16). In this sense, interference or distortion is not solely obstructive; what appears as error can «communicate as information» by showing uncertainty and choice produced by system (Nunes, 2010, p. 13).

In volumetric video, noise emerges particularly due to the complexities inherent in spatial sensing technologies such as those utilised by the Microsoft Kinect sensor we used. Early Kinect sensors relied on structured-light technology, projecting infrared patterns onto surfaces and measuring pattern distortion to ascertain depth. Later Kinect models transitioned to time-of-flight sensing, calculating depth from modulated infrared light reflecting from surfaces (DiFilippo & Jouaneh, 2015). Like Euclids emission theory of vision, the LiDAR sensors see by reaching out from the sensor rather then sensing ambient light. Ambient light can interfere with the depth reading as well as complimenting it with colour information in the visible spectrum recorded by conventional video sensors. Both Kinect sensing methods are sensitive to surface reflectivity, ambient interference, and sensor positioning, often resulting in ambiguous depth readings that manifest visually as pixelated distortions or duplicated images. The technologically unstable, informationally ambiguous image produced in this abstract phase of the development of this screen technology carries a trace of its own production. It shows limits and inconsistencies in the sensing. The deliberate making visible of the means of production was made political by pioneers in experimental moving image as discussed below in section seven.

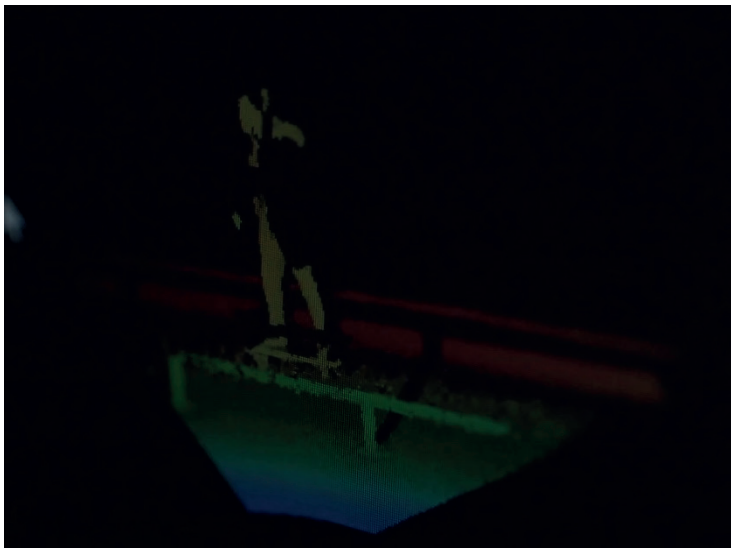

Figure 4. Image showing the short range vision of the Azure Kinect sensor. This image shows the distances as a depth map. Colours from blue nearest to red further away. The rendering is in the Azure Kinect Software Development Kit.

5.2. *Myopic Vision*

Volumetric video's restricted sensing range abruptly ends within a few metres. The range of the Kinect Azure sensor is visible in figure 4. The black areas are out of range. With a 2D video camera the side areas would not be visible as they are framed out by the edges of the rendered image. In 3D we can see the boundaries of the imaging area. In addition to the width cropping there is depth cropping that does not occur visible light video cameras. This is because LiDAR is dependent on bouncing light off the sub-

DOI 10.36158/97912566929415

ject. For the Kinect Azure the maximum distance it reaches is between 2.2 meters and 3.86 meters dependent on resolution and field of view (Bamji et al., 2018) The effective depth of the iPhone sensor we found to be a little less. We found the distance varied depending on the conditions such as the surfaces the Lidar reflects from, and ambient lighting.

Artists have explored the differences from normative vision such as myopia and astigmatism as part of their creative processes. Trevor-Roper's famous study on differences in vision and arts practice *The World Through Blunted Sight* (1997) identifies examples. He describes how a short-sighted painter «is reduced to painting what he sees, however blurred or distorted a percept it is [...] with a loss of detail and with relative clarity only in the essential lines and contours» (Trevor-Roper, 1997, p. 31). He describes how the limitation can be an advantage to creative work. This compression of vision produces a tendency to work through shape and tone rather than detail, a quality that artists such as Cézanne who dismissed spectacles and Degas, who relied increasingly on pastel for his failing sight. Trevor-Roper also observes that astigmatism introduces further perceptual anomalies: «can materially confuse and distort the retinal image», causing subtle directional biases and «depth-distortion in the rendering» (ibid., p. 38). Such impairments, rather than purely limiting, produces images depicting different types of perceptions. The stripping away of extraneous particulars to reveal structure and mass. Likewise, the spatial cut-offs and low resolution of volumetric video evoke this tradition of productive visual constraint, where limitation becomes the condition for renewed attention to the perception in the organisation of light, colour, and form.

Although working with a sensor with a different perception mode is significantly from working as an artist with myopia, we can learn from these artists on how they use different vision as part of their working processes. The myopic non-biological vision of the sensor separates the skater from their environment. They appear out of the black into the shallow field of vision, skate through it, demonstrating a trick and flowing out. This is a different type of editing from a film edit cut, or even characters coming and going out of frame. They enter frame through the reach of the LiDAR. This is different from human vision, extending to the horizon. The skaters appear almost as if out of dense fog. The technique offers new ways of editing – objects in three-dimensional space. Within the post-production software volumetric recordings can be placed into new environments and appear as if from thin air.

5.3. *Distorted Colors and Low Resolution*

Colour in volumetric video is dependent on various factors. Initially the colour image is recorded separately from the point cloud frame. Pixel depth may be recorded as a depth map false colour, for example in fig. 4 above where closer pixels are recorded in the blue end of the spectrum towards red signifying further away. Full colour images are recorded through a separate camera and may be mapped onto the depth image, colouring each pixel. Then, when the volumetric clip is placed in 3D editing software virtual lighting is added. Therefore, colours are represented in unusual ways. Rendering varies considerably between software. Resolution is limited and covered over by smudging due to forming shapes between the points in the rendering software or gridding due to the rendering of the points as they are recorded as in the image in the myopic vision section above. The sensor resolutions are of the Kinect Azure is 1024x1024 or 604x576 when it is set for greater distances, and narrower field of view

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Figure 5. Video still created using 3D scan of the Kingsbridge Skate Park generated through photogrammetry, into which volumetric video images of skaters were inserted. The resulting image includes multiple artifacts and inconsistencies inherent in the technologies used.

(Banmji et al., 2018) on the iPhone 15 Pro we used had a resolution of 0.01 megapixels. Images translated dependent on the type of rendering for viewing. As the technology moves towards similarity to human vision, away from the glitches of the current phase these differences will no doubt be ironed out, but for now they are available as aesthetic tools.

5.4. *Images that Emphasise Movement*

These stills from a moving image sequence are recognisable as a skater through their combination as movement, but individually they are not recognisable. Here movement has precedent over form for a viewer; the action of the jump is noticed first, which then leads to the understanding of recognisable objects – person and skateboard. The effect of emphasis on movement over surface detail runs through all the rendering variations we explored. In filmmaking this is not obfuscation for effect. Movement produces the development of event in cinema. These new techniques offer ways to draw the audience attention to shaping of perceptual experience itself, drawing attention to recognition emerging through motion rather than static representation. In this sense, the image becomes less a depiction of form than an unfolding of event. This emphasis on motion over surface detail resonates with accounts that recognition and meaning in skate media arise through body performance in relation to place, rather than through static appearance (Hauser et al. 2013).

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Figure 6. Simplified images emphasise movement.

6. Applying Understandings of the *Technical Object* From Simondon to Our Volumetric Video Experimentation

Each of the above qualities led to experimentation in the development of our volumetric workflows. These experiments formed part of the development of our creative approaches: each configuration of hardware and software contributed to the emergence of techniques. Our method of connecting technologies and working in the skatepark was open, adaptive, and exploratory. The setup – clunky and precarious required continual adjustment within the dynamic environment of the skatepark. We adapted its configuration and software around the skaters' movements and environmental contingencies.

This process exemplifies what Gilbert Simondon describes as technological individuation (Simondon, 2017/1958), where technical ensembles evolve through feedback between components, people, and milieu. In *On the Mode of Existence of Technical Objects* (2017/1958), Simondon challenges the hylomorphic model of technical genesis, which assumes that form is imposed upon inert matter or that tools are designed as direct extensions of human intention. Instead, he conceives the technical object as emerging as *ontogenesis* (Simondon 2017/1958, p. 255) through *individuation* – a process in which material, energetic, and human factors co-determine the evolution of form. (ibid., p. xi) Individuation unfolds as part of a situation, or *milieu,* that includes inventors, operators, and the associated milieu through which technical beings take shape (ibid., p. 242). In the companion thesis by Simondon, *Individuation in light of notions of form and information* (2020/1958), he describes a *transindividual* field in which the energetic and structural aspects contribute to *ontogenesis* (ibid., p. 93) in which the technical object develops. In this way the emergence of a technical object is considered to be the result of this collective relational development.

As Keating (2024) describes, this understanding of the technical is a shift from ontology to ontogenesis, from being to becoming. Simondon's conception of the technical object follows this orientation: relational and dynamic, defined by ongoing processes of individuation, transduction, and concretisations. Simondon's use of the term technical, or French *technique* derives from the Greek term *technê*, encompassing both art and

DOI 10.36158/97912566929415

craft. Technê concerns not the fixed ontology of tools but the process through which techniques emerge and evolve themselves. For Simondon, the technical object is not a static entity but a mode of existence defined by internal coherence and evolving relations with its environment. In the *abstract* or *primitive* phase, technical elements remain loosely connected, operating in partial independence and largely conditioned by external circumstances. It has the capacity for *concretisation* – a process by which separate parts become integrated, achieving what he terms "technical individuality" (Simondon, 2017/1958, p. 21). Simondon writes:

> A primitive technical object is an abstract system of isolated partial ways of functioning, without common ground of existence, without reciprocal causality, without internal resonance; a perfected technical object is an individualized technical object. (Simondon, 2017/1958, p. xv)

It is the *abstract*, primitive phase that is the concern of this paper, because there we found the ontogenesis in action. In volumetric video setup – comprising two tripods, a Azure Kinect sensor, a camera, a sound recording device, portable power systems, and Brekel software – the configuration exemplified a technical system in its *abstract* phase. Each component functioned independently and could serve other purposes; their coordination was provisional, improvised, and environmentally conditioned. Working in the field required continuous adaptation between apparatus, skaters, and site. This process revealed the system's dependency on its environment. Software was combined in to produce differing rendering of the recordings. The relation between the technical object and its use were emergent. The community of volumetric video users sharing aspects of their approaches via YouTube and online forums support one another in developing new configurations of hardware and software, sharing their findings and developing the methods.

Rather than treating the *abstract* phase as of less value, our research considers it as a productive state in which the relations that compose a technical object are most visible. In this phase, components remain exposed. They may be reorganised to explore possibilities for different image making techniques. Our creative experimentation in the skatepark, produced a challenging environment showing how technical composition itself can become a site of aesthetic and conceptual inquiry.

The emergance of volumetric video can be understood as the progressive concretisation of techniques from abstract to concrete forms. Simondon describes this evolution as a process wherein initially abstract technical systems become increasingly integrated, multifunctional, and adapted to their environments, acquiring greater internal coherence and operational autonomy (Simondon, 2017/1958, p. 56). Simon Mills elaborates on this trajectory, emphasising Simondon's concept that early technical objects begin as isolated, abstract constructs which, through iterative interaction with their environment, progressively evolve into more concrete and integrated entities (Mills, 2016, p. 108).

Volumetric video is largely in an abstract phase characterised by fragmented workflows, experimental setups, and technological limitations such as short-sightedness, noise, and movement-based glitches. These forms are heterogeneous, with components often operating independently, requiring considerable manual intervention, and offering multiple directions of development. Simondon describes this early abstraction as marked by a state of "discontinuous functioning" where the parts lack full harmonisation (Simondon, 2017, p. 153). Our practical experience with volumetric video at this abstract stage has been characterised by productive engagement with uncertainty and noise.

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Our experiments emphasised movement-oriented improvisations with both camera and skaters, leveraging technological shortcomings as aesthetic possibilities, thereby amplifying performative and experiential dimensions. The Apple Spatial Video technologies discussed above is our example of a concretisation of volumetric video. It is self-contained. The functionality of the various sensors involved in creating the image become less apparent in the output. However, the system risks diminishing the aesthetic opportunities inherent to volumetric video approaches in their abstract, primitive, forms.

7. History of Making the Technologies of Production Visible as Critical Practice in Screen

As discussed in above, we enjoyed how one can see the traces of the volumetric video methods in the images produced. There is a significant historical precedent for artists explicitly exposing the mechanisms and processes of filmmaking within their works, rejecting cinema's drive for immersion and suspension of disbelief. Malcolm Le Grice situates such approaches within the tradition of experimental cinema, where the method of production is rendered evident rather than concealed. He identifies this as central to his experimental practice, and to filmmakers that draw attention to the materiality of film, its chemical and mechanical operations, to the medium itself rather than its illusionistic effects (Le Grice, 1977, p. 55). Peter Gidal (1976) understood the work of the structural/materialist filmmakers such as Le Grice and Liz Rhodes as a political aesthetic, in that it was against the illusionism of continuity editing and sharp images that dominate mass media. Le Grice later described how the «illusion of a space and time not physically present» can be countered by asserting the material presence of the film image itself (Le Grice, 2001, p. 202). By stressing the work as material and process rather than illusion experimental filmmakers redefined cinema's relation to perception and representation. By revealing rather than concealing filmic process, it resists the dominant ideology of cinematic realism – the pursuit of seamless continuity and verisimilitude.

Although thinking through making of these experimental filmmakers was concerned with the material of photochemical film, it can be applied to digital. The images in this paper do the opposite of the immersion promised by Apple Spatial Video. Experimental filmmakers explored of what film technologies could do, testing perception – both biological and non-biological, duration, and making apparent process of image creation as structural elements of viewing.

8. Urban Skating as a Mediator of Future Possibilities

Speculative design has laid the groundwork for envisioning alternative futures through critical and reflective design practices. Dunne and Raby's seminal work, *Speculative Everything* (2013), highlights the role of speculative design in prompting reactions and debates about possible futures. However, speculative design often leaves unanswered the question of how such futures might be realised. In this sense, skateboarding enacts "future-making" at micro-scale via iterative trials, failures, and refinements; the same experiential loop by which practitioners adapt board, body, and route to the environment (Hauser et al., 2013).

DOI 10.36158/97912566929415

Thompson and Byrne, along with others, use the term "future-making" to resolve the provocations of speculative design by creating actionable strategies and aiming at preferable futures with intent and active participation, as such, creative speculation is approached with the intention of materialising and developing steps towards said future (Auger et al., 2021; Thompson & Byrne, 2022). However, given that the perception of the future highly depends on individuals' perception and education about the future (Wenzel et al., 2020), future-making does bring certain challenges. As such, some of the challenges come from the fact that individual definition of the future is somewhat limited compared to that of a group of individuals, thus suggesting that future making is participatory among institutions (Beckert, 2016), and individuals as an experiential co-production of future-making (Wenzel et al., 2020).

Because visions are collectively negotiated, future-making involves challenges of formulation, representation, and organisation within groups of practice (Llewellyn & Spence, 2009; Wenzel et al., 2020; Beckert, 2016). The practice of future-making requires participants to identify methods for coordinating actions and intentions to organise conjectures into plausible and shared views of the future (Thompson & Byrne, 2022). As such, future-making is concerned with the realisation of imagined futures by testing, validating, and engaging stakeholders to consolidate these visions.

Skateboarding enacts future-making at micro-scale. Through repeated trials, failures, and refinements, practitioners adapt board, body, and route to the environment (Hauser et al., 2013). This situated appropriation of urban features–benches, plazas, ledges–reconfigures conceived spaces into lived spaces of play and identity (Borden, 2001; Németh, 2006). As Willing et al. (2025) describe, skateboarding's "world-making pedagogies" cultivate speculative thinking through embodied experimentation-skaters imagine possible movements and then test them materially, producing futures of space and practice through motion. Similarly, Glover et al. (2021) show how community skate events act as "gentle activism", transforming public space into a site where alternative civic futures are rehearsed.

The challenges Llewellyn and Spence identify for future-making align strongly with skaters sensibility and their exploitation of urban features, by echoing formulation, representation and organisation (Llewellyn & Spence, 2009). Borden (2001, pp. 114-118) demonstrates how skaters appropriate benches, plazas, and ledges, shifting them from conceived spaces of commerce to lived spaces of play and identity. As such, Skaters envision potential uses for existing structures (affordances), experiment with these possibilities (formulation), through repeated practice and shared knowledge within the skateboarding community (representation and organisation), they collectively shape the future of that space for their activity. The development of a new trick or a novel way to use an urban element is a small-scale enactment of an imagined future.

Simondon emphasises how technical objects mediate our relationship with the world by creating the milieus in which they function (Simondon, 2017/1958. p. 59) As we have discussed, skateboarding fundamentally changes how practitioners engage with the environment and their mobility (Hauser et al., 2013). Skateboarders perceive and interact with urban spaces in unique ways, discovering possibilities for their practice through appropriating the urban environment. This active engagement with the environment, enabled by the skateboard as a mobile technology, resonates with Simondon's broader view of how technology shapes worlds (Simondon, 2017/1958, pp. 57-61) The reinterpretation of urban elements as skateable terrain highlights this mediated relationship and hints at skateboarding core values of self-determination (Glover et al., 2021; Németh, 2004).

DOI 10.36158/97912566929415

According to Simondon's view, technology doesn't prescribe a linear or deterministic future. Similarly, the unpredictable and emergent nature of skateboarding within public spaces resists pre-determined uses and regulations (Borden, 2001; Németh, 2006; Donaghey & Browne, 2025; Glover et al., 2021) Skateboarders constantly adapt and reimagine the possibilities of their environment, aligning with the future-making activities, moving away from normative uses and predictable outcomes and aiming at the creation and enactment of imagined possibilities (Thompson et al., 2022). Building on this, we examine how skateboarding materialises future-making through situated, incremental coordination of body, board, device, and site. Our sessions echoed this dynamic: when one skater suggested a line optimised for the sensor's short range, others adjusted approach speed and stance to "sit" in the myopic cone; in parallel we modified follow distance. The choreography that resulted was co-designed in real time, with environment, device, and technique refining one another.

9. Opportunities for Further Research

This ongoing research aims to build stronger relationships with local skater communities of practice. We frame our approach as moving towards *participatory critical technology workshops* (DiSalvo et al., 2012, p. 185; Toupin & Van Oost, 2020, Ratto, 2011) as well as emerging digital communities of practices and theory of change (Ferreira & Pantidi, 2018). Our work has so far been exploratory and relational, using observations and experimental media practices as invitations rather than fully co-developed outputs. Key elements of our intended approach include prioritising co-design as a guiding principle, fostering bidirectional participation and shared ownership across research activities, and integrating skaters into processes of data generation. We also plan to share data with these communities of practice, to open discussions on its value, limitations, and possible transfer to other contexts.

10. Conclusion

In this article we have explored how working with a technology in early stages of development offers unique opportunities for creating screen media arts. Volumetric video techniques in their early stages produced artefacts that can reveal the means of production to an audience. The artifacts of production offer aesthetic possibilities that a concretised technology may not offer. In this way we have worked in to invert the valorisation of the complete, integrated technical object, in favour of the emergent, abstract, primitive phase of technique.

We have explored how the situation in which a new screen technology develops plays a part in its shaping. We chose the skate environment because, firstly, of the emphasis within skate film on images of movement and form in space; and secondly, because of the DIY culture of skate film production. Seen alongside research that frames skateboarding as embodied mobility and everyday design, our results show that the abstract phase of a technical object becomes generative when coupled to practices that already transform environments through iterative appropriation.

In this sense, skateboarding materialises future-making as situated, collective processes. Skaters navigate and speculate possibilities within the city, creating new relations

DOI 10.36158/97912566929415

between body, board and place through experimentation. The reconfigurations of the urban environment emerges not as a predetermined outcome but relational amongst humans, materials, and situations. Skate practice articulate futures as a situated practice working with contingency rather than against it.

Situated skate practice shows how milieu does not merely host technique but co-produces it. Early-phase configurations of hardware, software, operators, and site co-produce one another together; the skatepark becomes an associated milieu that participates in the development of our application of volumetric video. The lineage from stereoscopy to point clouds, gaussian splats, and meshes suggests that each technique carries distinct aesthetic possibilities. With our work we have aimed at showing how working deliberately within the abstract phase, embracing short range, unstable geometry, and colour/lighting remapping, can foreground movement and uses means of production as a creative opportunity.

Coupling an emergent screen technology to a community whose practice already reconfigures urban possibilities reveals a productive path for future screen media: rather than waiting for stability, we treat informational ambiguity as a creative resource and co-design technique with/within its milieu.

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DOI 10.36158/97912566929415

Emotive Immersion: EEG-Driven AI Art in Immersive Visual Spaces (Full Dome)

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| abstract

This paper proposes a rethinking of the “Future Screen” through the integration of affective computing, generative AI, and immersive spatial display. As an advanced screen paradigm, the full dome environment transcends flat, passive interfaces and enables dynamic, multisensory, and emotionally adaptive media experiences (Von Chamier-Waite, 2013). Building on this potential, the research presents Coids, an interactive dome installation. In this work, real-time emotional states are captured using EEG-based emotion recognition. These inputs dynamically shape AI-generated visuals within a shared immersive setting. Drawing on theories of immersion, presence, AI generated visuals and affect, the study explores how physiological data, even from low-resolution consumer-grade EEG devices, can meaningfully influence audiovisual space. Audience engagement with Coids suggests that affective responsiveness enhances both immersion and a sense of personal agency. These findings point to a model of screen-based media that is adaptive, generative, embodied, and socially situated. The study contributes to a broader reconceptualization of the Future Screen. Rather than considering it a singular display technology, it can be understood as a relational system in which human emotion, machine perception and generative computation work together to shape the viewing experience.

DOI 10.36158/97912566929416

1. Background

Screen technologies have evolved significantly over the past century, transitioning from passive viewing surfaces to highly interactive and immersive media environments. Early display technologies, such as cathode-ray tube (CRT) screens, primarily facilitated basic visual communication with minimal interactivity. Subsequent innovations, such as liquid-crystal displays (LCDs), introduced notable improvements in portability, power efficiency, and visual clarity, ultimately replacing CRT as the dominant display technology (Kawamoto, 2002). Similarly, plasma display panels (PDP), developed initially in the 1960s, provided superior brightness, contrast ratios, and response times compared to earlier display technologies, enhancing visual experiences across various applications (Weber, 2006). These technological milestones have established a foundation for screens evolving toward richer visual and interactive experiences.

Parallel to technological advancements, the conceptual understanding of screens has expanded beyond purely technological dimensions. Screens must be understood

within broader social and environmental contexts, influencing user interactions, emotional responses, and cognitive engagement with displayed content (Jones, 2013). This socio-technical perspective emphasizes that displays not only provide visual information but significantly shape user interaction patterns and audience experiences in various social and spatial settings.

Immersive display technologies, such as Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), represent significant developments toward highly interactive environments that foster deeper engagement. Milgram and Kishino's (1994) "Virtuality Continuum" positions immersive environments along a spectrum ranging from purely real to entirely virtual. Within this continuum, full dome environments occupy a distinct space as augmented virtuality systems, blending projected digital content with shared physical presence (Von Chamier-Waite, 2013; Phillips, 2024). Full dome technology uniquely facilitates collective immersive experiences compared to individual-oriented head-mounted VR devices (Lantz, 2006).

However, traditional full dome environments primarily rely on static, pre-scripted content, limiting their ability to dynamically respond to audience emotional and cognitive states (Phillips, 2024). To achieve more effective interactivity, Slater and Wilbur (1997) suggest distinguishing between immersion – the technological capacity to deliver sensory realism – and presence, the psychological experience of feeling situated within a virtual environment. Enhancing presence thus requires systems capable of dynamically adapting to users' real-time emotional and cognitive states. Electroencephalography (EEG), which captures real-time brainwave patterns, offers a viable method for achieving this dynamic adaptation by allowing immersive environments to directly respond to physiological feedback (Kovacevic et al., 2015). For instance, the project *My Virtual Dream* successfully employed EEG to facilitate real-time interactions within an immersive installation, responding dynamically to users' cognitive and emotional states (Kovacevic et al., 2015). Furthermore, recent advancements indicate that integrating AI with physiological data analysis can further enhance real-time responsiveness by accurately interpreting emotional states and adjusting digital content accordingly (Du et al., 2024).

2. Immersive Environments as the Future of Screen Technology

Screen technology has evolved from passive, two-dimensional displays to interactive and immersive environments that engage multiple senses. Traditional screens, including LCD and PDP, primarily provide visual output with limited user interaction (Kawamoto, 2002). In contrast, immersive technologies, such as VR, AR, and MR, incorporate multisensory input, spatial tracking, and stereoscopic visuals, allowing for more integrated and responsive interactions (Suh & Prophet, 2018). The shift toward immersive environments is driven by advancements in display resolution, interaction design, and real-time processing, distinguishing these technologies from conventional screen-based media.

A key aspect of immersive environments is the distinction between immersion and presence. Immersion refers to the technical attributes of a system, such as the breadth of sensory input, spatial sound, field of view, and motion tracking (Slater & Wilbur, 1997). Presence, in contrast, describes the psychological perception of being situated within a mediated environment, shaped by the depth of immersion a system provides (Cummings & Bailenson, 2016). Nilsson, Nordahl, and Serafin (2016) extend this framework by

DOI 10.36158/97912566929416

identifying three dimensions of immersion: technological, narrative, and emotional. This distinction is important for understanding why immersive environments create engagement beyond the capabilities of conventional displays.

Research has demonstrated that immersive environments influence cognitive and emotional processes differently from traditional screens. Brown and Cairns (2004) describe immersion as a progressive process, moving from engagement to deep absorption, which can enhance user attention and focus. Empirical studies further indicate that immersive learning experiences improve knowledge retention and emotional involvement compared to traditional media (Freina & Ott, 2015). For instance, virtual reality applications in education have been shown to increase motivation and learning outcomes by simulating real-world scenarios that demand active participation (Suh & Prophet, 2018).

The interactive potential of immersive environments is another significant factor in their adoption. Unlike conventional screens that rely on indirect input methods such as keyboards or touchscreens, immersive systems integrate gesture control, spatial movement, and haptic feedback, creating more intuitive interaction models (Spittle et al., 2022). The ability to interact naturally within an environment contributes to a stronger sense of presence and engagement, further differentiating immersive environments from traditional displays.

In addition to individual user experiences, immersive environments also facilitate collaborative and social interactions. Unlike traditional screens, which primarily support individual engagement, immersive spaces allow multiple users to share virtual environments, supporting collective interaction and communication (Phillips, 2024). This has implications for areas such as remote collaboration, training, and entertainment, where social presence plays a key role in engagement and effectiveness (Cummings & Bailenson, 2016).

The transition from traditional screens to immersive environments highlights the broader evolution of media interaction. The characteristics of immersive environments – including sensory integration, user interaction, and social collaboration – position them as a development beyond conventional displays. This shift provides the foundation for examining specific immersive formats, such as full dome environments, which further expand the possibilities of interactive and collective media experiences.

3. Why Full Dome is a Key of Future Screen

Full dome technology represents an important evolution within immersive environments, characterized by its unique capability of presenting visual content on a hemispherical screen, thereby offering an experience fundamentally different from conventional screen-based media. Historically originating in planetariums and primarily used for astronomical education, full dome technology has progressively expanded its applications into broader domains including art, scientific visualization, and educational contexts (Díaz, 2011; Lambert & Phillips, 2012). Technologically, full dome distinguishes itself significantly from both traditional and other contemporary immersive displays. Unlike standard two-dimensional screens, which inherently possess framing limitations and restricted visual fields, the hemispherical projection of full dome systems eliminates perceptual boundaries, providing users with a visually continuous and panoramic field of view (Lambert & Phillips, 2012). This panoramic visual environment

DOI 10.36158/97912566929416

supports spatial immersion by reducing visual distractions, allowing users to engage more uniformly with content, and significantly enhancing spatial cognition and perceptual depth (Schnall, Hedge & Weaver, 2012).

Comparisons between full dome systems and other immersive technologies highlight its unique characteristics. Unlike VR head-mounted displays (HMDs), which offer individual immersion but may induce discomfort due to motion sickness or visual isolation, full dome supports collective experiences, enabling multiple participants to engage simultaneously without the need for wearable equipment (Yu et al., 2017). Compared to CAVE environments, which rely on multiple flat projection surfaces, full dome systems present a unified, continuous display, reducing the segmentation of visual information and maintaining a more cohesive spatial perception (Schnall et al., 2012). This ability to accommodate group-based immersion makes Full dome particularly suitable for applications in education, scientific visualization, and digital arts.

In educational contexts, full dome technology has demonstrated advantages over traditional instructional media. Studies suggest that immersive projection environments improve knowledge retention and conceptual understanding, particularly in disciplines requiring spatial reasoning, such as astronomy and earth sciences (Yu et al., 2017). The all-encompassing nature of full dome visualizations reduces cognitive load by aligning visual stimuli with natural human perception, thus facilitating more intuitive learning experiences. Additionally, the incorporation of dynamic content and real-time simulations in full dome settings has been shown to enhance audience engagement and comprehension (Phillips et al., 2015).

Beyond education, Full dome has been increasingly utilized as a platform for artistic expression. Digital artists and media practitioners have leveraged the medium to explore new forms of immersive storytelling, leveraging its spatial continuity to create non-linear narratives and interactive installations (Phillips et al., 2015). This aligns with broader trends in new media art, where immersion is used as a mechanism for audience participation and experiential engagement. In gaming and interactive experiences, recent developments have sought to integrate real-time input mechanisms, including gesture-based interactions and multi-user engagement models, extending full dome beyond passive viewing towards interactive media formats (Benko & Wilson, 2010).

Despite its advantages, full dome technology faces certain limitations, particularly concerning real-time interactivity. Most of the full dome contents remains pre-rendered, limiting the adaptability of visual output to user inputs (Phillips, 2024). Advances in AI and sensor-based interaction models, including physiological signal integration, have been proposed as solutions to enhance interactivity. Emerging research explores the use of EEG and biometric feedback to enable real-time content modulation based on cognitive and emotional responses (Kovacevic et al., 2015). Such developments suggest a trajectory in which Full dome environments transition from passive viewing systems to dynamic, responsive media platforms, further solidifying their role within the evolution of immersive screen technologies.

4. Why EEG + Full Dome is a Future Screen

The integration of EEG with full dome technology represents a significant advancement in immersive screen environments, enhancing both interactivity and adaptability. Traditional full dome projection systems have historically re-

DOI 10.36158/97912566929416

lied on pre-rendered content; however, recent advancements in computational workflows, such as those integrating Unity3D for real-time mesh warping, have enabled greater adaptability (Melenbrink & King, 2015). EEG-based systems provide a means of incorporating real-time physiological feedback, allowing for dynamic adjustments to visual and auditory stimuli based on cognitive and emotional states (Yu et al., 2022; Weinel et al., 2014). This integration aligns with broader trends in interactive media, where adaptive content systems enhance immersion and user experience through direct biological interaction.

EEG functions by recording electrical activity in the brain, offering insights into user attention, cognitive load, and emotional states (Picard, 1997). Research indicates that EEG signals, particularly within theta (4-8 Hz) and gamma (30-49 Hz) frequency bands, are strongly correlated with emotional responses in immersive environments (Yu et al., 2022; Kober et al., 2012). The capacity to analyze such signals in real time enables a full dome system to adjust its content dynamically, modulating aspects such as brightness, color, movement speed, and visual complexity to enhance user engagement (Kovacevic et al., 2015). Compared to traditional interaction methods, which rely on explicit user commands, EEG-based systems enable implicit, subconscious interaction, fostering a more seamless and personalized immersive experience (Kovacevic et al., 2015).

The use of EEG within immersive environments has been extensively explored in VR research. Studies have demonstrated that EEG can effectively measure presence and engagement levels, offering a reliable metric for evaluating immersive experiences (Tauscher et al., 2019; Kober et al., 2012). However, EEG integration within VR remains constrained by hardware limitations, particularly the physical interference of head-mounted displays with EEG sensors. Full dome environments, by contrast, eliminate the need for direct head-mounted equipment, providing a setting where EEG data can be collected with fewer artifacts and signal disruptions (Tauscher et al., 2019; Weinel et al., 2014). This suggests that full dome systems may serve as an optimal platform for EEG-driven interactive content, overcoming some of the limitations inherent in VR-based EEG applications.

Beyond measuring engagement, EEG technology facilitates real-time emotional adaptation within full dome environments. Adaptive systems leveraging EEG data have demonstrated the ability to personalize user experiences by responding to shifts in cognitive and emotional states (Yu et al., 2022; Weinel et al., 2014). For example, heightened cognitive load or stress levels, as indicated by EEG readings, could trigger adjustments in visual intensity or auditory complexity to maintain an optimal state of engagement (Kober et al., 2012). Such advancements align with research on EEG-based neurofeedback, which has been applied to therapeutic and training contexts, demonstrating the potential for full dome systems to evolve into interactive cognitive and emotional training environments (Kovacevic et al., 2015).

The integration of EEG with full dome technology also enables the development of collective adaptive experiences. Whereas VR-based EEG interactions are largely individualized, full dome environments allow for simultaneous EEG monitoring across multiple users, enabling content to adapt based on aggregated emotional responses (Kovacevic et al., 2015; Yu et al., 2022). Such applications extend to fields such as group meditation, collaborative learning, and synchronized audience-driven narratives in digital performance spaces (Weinel et al., 2014; Kober et al., 2012).

As immersive screen technologies advance, EEG integration presents a pathway for full dome environments to transition from passive viewing systems to dynamic, user-re-

DOI 10.36158/97912566929416

sponsive platforms. By leveraging real-time physiological feedback, full dome systems can provide a more personalized and interactive experience, surpassing the constraints of traditional pre-rendered content. Future research should explore the combination of EEG with AI to enhance adaptive capabilities, enabling more sophisticated real-time adjustments based on complex cognitive and emotional patterns (Du et al., 2024; Weinel et al., 2014). This convergence of EEG, AI, and immersive media positions full dome as a key component in the evolution of future screen technologies.

5. Experimental Project: Coids

5.1. *Conceptual Background*

Coids (Cosmic-oid Objects) is an interactive full dome project that investigates how human emotional states can be translated into generative visual forms through the integration of EEG data and AI. The work is motivated by a central question: In the context of AI-generated visual content, can human emotion remain an active and meaningful driver of image generation?

The project combines physiological sensing with real-time audiovisual feedback to construct an immersive system in which viewers' affective states – captured via brainwave signals – directly influence the visual content projected inside a full dome environment. Rather than relying on explicit interaction mechanisms such as touch or speech, Coids engages with non-verbal, physiological input, creating a system where emotional responses contribute to the generative process itself.

The title Coids is derived from "Boids", a behavioral simulation model used in computer graphics to depict flocking behavior (Hartman & Benes, 2006). By extending this concept from biological motion to affect-driven particle dynamics, Coids reframes the original algorithm in a different context: instead of modeling flocking behavior among agents, it explores how emotional states can influence collective visual behavior at a cosmological scale.

The core idea of the project is to represent emotion not symbolically, but structurally – by mapping affective input to visual parameters such as color, motion, and speed within a dynamic particle system. These particles are derived from AI-generated imagery based on astronomical references, including nebulae and cosmic phenomena, evoking a sense of scale that links inner psychological states with outer spatial environments.

Coids therefore positions emotional data as a real-time modulator of visual experience, highlighting a form of interaction that is intimate, continuous, and non-verbal. By embedding physiological feedback within an immersive visual system, the project proposes a new mode of audience engagement – one that shifts from active control to affective co-presence.

5.2. *System Design*

5.2.1. EEG Signal Acquisition and Emotion Classification

In this project, EEG data is acquired using the Muse 2 headband, a consumer-grade device equipped with four dry electrodes (TP9, AF7, AF8, TP10) and one reference sensor.

DOI 10.36158/97912566929416

Figure 1. A view of the Coids exhibit in Market Hall's Dome Theater, 2025 (©and Photo: Yuming Chen).

The Muse 2 is favored for its portability and ease of integration into real-time audiovisual systems (Krigolson et al., 2021). Brain signals are transmitted via the Mind Monitor application, which streams raw frequency-band data into TouchDesigner, where signal processing and visualization are performed.

In order to reduce noise and computational complexity while maintaining the reliability of emotion signals, only the AF7 and AF8 channels located in the prefrontal cortex are used for emotion analysis. These channels have been shown to be very sensitive to emotional and arousal-related brain activity, especially in the alpha, beta, and theta bands (Bird et al., 2018).

Since Muse 2 does not provide separate frequency bands for individual channels, we implemented a Fast Fourier Transform (FFT) via Python script in TouchDesigner. This enables real-time decomposition of continuous EEG signals from AF7 and AF8 into alpha (8-12 Hz), beta (13-30 Hz) and theta (4-7 Hz) components. Following the methodology described by Bird et al. (2018), the emotional state is estimated by computing power spectral features for each frequency band over sliding time windows (1-second window with 50% overlap). Specifically, the following features are extracted:

- Mean band power in alpha, beta, and theta ranges.
- Asymmetry between AF7 and AF8 band powers.
- Alpha/beta and theta/beta ratios, commonly used indicators for arousal and attention levels.

The affective dimensions are then estimated as follows:

- *Valence* is approximated using alpha asymmetry:

$$Valence = P_{\alpha}^{AF7} - P_{\alpha}^{AF8}$$

Greater left-frontal alpha activity (lower AF7 alpha power) is associated with more positive emotional valence (Bird et al., 2018).

DOI 10.36158/97912566929416

– Arousal is computed as a composite of beta and theta activity, often using a ratio such as:

$$Arousal = \frac{P_{\beta}^{AF7} + P_{\beta}^{AF8}}{P_{\theta}^{AF7} + P_{\theta}^{AF8}}$$

These heuristics are derived from prior EEG studies in affective computing and brain-machine interfaces, and have shown effectiveness even with low-density EEG systems such as Muse (Bird et al., 2019).

The resulting valence and arousal values are mapped to visual parameters in the generative system, enabling the audience's real-time emotional states to directly shape the immersive audiovisual experience.

5.2.2. Affective-to-Visual Mapping Strategy

To translate emotional states into visual experience, Coids employs a dual-channel mapping system: one that links affective states to text-based prompt control for AI-generated image, and another that modulates particle behavior in a custom-built system within TouchDesigner. Both are continuously updated based on the user's real-time valence and arousal values derived from EEG signals.

Emotionally reactive imagery is generated through a custom integration of Stable Diffusion into TouchDesigner, using an API-based interface. To adapt the model to the aesthetic scope of the project, LoRA fine-tuning is performed using publicly available astronomical datasets from NASA, allowing the model to specialize in generating cosmic visual textures such as nebulae, stellar clusters, and gravitational fields.

Emotional dimensions are mapped to semantic prompt modifiers, based on the circumplex model of affect (Russell, 1980). For instance:

– Positive valence (e.g., relaxed, joyful) prompts visual keywords such as warm galaxy, soft aurora, or glowing nebula (Nijdam, 2005).
– Negative valence (e.g., anxious, tense) generates cold space, dark matter storm, or fragmented starlight (Nijdam, 2005).
– High arousal strengthens adjectives like swirling, exploding, or intense, while low arousal evokes drifting, dissolving, or ambient.

This dynamic prompt modulation results in real-time AI-generated visuals that reflect the emotional landscape of the participant in a way that is both semantically coherent and emotionally resonant.

In parallel to prompt generation, the valence and arousal values also control visual parameters within a procedural particle system developed in TouchDesigner. Specifically:

– Valence is mapped to the color gradient of particles:
  • Positive valence is expressed through warm colors (e.g., gold, red-orange, pink), associated with joy, affection, and vitality (Kaya, 2004).
  • Negative valence shifts the palette toward cool or muted tones (e.g., blue, grey, violet), associated with calmness, sadness, or detachment (Kaya, 2004).

DOI 10.36158/97912566929416

- Arousal is mapped to the kinetic properties of the particle system:
  - High arousal increases velocity, turbulence, and diffusion radius, creating dynamic, chaotic, and energetic visual behavior.
  - Low arousal results in slower, more cohesive flows, evoking serenity and spaciousness.

To adapt to the unique geometry of the full dome environment, the generative visuals are structured around radial symmetry and circular transformations, echoing the participant's emotional dynamics. The central metaphor is the transition from rings to spheres – representing the shift from individual inner experience to a shared emotional cosmos. These visual transitions not only serve spatial composition but also function as symbolic expressions of emotional expansion and collapse, synchronizing body and environment.

Due to hardware limitations, a single Muse 2 headset, only one participant can engage with the system at a time. However, to ensure perceptual coherence and avoid visual "flickering" caused by rapid emotional shifts, a temporal smoothing algorithm is implemented. Valence and arousal values are updated with a weighted moving average, ensuring gradual transitions and sustaining immersive continuity.

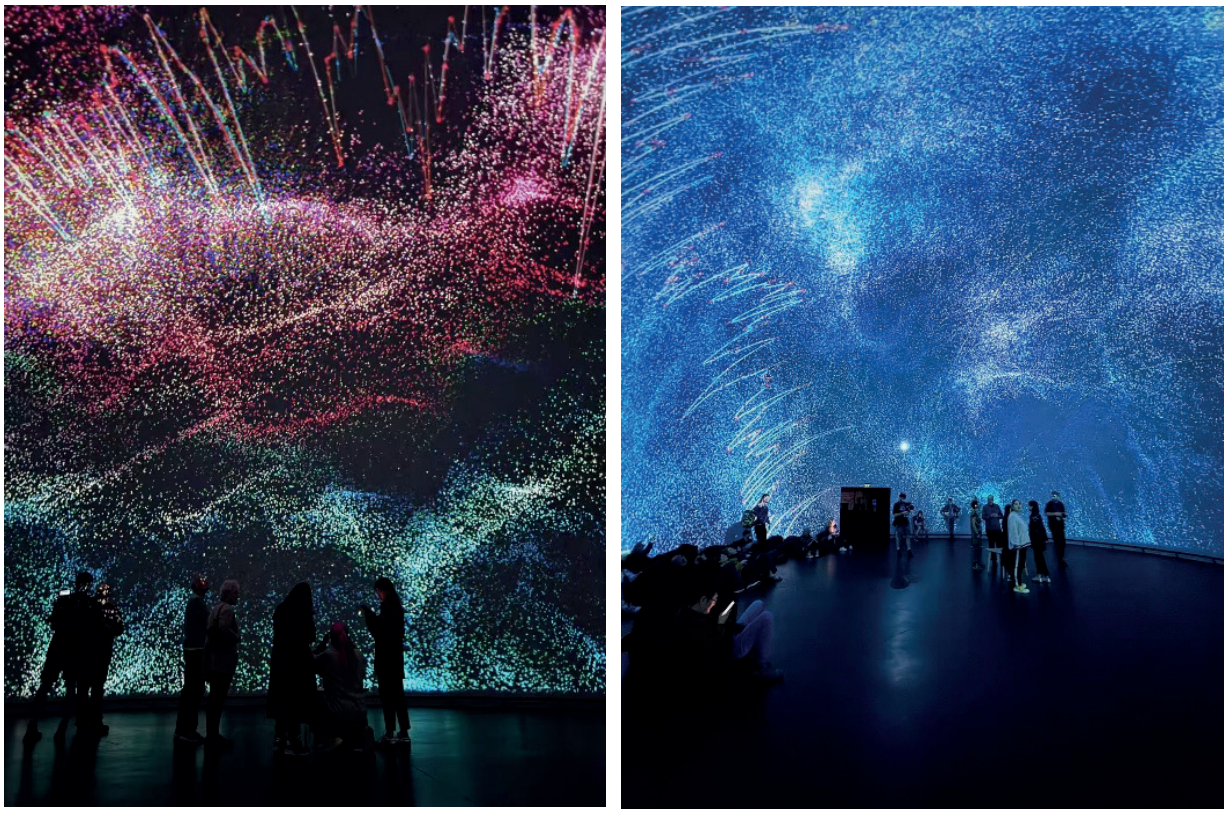

Figure 2. Different emotions presented by Coids, 2025 (©and Photo: Yuming Chen).

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Figure 3. Audience wear Muse 2 to transmit emotions to the Coids system., 2025 (©and Photo: Yuming Chen).

5.3. *Audience Experience*

The first public presentation of Coids took place on 9 April 2025 at Market Hall, Plymouth. The work was shown inside a 15-meter diameter full dome theater. Around 150 visitors attended throughout the day. Each was invited to engage with the installation individually using the Muse 2 EEG headset.

The real-time interaction was central. Brainwave data influenced AI-generated visuals instantly, creating a direct feedback loop between mind and image. This immediacy reflects a key shift in Future Screen practices – from static, pre-rendered content to environments that respond to human presence, emotion, and cognition. The exhibition offered insights into how audiences engage with this kind of responsive, emotionally-driven system.

Feedback collected during the event indicated that audiences were generally intrigued by the responsive and personalized nature of the experience. Many visitors described the system as a notable departure from traditional full dome works, which are typically linear and non-interactive. In contrast, Coids enabled viewers to witness how their emotional states could shape the surrounding visual field in real time, thus encouraging a stronger sense of engagement and emotional presence.

However, the exhibition also revealed some technical limitations. Due to the sampling frequency of the Muse 2 device and the Bluetooth transmission method, as well as factors affecting the Muse 2 device such as the presence of the participant's own frown (Díaz De León et al., 1988), there was a delay of approximately 5 seconds between the participant's actual emotional state and the corresponding visual response. In addition, according to participants' self-reports in the post-experience questionnaire, the average error rate of EEG-based estimates of emotional states was approximately 30%.

Despite this delay and recognition inaccuracy, the majority of participants reported that it did not negatively affect their interest or enjoyment. On the contrary, they expressed strong curiosity and appreciation for the novel integration of EEG, generative

DOI 10.36158/97912566929416

AI, and full dome projection. The audience's responses suggest that technical imperfections were perceived as acceptable trade-offs within the context of an experimental artistic environment.

Furthermore, the project encouraged social interaction within the dome space. While only one user could engage with the system at a time, others observed the changing visuals and often engaged in conversation about the relationship between emotion and imagery. This collective setting allowed Coids to function not only as a solo interface but also as a shared emotional and discursive space.

Fig. 4. Audience members shared their emotional experiences with each other, 2025 (©and Photo: Yuming Chen).

6. Conclusion

This research examined the integration of EEG-based emotion recognition and AI-generated visuals within full dome environments as a novel approach to interactive screen-based media. By situating this integration within the broader discourse on immersive technologies and the evolving concept of the "Future Screen", the study highlights the potential of bio-responsive systems to enhance presence, personalization, and audience engagement in collective visual experiences.

The implementation of Coids served as a practice-based investigation into the technical and experiential affordances of affective, real-time media systems. Findings from its public deployment indicate that emotional input, captured via accessible EEG hardware despite limited signal resolution, can be effectively mapped onto generative visual output within immersive environments. While constraints such as signal latency, classification inaccuracy, and a single-user configuration remain, audience responses suggest that the system's perceived responsiveness and emotional resonance significantly contributed to the immersive experience.

These findings point to a set of defining characteristics for Future Screen environments: immersive spatial display, real-time human-machine interaction, affective responsiveness, and adaptive visual generation. Coids demonstrates how these features can be materially realized through the convergence of brain-computer interfaces, AI-driven visual systems, and dome-based projection technologies.

Moreover, the results suggest that EEG-driven interaction may constitute a viable framework for extending the interactive potential of full dome systems beyond conven-

DOI 10.36158/97912566929416

tional input modalities. The integration of affective computing with generative AI enables a shift from symbolic commands to continuous, non-verbal modulation of audiovisual space – an approach with particular relevance for digital art, affective learning, and therapeutic media contexts.

Future research should address current limitations through improved signal processing, more robust emotion classification algorithms, and support for multi-user interaction. Further investigation is also required to explore how emotional data can be interpreted and integrated within collective experiences without compromising individual specificity or coherence. Ultimately, the convergence of immersive media, physiological sensing, and computational creativity offers promising new directions for understanding and designing Future Screen experiences as adaptive, affective, and socially situated systems.

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DOI 10.36158/97912566929416

Digital Resistance Against the Lasting Manipulation of Capitalism

AI, Luddite Rebellion, and the Haunted Future of Cyberpunk

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| abstract

This paper examines the complex relationship between artificial intelligence, labour, and resistance amidst contemporary capitalism. Big Tech presents AI as revolutionary innovation, yet this narrative obscures its function in maintaining growth and preventing alternative economic forms from emerging. Through the lens of "enshittification", we observe a strategic shift toward AI deployment despite its beta state of development, threatening workers' livelihoods. This tension echoes historical patterns of technological implementation and resistance, exemplified by the Luddite movement whose meaning elites have successfully corrupted over time. The Luddites, organised under the mythical figurehead Ned Ludd (a Robin Hood-esque figure), recognised technological change as inevitable but fought to manage its pace to prevent further exploitation, ultimately winning meaningful concessions. Technology can improve working conditions, but only when workers maintain control over implementation. The contemporary work-from-home debate reveals how management resistance often centres on control rather than technological capability. While widespread AI protests remain limited, emerging forms of Electronic Civil Disobedience and anti-corporate demonstrations signal growing resistance. The cyberpunk genre illuminates this state by continuing to depict alternative futures haunted by recycled pasts, highlighting a state of permacrisis where historical alternatives increasingly represent potential futures obscured by futurist – yet aesthetically dated – technology that facilitates control by corporations.

DOI 10.36158/97912566929417

1. Introduction

Artificial Intelligence (AI) is positioned as the next area to help sustain the continued quest for growth amongst Big Tech companies. For these corporations AI represents something "new" that will also supposedly improve their services and products for its customers. Yet, this is the optimistic façade that attempts to mask the disruption that can be caused, which itself echoes a pattern from the past.

This transition towards AI at the core of the business model amongst Big Tech is the continuation of what Cory Doctorow (2023) has coined "Enshittification", this being the gradual degradation of services and products to serve profit maximisation over user experience. Even though the AI technology touted by Big Tech is largely in its beta stage, the implementation across different industries is already starting to pose risks to work-

ers around the world, contributing to the already growing levels of uncertainty present in the current state of permacrisis[1].

The tensions between technological progress and workers security have historical precedent as can be seen with the Luddite movement of the early 1800s. This has been misrepresented by capitalists and elites acting to shift the narrative and to undermine what the Luddites were working to achieve. The workers (typically from the wider textile industry) united together naming themselves after the mythical Ned Ludd; a Robin Hood-esque figure (Merchant, 2024). They did not oppose technology itself but were instead fighting against its implementation by capitalists in ways which were detrimental to their livelihoods.

The Luddites knew that technological change was inevitable and therefore focused on how best to manage this change to prevent (or at least minimise) future hardship. Their resistance has helped to provide a template for workers that should resonate with what is taking place today. Acknowledging that whilst technology can bring benefits, it is only when workers maintain meaningful control over its implementation and application that these benefits are most felt.

Contributing to the argument is an exploration into how the Cyberpunk genre resonates with these issues in the past, present, and future. Starting with acknowledging the importance of Mary Shelley's (1818) *Frankenstein* as both early science fiction and parable of the Luddite situation. After which expanding into the continued relevance of Cyberpunk, which via its continued reliance on 80s and 90s aesthetics, provides a memory of the future that is yet to arrive.

Cyberpunk provides depictions of the future through the lens of the past, one that is being misunderstood by Big Tech who are ignoring the warnings that have been laid out. Contemporary alternatives to the actions of the Luddites breaking the machines are identified as are instances of its use against Elon Musk's different companies. Signalling the start of a new resistance utilising a mixture of physical protest and Electronic Civil Disobedience that channel the spirit of the Luddites with the aim that technology and corporations should serve the people rather than solely corporate growth.

2. The Problem of Modern Big Tech and AI

In contemporary society technology rule the lives of the typical working person. This is not an inherently new development, but it has become more invasive. Not only upon our daily lives, but also how the changes that have occurred have been damaging to the media we engage with outside of work as well. Whether it be for entertainment or for getting things done, the digital services (as increasingly it is not a singular *product*) we use have become worse (Ars Staff, 2025) as the technology firms behind them scramble to extract as much profit out of its use as possible.

This has unravelled via what Cory Doctorow (2023) has coined as "Enshittification", in short referring to «how platforms die». Whilst we are yet to see any of the big digital services die, we have certainly begun to witness their ongoing decline. There is not a singular way in which this has happened, but one element that many share is an increased implementation of supposed AI.

1. «An extended period of instability and insecurity» (Collins English Dictionary, n.d.) and can result in/from the «feeling of living through a period of war, inflation, and political instability» (Bushby, 2022).

DOI 10.36158/97912566929417

However, the use of the name "AI" has been deliberately misleading. Currently substantial (over)investment is going into generative AI, where "new" content is created based on prompts inputted by the user, the most (in)famous being OpenAI's ChatGPT, but also Google's Gemini, Microsoft's Copilot, and Anthropic's Claude AI. Yet, "AI" is also frequently used by many technology companies to rebrand machine learning and Large Language Models (LLMs). Understandably for most users, they don't know what the difference is, but they are at least aware of AI. For the rest of this article when talking about AI this will be referring to generative AI[2] unless otherwise mentioned, further highlighting the confusion that has evolved around this term.

2.1. *AI and "Big Tech"*

AI has become "the next big thing" for technology firms like Google, Microsoft, Meta, and to a lesser extent Apple and Amazon. Meanwhile, Sam Altman's OpenAI is unsurprisingly all-in on AI. This shift in direction is partly the result that, like with media – such as music, film/TV, and videogames – "Big Tech" has succumbed to a similar slowdown of new ideas. However, unlike media forms that I (Sweeting, 2023, 2024) have argued (as have Simon Reynolds (2012) and Mark Fisher[3] (2022a, 2022b)) are unable to imagine a different future, Big Tech is able to imagine *a* future, except this is predominantly based around AI being what is hoped to sustain the exorbitant growth it has been used in an effort to maintain this going into the next decade.

If, though, AI is not the growth enabler and sustainer that Big Tech hope for, then those who work for these companies will be at risk of losing their jobs en masse (Dmitracova, 2025). With some even questioning if AI is another "tech bubble" (Karma, 2025; Zitron, 2025b) ready to burst. Although management will still be protected at all costs despite being responsible for the decisions made. In the past year significant job losses have been seen in other technology/media industries, in particular videogames (such as Microsoft's Xbox division (Warren, 2025)). Yet, there is another existential threat at play here.

I have argued with my coining of "Hauntological Form"[4] (Sweeting, 2023, 2024) that despite not being able to imagine a different future for the medium, mainstream[5] videogames have still been able to provide the illusion of newness (new products) via reutilised elements of the mediums past (at the cost of truly novel ideas). That the videogames medium has had to resort to this within five/six decades of its mainstream existence has been surprising, although it was a matter of when not if, as a similar situation has been observed in music and film/TV.

Meanwhile, Internet technology and services did not begin to reach the general public until the advent of the World Wide Web in 1991 and subsequently the adoption of Broadband connections and Wi-Fi in the mid to late 2000s. This also corresponds to the creation of the smartphone which could be argued to have done the most to change how we interact with the Internet. By combining different features all into one portable

2. By extension this technically includes Large Language Models (LLMs) as these are still generating text. Further contributing to the confusion.

3. Fisher's two most notable books were originally released in 2009 and 2014.

4. I argued that hauntology provides an answer to questions about the viability of the future, with nostalgia being a symptom of media's increasing unwillingness to escape its past combined with an inability to imagine a different future. Hauntological Form is a response to this providing the illusion of newness to sustain creative media output.

5. Mainstream is used here to refer to large budget videogames made by studios with over 200 members of staff (often over 1,000). Although aspects of this approach can be observed in smaller "indie" videogame development.

DOI 10.36158/97912566929417

device, the result was that it limited how we interact with technology and what we can do. AI does fit into this, but it is only billion-dollar firms that have been able to compete.

With Internet services and alongside this Internet connected devices like phones (and GUI[6] based Desktops/Laptops) dating back less than three decades, the past that it can draw from for ideas is even more limited than what the videogames medium had available to play with. AI is dependent on past data to draw from when generating results, without this it currently cannot function, yet already it is running out of usable data (Punt, 2025; Roose, 2024).

AI is yet to be a stable technology (many services are still referred to as being in "Beta"), although that has not stopped companies such as Google and Microsoft pushing AI onto its users by including it in many of their core products, such as search for Google and Office for Microsoft. Even though the majority of users still are not interested in using them (Singleton, 2024; Zitron, 2025a). This is partly out of indifference, but largely due to the implementation of AI not working as intended or at all. Search remains Google's main "product" despite its various other ventures (such as YouTube, Workspace, and its Pixel line of phones), yet AI was seen as the means to "improve" how it works as well as increasing the amount of time users spend with the service instead of going elsewhere, such as another website that is identified via a search (Zitron, 2024). Except, the problem with Google's AI answers via search is that there are far too many instances where the information is inaccurate, incorrect, or even outright dangerous[7].

Google search has been considered to have been increasingly getting worse over the past few years as a result of efforts by Google to keep users on Google's services instead of passing them on to where they want to get to (Ibid., 2024). By adding friction to the searching process increases the time spent using Google's services which in turn strengthens its user metrics. This is just one example of Doctorow's Enshittification in action, in which a service that was working as intended has been deliberately made worse in order to generate more profit from its users.

AI is just the continuation of a process that was already underway and is contributing to the wider Enshittification that is impacting the services that millions use daily around the world. Yet, if it was just Enshittification that was of concern in relation to AI, the problem being addressed would not be quite as dire as the potential wider situation that poses a deeper existential threat.

2.2. *Misuse of AI*

This is not to make the claim that AI – of whatever type – is inherently *bad*, rather the problem with AI (especially generative) is how it is *mis*used, particularly by large corporations such as Google, Microsoft, Apple, Meta, Amazon, OpenAI. All have started to pivot[8] their operations towards prioritising the inclusion of AI elements into their users' workflows. Part of the argument behind this is that it helps to aid *efficiencies* and that it can help to "automate workflows" such as the boring and repetitive tasks that we do not want to do. Except, as mentioned already, that is assuming these services actually work as well as they have been marketed. The real issues of AI services convincingly "hallucinating" (Choi & Mei, 2025) *answers* or providing what should be factual answers entirely

6. Graphical User Interface.
7. The infamous example of this is when Google AI search told users to eat rocks, or that glue was a valid ingredient to use on pizza (Robinson, 2024).
8. Except for OpenAI because the entire company is already dedicated to creating AI services.

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incorrectly can have tangible implications and ironically would cause more inefficiencies.

Despite these issues, the Big Tech corporations continue to push services that do not meet the usual standard of beta let alone alpha stage of development. Sam Altman of OpenAI is the most egregious in upselling the supposed capabilities of AI, continually espousing both the alleged next step for AI and crucially his company (Tangermann, 2025). Other companies are taking notice (Dmitracova, 2025) and have started to lay off its workers. Although, it is important to acknowledge that the layoffs are not solely because of companies replacing them with AI, «business efficiencies» (BI Staff, 2025b; ET Online, 2025) are currently often cited as the excuse. Laying off staff is still seen as one of the quickest means of bringing a company's finances "under control", even if other means exist, such as reducing the sizable salaries of the C-suite executives who in certain instances – especially amongst Big Tech – are earning tens of millions of dollars, such as Microsoft CEO Satya Nadella (McEvoy, 2024). Staff are considered both costly and (unfortunately) entirely expendable.

This is where the long-standing problem of automation comes in. Technology has for centuries helped to support and automate various tasks. This has especially been the case in manufacturing. Except, in many instances, whilst the results created by the machine were produced faster, the quality was often inferior (Merchant, 2023, p. 239) when compared to the human made version[9]. Even in the office environment the introduction of computers and emails actually resulted in a *decrease* in productivity after companies laid off secretaries and typists which saw higher-skilled employees spending increased time typing up notes and sending emails instead of focusing on their core job (Karma, 2025). AI as a technology is not too dissimilar in this regard as it too can *create* something faster than the human but often will not be as good as what a trained specialist can produce. Although one considerable difference is that AI is threatening the white-collar worker now as well as those in the creative industries. It is still early, and the extent to which AI can impact these industries is still not fully clear, but if nothing is done to regulate this technology then it will be allowed to run rampant by the capitalists as was done so during the Industrial Revolution.

This brings us to the next section which exposes the relationship between what could happen in the present with a similar existential crisis posed by the misuse of new technology by capitalists. During the Industrial Revolution workers united under the Luddite movement, which «was not about technology… [but] about workers' rights» (Merchant, 2023, p. 202) despite how their message has been misconstrued in common parlance over the centuries. This fallacy has also become relevant once more as it too has been wrongly used to malign those who stand up against AI.

3. This is Not a "New" Problem – Looking Back to the Luddites

Technology can bring real meaningful benefits to society, but equally it can also be incredibly damaging to human lives and the environment. For workers during the early years of the Industrial Revolution the "frame"[10] represented the contradiction of what technology means for their quality of life. This section is ex-

9. Tools would still be used, which can still be considered a *type* of technology.
10. There were different types of frame machine that were used across different forms of textile manufacturing.

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ploring this paradox, helping to explore the misunderstood movement of the Luddites to identify why this group from the early 1800s is still relevant over 200 years later.

The elites (land/factory owners and capitalists/entrepreneurs) during the early 1800s and continuing across the following centuries, manipulated «the very definition of a Luddite into the cultural firmament as an epithet for a delusional malcontent who is anti-technology and anti-progress» (Merchant, 2023, p. 461). Despite this incorrect narrative, «the luddites understood technology all too well» Brian Merchant wrote in his book on the Luddite movement stating that «they didn't hate [technology], but rather the way it was used against them» (Ibid., 2023, p. 27).

Workers, such as weavers, used technology themselves, ranging from the large factories (which would become particularly problematic), mid-sized businesses, to literal "cottage industries" which would often be family enterprises where everyone under the same roof contributed. The technology used was not yet in a state to replace the workers, rather it was another tool used in assisting the trained craftsmanship that the workers had dedicated their lives to. In some instances, the frames used were owned by the workers themselves or as part of a collective (Merchant, 2023, p. 52), meaning that they were in control of the means of production, giving them some agency over what was produced, how it was done, and when. This flexibility led to some enjoying a better work life balance with many having three-day weekends; something that is being *discussed* today.

What changed though was when the frames advanced from being a tool that required direct control by a human to being powered[11] in a way that required minimal operation[12] from a human and a single machine could "do the job" of many. The initial investment for these machines might be higher than that of bringing in new staff, but aside from the running costs, was deemed more cost effective than human workers. Those who were *fortunate enough* to still work in the ever-growing factories dominating the British landscape became beholden upon them, and if they were let go, the Government at the time had no interest in supporting them (Merchant, 2023, p. 229).

3.1. *Automation*

Concerns surrounding automation also are not new to the 1800s, as fears about non-living mechanical entities go back even further. The automaton dates back to that of Homer's *Iliad* in which it accompanies the description of «self-moving and intelligent machines fabricated by Hephaestus» who is the blacksmith god of technology (Merchant, 2023, p. 83). This is identified by Adrienne Mayor (2018) who foreshadows the fascination and hesitation about automation, robotics, and AI that has long been enshrined in myth.

Mayor goes on to explain in an interview with Merchant (2023, p. 85) that «exploiting the human labourer is a necessary evil on the path to full automation, which is always just around the bend» even though for nearly a millennium, *dreams* of automation were sustained via prose. As it was not until the 1940s that the *term* of automation was eventually coined by a Vice President of engineering at Ford who used it alongside «roboticization» of the company's factory car assembly lines (Merchant, 2023, p. 30).

The Luddite movement was an attempt at reversing or at least slowing down the rampant momentum propagated by entrepreneurs' relentless faith in "progress" that

11. Non-automated machinery that is powered also exists.
12. These machines would also still require maintenance.

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was linked to the laissez-faire political dogma of the English bourgeoise espoused by Adam Smith (Bailey, 1998, p. xv). Propping up freedom for the employers, which in turn resulted in repression for the workers (Merchant, 2023, p. 122). Therefore, it soon turned towards *violent* actions of breaking the very machines that were the physical manifestation of their hardships as a method of last resort.

The Luddite name itself comes from the Robin Hood-esque figure Ned Ludd, a mythical figurehead for the movement whose alleged turn against his master inspired similar acts of rebellion amongst his followers (Merchant, 2023, p. 100). Yet, due to his incorporeal presence, he could not be physically taken down. Instead, "General Ludd" or "King Ludd" was simultaneously able to lead multiple parties of Luddites across England (Merchant, 2023, pp. 93 and 109), as an *idea* is much more difficult to defeat than a single man, especially if that man does not actually exist.

Responses to the Luddites from the factory owners and the Government were not receptive to their requests. Instead, it drove for calls of harsher punishment to all those involved in the destruction of the frames, including for making such actions a capital offence punishable by death (Merchant, 2023, p. 325). In the short term, many Luddites lost their lives because of this but ultimately did win meaningful political and economic victories.

The actions of the "armies" organised under the name of Ned Ludd contributed to bringing about living wages and helped to bring management to the negotiating table. They also managed to slow the adoption of frames (such as gig mills and cut-up frames) when the economy was not in a conducive state which helped to keep humans employed during what could have been an even tougher time (Merchant, 2023, p. 461). Though the machines did return, by advocating for their delay added an element of sustainability to employment rather than a sudden damaging shift.

As mentioned, the Luddites were not anti-technology, but also, they were realistic with understanding that change was coming (Noble, 1995, p. 8). The key was managing this change effectively so that they would not be exploited further by their employers. This might not seem particularly meaningful, but it demonstrated that workers were not going to stand idly by and let their livelihoods become completely destroyed. By standing up then, it helped create a model (a legacy) for resistance by future generations. A language to contextualise the abuses caused by «the excesses of industrial capitalism and technological exploitation» (Merchant, 2023, p. 463) that unfortunately we are still witnessing today, which is why their actions continue to be relevant.

Digital technology – especially Internet based – was supposed to help liberate workers, providing them with flexibility not seen since the early days of the Industrial Revolution when cottage industries enabled families to work together under one roof. Technology can aid with efficiencies enabling workers to get their share of work completed more efficiently, therefore allowing them to enjoy more leisure time. This was evident with some able to «work just 30 hours a week, on one's own schedule, and take long weekends» (Merchant, 2023, p. 52).

During the Covid lockdowns, amongst the horrible global situation, one beneficial aspect became apparent, workers *could* successfully work from home (WFH), on their own schedule. Even as the world opened up, "hybrid work" was still seen by many as a beneficial compromise, especially for those with long commutes due to the amount of essentially wasted time saved, which could be used to spend more time with their family; or even to do more work. Except, in the years that followed the world opening up fully, there has been considerable pushback from companies, including ironically the

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very tech companies that were pushing the technology that facilitated WFH and hybrid working (BI Staff, 2025a).

Executives and managers were not able to exercise the same level of control as when workers are physically in the office. Offices are the modern factory, and physical beatings for making mistakes (Merchant, 2023, p. 143) have been replaced with verbal abuse and mental anguish (Wilson, 2023). Like with the automated machines of the Industrial Revolution which aided production, AI services – which are supposed to reduce the drudgery of repetitious work – should not be providing reasons for companies to lay off workers in order to protect balance sheets because their work can seemingly be done by AI instead; even though AI remains incapable of doing so.

3.2. *Where are the Protests?*

There is anger online about large companies laying off workers in their thousands, including tech and videogame companies (Cryer, 2024; Drucker, 2024; Warren, 2025), but we are yet to see a movement at the scale of the Luddites; even if self-proclaimed "New Luddites" now exist (Merchant, 2024). The situation might be similar, not only in the introduction of a new technology that can make workers obsolete, but also a wider economic situation that is contributing to companies trying to reduce their costs.

So far, the closest movement in terms of physical action has been the Anti-Tesla protests primarily taking place in the United States (Barr, 2025). However, these protests are not specifically against "Big Tech" as in this instance they are more in relation to what Tesla CEO Elon Musk had been doing within the US Government in his previously created role of head of the Department of Government Efficiency which had also resulted in thousands of federal government employees losing their jobs and many more in other roles impacted by removal of government funding.

Elon Musk does have a vested interest in AI as he is also founder and CEO of for profit "public benefit" xAI and its AI service "Grok" (which has since also incorporated the social network X (Reuters, 2025) that had been used for training data). He has also made statements predicting that the extent to which AI will replace jobs will require Universal Basic Income[13]. This is saying the quiet part out loud about a potential future AI might bring and given the track record of both large corporations and the US government, it seems unlikely that such a safety net would be provided. Furthermore, unsurprisingly, these protests – specifically the physical attacks on Tesla vehicles – have angered both Musk and US President Donald Trump. With the latter at the time suggesting specific punishment involving sending those found guilty to prison in El Salvador (Barr, 2025). Whilst not the capital punishment used against the Luddites, this also shows that private interests are swaying a nations legal system.

The anti-Tesla protests might also expand to include Musk's AI stance, but it was concentrated on his then government related actions. Though, could we see additional protests emerge directly protesting against AI and/or the actions of Big Tech? How would people go about doing so? Tesla cars might have been damaged but would attempts to physically damage server locations work? Yet, with digital spaces, there are means to protest in non-violent ways, using what it referred to as Electronic Civil Disobedience (Brush, 2003). Whether that be not using the services of these companies thus reducing

13. He goes on to state that a «Universal *High* Income» would be needed, although this is likely an act of marketing to make it sound more appealing.

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the amount of money they make, hitting them where it hurts. Or online actions such as Distributed Denial of Service (DDoS) attacks which can take down online services for extended periods of time without strictly causing any direct damage. This approach has already been used, and again the target was Elon Musk, this time his X[14] social media network (Newman, 2025).

As of writing the anti-Tesla protests and X DDoS attack remain the public facing extent to activity against laissez-faire capitalists. Although, there are many silently changing their habits by moving to alternative web services. In addition, electric vehicle consumers are deliberately avoiding Tesla's and buying from alternative companies (Espiner, 2025) which has directly affected Tesla's market value, having dropped by 45% in the first few months of 2025 (Kirkham, 2025).

4. Warnings From an Imaginary Future: Cyberpunk and the Memory of the Future

Genre fiction has been used since the days of the Luddites as a parable reflecting on the misjustices taking place and a warning for the future. Unfortunately, not only have these warnings not been heeded, but they have also been corrupted and replicated without a hint of irony. To quote the fictional Dr Ian Malcolm from the original *Jurassic Park*[15] (Spielberg, 1993) «your scientists were so preoccupied with whether or not they could, they didn't stop to think if they should». Just as there are scientists today trying to bring back extinct animals (Hunt, 2025), Silicon Valley has been preoccupied with creating the metaverse (Tassi, 2025) from dystopian novel *Snow Crash* by Neal Stephenson (1992) or AI and the various technologies envisioned in William Gibson's (1984) influential cyberpunk novel *Neuromancer*.

Mary Shelley's (1818) *Frankenstein* is often considered one of the first science fiction novels, but it is also argued to be a reflection upon the Luddite movement. The monster himself making reasoned demands and just wishes to be allowed to live. Yet when these requests were refused, only then does he turn to indiscriminate violence, particularly against the entity that has wronged him, the titular scientist Frankenstein (Merchant, 2023, p. 451). Just as the Luddites resorted to doing as their requests to be able to survive were also ignored.

Dr Frankenstein himself shares a similar entrepreneurial mindset as the factory owners and unleashes a new technology upon the world without considering what the wider socio-economic consequences could be. Just two centuries later and this is still being criticised in media as seen with Dr Malcolm's statement, intimating that the warning still has not been understood. *Frankenstein* – like the Luddites – is also not anti-technology, as in both instances the technology is not what is directly responsible for the harm inflicted, instead it is *how* it has been (mis)used by those with power. It is why Merchant (2023, p. 456) claims that today, Victor Frankenstein would be portrayed as «a corporation, or a tech bro». This brings us to a more contemporary example of science fiction, the sub-genre of Cyberpunk, which shows how bad things can get when corporations run wild and abuse technology. Yet somehow, it is the technology that gets the attention, not necessarily the warning of the surrounding dystopia.

14. Previously known as Twitter before being purchased by Musk in October 2022. And has since been incorporated into his company xAI (Reuters, 2025).

15. The exact quote does not exist in the original book by Michael Crichton, but it does contain a similar sentiment.

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4.1. *Future Dystopia: Post-utopias*

Cyberpunk as a genre is often considered to be depicting dystopias, a near future that has collapsed in one way or another. Except, many depictions in Cyberpunk do not take place during the *worst* of the events, instead showing the situation afterwards where a degree of normalcy has returned, even if there are still considerable dystopic aspects present. For example, *Cyberpunk 2077* (CD Projekt Red, 2020) takes place after environmental catastrophes and multiple wars, yet the situation as the player engages with the setting is relatively stable at a macro level. Instead, the videogame is often more concerned with the problems present at the micro level, typically exacerbated by the side effects of the corporations («Corpos»[16]) actions.

Elana Gomel (2018) examines the connection between Cyberpunk and dystopias and asks whether dystopia is the correct term to use in relation to what is depicted in Cyberpunk. When comparing the future as illustrated in Cyberpunk to our present, Gomel asks whether it is different enough to still be regarded as dystopian? Instead, she argues that it belongs «to the broader trend of post-utopia». That being an era that «comes after the end of history, as described by [Francis] Fukuyama (1992)», coincidentally published the same year as *Snow Crash*. Despite how it sounds, Fukuyama's work «was about the end of History with a capital H» (Gomel, 2018). Meaning that, whilst momentous events will continue[17], what *has ended* is a belief that there are events leading towards a predestined goal, «whether that be a communist society of equality and plenty, or a total collapse of civilization» (Ibid., 2018). In other words, an ever-lasting present.

This ever-lasting present is also explored by Mark Fisher which he refers to as «lost futures» (Fisher, 2022b, p. 26) where the past is looked towards for a possible future, even if it can no longer exist. Fisher also unpacks this as part of «the slow cancellation of the future» (Fisher, 2022b, p. 6; Reynolds, 2020) and is apparent in the popular media that is available.

The «belief and expectation that the future would be different from the present in some dramatically improved way, or even in just some dramatically strange way» has become no more (Reynolds, 2020; Sweeting, 2023, p. 134), which is why Cyberpunk continues to endure. As like when Gibson has provided visions of the future, even when not entirely positive, have become a way of depicting a future through the lens of the past (Sweeting, 2023, p. 136). As has become the case with the form of Cyberpunk as it still relies heavily on referents of its form from the 1980s.

Gomel also states that the terms of utopia/dystopia have become less helpful as we exist in a world now where – quoting Fredric Jameson – «late capitalism seems to have no natural enemies» (Jameson, 2005, p. xii). This lack of alternatives has contributed to the paralysis of the historical imaginative, the kind Fukuyama is referring to having ended. Jameson wonders in his essay of the same name, *Can We Imagine the Future?*, and increasingly it seems that we cannot. This is how we have ended up moving towards a Hauntological state. That being one which is incapable of moving on from the past.

Without a meaningful counter ideology to the global state of capitalism[18] the argument is that instead of evolving, capitalism resorts to depending on *retro*spection. Jacques Derrida (1994) might have argued when he coined Hauntology that the ideol-

16. This is the slang used in game to refer to the different corporations and those who work for them.
17. Gomel gives the example of 9/11, even if this is more significant in the US (or Middle East region because of the US' response) than other nations.
18. The model in China is more akin to state managed capitalism meaning in practice is a different *shade* of capitalism rather than a completely different entity.

DOI 10.36158/97912566929417

ogy of Communism was not in fact *dead*, but through expanding the term in order to help us understand what has taken place with media form (Fisher, 2022b; Reynolds, 2012; Sweeting, 2023) – which has become increasingly reliant on the past – we can also see this extending beyond into broader cultural perceptions. Cyberpunk is increasingly one of the more apt means of examining this Hauntological state, as it both acknowledges capitalisms inability to evolve to improve people's lives but also the genre's reliance on its own past, thus exemplifying what I have previously coined as Hauntological Form (Sweeting, 2023). This being where the past continues to haunt both the present and the future, though its presence can have an intangible quality due to the melancholy that something else remains missing; such as a different future. Perhaps one where capitalists aren't misusing technology to exploit its workforce.

When Cyberpunk came to prominence during the 1980s, especially *visually*, with the likes of *Blade Runner* (Scott, 1982), despite being set on an Earth that was essentially dying with people trying to leave for Mars, the cityscape shown provided «shocking newness to the Western audiences» (Gomel, 2018); an example akin to future shock[19] (Toffler, 2022). Today, the style of Cyberpunk provides a sense of familiarity, a memory of a future that still has not arrived yet, and an alternative to the state of permacrisis (Collins English Dictionary, n.d.) the present is suffering from. Whilst Cyberpunk settings usually depict their own state of permacrisis (see *Cyberpunk 2077*), it is different *enough* from the present, which is why a depiction of the future via the lens of the past will seem *progressive* (Reynolds, 2012, p. 361; Sweeting, 2023, p. 108). Although, there is also a risk that too much reliance on the past could instead result in past shock[20] (Reynolds, 2020).

4.2. *Cyberpunk, the East, and Lost Futures*

A big part of what contributes to Cyberpunks *otherness* is the significant influence of East Asian style and iconography. Part of this is an element of Orientalism (which can vary between positive and/or negative in any given example) and incorporating another culture's aesthetics into Western creative output. The other is that East Asian countries – especially Japan – have managed to also claim Cyberpunk as their own as well and using it to tell stories commenting on their situation as seen in franchises such as *Ghost in the Shell*[21] (Oshii, 1995) or *Akira* (Otomo, 1988).

What also stands out about the relationship between Cyberpunk and Japan is that to a Western audience it gives the *appearance* of the future and continues to do so, even though Japan today is no longer the home of cutting edge technology, instead an unsteady balancing act between the US' Silicon Valley and Shenzhen in China, with the former focusing on software and the latter on hardware.

William Gibson wrote a piece titled *The Future Perfect* (2001) and suggested that Japan for the past couple of centuries had been dealing with future shock, but unlike how it was experienced in the West (such as Britain), in Japan they faced a «near-lethal dose of futurity» in part due to the outside introduction of new technology and ideas. This resulted in a «mutant culture» but one which managed to remain «deeply traditional» yet adaptable to repeated «technological change». Gibson argued that Japan «had a head

19. In which there is «too much change in too short a time» (Toffler, 2022, p. 2).

20. «Horrified disbelief that so little progress had been made on multiple political and social fronts, with actual reverses and rollbacks in some areas underway» (Reynolds, 2020).

21. It is based on a manga series originally released between 1989 and 1991. The franchise continues to this day across different forms of media.

DOI 10.36158/97912566929417

start» when it came to the future, which is why it seemed so much more advanced in comparison.

That advancement is no more; Japan is not challenging the US for the number one spot. And when we think of the technology on display in Cyberpunk, it remains heavily tinged by the technology aesthetics of the 80s and 90s (often from Japan). Svetlana Boym appropriately titled her book *The Future of Nostalgia* and argued that nostalgia «is a by-product of globalism» (Boym, 2001, p. 10; Gomel, 2018). With Japan no longer representing the future, the past has to stand-in instead. Which is where Cyberpunk fits in for the role, giving the illusion of a future, even though it is anchored in the past.

Cyberpunk might be anchored in the past, but it is also a *warning* from the past. Gibson (2001) alluded to overdosed industrialisation that has gone beyond our control. This is a continuation of the warning from the Luddites, one that is relevant today where the next stage of industrialisation is underway. This might seem contradictory, given my previous arguments that the current state of permacrisis has contributed towards looking to the past rather than an alternative future. Except, whilst the actual technology of AI might be new, the idea of automation, as noted with the identification as far back as Homer's *Iliad*, and the way in which it was implemented in the early 1800s, is not new. History continues to repeat itself; we just need to make sure we listen to the warnings from the past and stand up like the Luddites did. Otherwise, we could end up in the post-utopias depicted in Cyberpunk.

5. Conclusion

This paper has looked at the recent rise of AI and the challenges it brings not only to the online services we use but also what it could mean for workers around the world. Whilst the implementation of AI services is still in its early days in terms of general adoption, the worrying signs are already starting to present themselves. This is why it is crucial to look back at what the Luddites were doing in the early 1800s when they were standing up against the new technology that was being implemented by the capitalist elites of the time which threatened not only their way of life but also their ability to make a living.

Like the Luddites dealing with automated frames, the new technology of Generative AI is not something that can be ignored or prevented. However, it can be tackled in order to prevent significant damage. There can be uses for it as a tool, but if capitalists try to rush to implement it across a range of industries without careful consideration, thousands if not millions of jobs could be at risk, causing untold human damage. This is not a threat of the "robots" taking jobs, rather it is the capitalists making jobs redundant.

Science Fiction since its earliest version with Mary Shelley's *Frankenstein* has long warned about the dangers of misusing technology. Cyberpunk is a continuation of this, and more explicit with its anti-corporate and anti-government stance. That these actors will exploit technology for their own interests, whilst normal citizens (not the elites) will face the ramifications of these technologies.

However, Cyberpunk as a genre still has a foot firmly placed in the 1980s, yet also provides a memory of the future, one that some are still waiting for. Even though it is different from our present, permacrisis is leading to that of a Hauntological state, in which visions of the future become increasingly dependent on the past. This is why Cyberpunk continues to be so relevant because Big Tech needs ideas to sustain its previously high

DOI 10.36158/97912566929417

levels of growth. As a result, it is taking the wrong lessons from Cyberpunk texts to provide something "new". However, these ideas are not taking off, with Meta's "Metaverse" failing to generate any lasting interest.

These corporations, like those depicted in *Cyberpunk 2077* require growth and control. It is not about serving the needs of its customers; it is about keeping them trapped in digital walled gardens to extract continual profit. Helping them to do so by keeping the Government on side. Now the United States is becoming a parody of itself as depicted in Cyberpunk texts. These texts were always meant to be warnings of what *not to do*, instead they have inadvertently become guides.

However, that does not mean that this is how things can end, as workers today can look back to the successes of past resistance in which the Luddites were able to gain small wins from the capitalists and obtain some concessions. Similar can be achieved once more, using the technology (including that made by Big Tech) against capitalists to organise, conduct protests, as well as impacting their bottom line/share price. Hopefully preventing the levels of control imagined and depicted in Cyberpunk.

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DOI 10.36158/97912566929417

Running on the Edge

Mapping the Future Screens of Night City's Digital Life and Urban Spaces

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| abstract

This paper develops a digital ethnography to examine the dynamics of *Cyberpunk 2077*'s *Night City*, an immersive metropolis, exploring how emerging future screen technologies reshape urban experience, narrative agency and social interactions within immersive digital environments. Anchored in the broader discourse of the creative, cultural and entertainment industries, this study investigates how emerging screen-based technologies redefine the relationship between space, audience and content through a speculative world-building. *Night City*, as a meticulously realized fictional world, provides fertile ground for analysing the social and individual impact of future screen technologies on immersive storytelling, spatial reconfigurations and community interactions. Adopting a digital ethnographical approach (Hine, 2020; Berg, 2022), the research combines participant observation, visual documentation and analysis, and reflexive analysis within the virtual setting of *Cyberpunk 2077*. Fieldwork was conducted through a "nomad" character path, allowing the researcher to experience *Night City* both as an outsider and as a participant. Fieldnotes, screenshots, and in-game interactions were collected, coded and thematically analysed, following the principle of interpretive and reflexive ethnography (Gold, 1958). The approach discloses a complex interplay between space, embodiment, and participation within the digital city. The spaces and architectures of *Night City* emerge as a fluid synthesis of material and virtual design. Corporate towers, neon-lit streets, and decaying suburbs mirror the city's economic and social stratification of the metropolis. In this scenario, the player's technologically enhanced body is a site of continuous negotiation between the self and the machine, reflecting broader tensions of identity, alienation, and control. Meanwhile, pervasive screen culture gives form to participatory practices where immersion and interactivity allow hybrid communities and the co-creation of narratives that blur the boundary between observer and active participant. In this sense, the city itself becomes participatory: a networked environment where technological infrastructure and human interactions constantly co-construct meaning. Fusing speculative design with cutting-edge media technologies, the game encourages critical reflection on the social impact of immersive media in blurring the boundaries between reality and simulation. This ethnography contributes to an understanding of the future screen as a catalyst for innovation, pointing out its potential to redefine the relationship between space, audience and content, and create new imaginaries. It also highlights the value of mapping the material culture, behaviour and style of digital inhabitants as a lens for understanding how screen-based technologies mediate and reimagine our interactions with urban life in increasingly hybridised digital-physical landscapes. This study frames the future screen as both a medium and a methodological tool – an active interface that constructs, rather than merely represents, urban experiences. By applying ethnographic tools to a speculative digital environment, this research tries to contribute to the methodological debates on digital ethnography and to the theoretical discussions on identity, spatiality and social life within increasingly hybrid techno-urban landscapes.

DOI 10.36158/97912566929418

1. Introduction

The rapid development of immersive digital technologies has significantly transformed not only media practices and habits, both in terms of consumption and forms of social interaction (Handa et al., 2012; Suh, Prophet, 2018), but has also altered and influenced urban landscapes and related narrative practices (Wakabayashi, 2002). These phenomena are increasingly present in everyday life, such as interactive advertising (Wilson, 2023), smart cities (Kunzmann, 2014; Yin et al., 2015), mobility applications (Lopez-Carreiro et al. 2020). However rich in insights and stimuli, all these fields of study are still anchored, to varying degrees, in the physical and material dimensions of urban spaces and the practices they enable or facilitate. This paper intends to move into a field characterised by a form of "other" materiality (Han, 2022) – digital environment that simulate the sensory and social qualities of physical space through screen-based technologies –, presenting an ethnographic study based on *Night City*, a hyper-realistic digital metropolis where the events of the video game *Cyberpunk 2077* are set. The intention is to explore how an interweaving of technologies and digital technical advancements manage to reshape the relationship between space, audience and content in a de-materialised context, albeit one that is deeply connected to and indebted to the materiality and imaginaries of cities (Lindner, Meissner, 2018), past, present and future. In this study, immersive digital technologies are intended as screen-based systems (augmented, virtual or mixed) (Melro, Oliveira, 2018) that extend the users' spatial and sensory engagement. The concept of urban imaginary is used to describe how such environments project and reshape collective vision of the city (Lindner, 2006). Situated within the broader discourse of the creative, cultural and entertainment industries, this study investigates how screen-based media redefine urban engagement, individual action and collective narrative. Therefore, this paper aims to answer the following questions: how will future screen technologies redefine the experience of urban spaces? How does *Night City* serve as an ethnographic field for exploring digital urbanism? By examining virtual architecture, aesthetic configurations and social interactions within *Night City*, this research addresses the interplay between immersive technologies and urban imaginaries. We intend, here, to consider how spatial reconfigurations, technological augmentations (Carmigniani et al., 2011) and participatory media challenge conventional notions of narrative and identity, shaping a speculative vision of future urban life (Ratti, Claudel, 2016). Through its use of extended reality (XR), artificial intelligence (AI) and IoT-driven interactions, *Cyberpunk 2077* epitomises the potential of this set of tools for creating an increasingly hybrid social experience (Dincelli, Yayla, 2022), fusing virtuality with physicality. These technological and narrative convergences make Cyberpunk 2077 a fertile ground to analyse how future screens mediate the boundaries between the physical and the digital urban experience.

1.1. Cyberpunk 2077*: Historical and Contextual Overview*

A necessary premise, considering our object of study, is an in-depth background and history of the video game in question. *Cyberpunk 2077* is an open world role-playing game (RPG) (Zagal, Deterding, 2018) developed by CD Projekt Red and released in December 2020 (Maj, 2022). It was inspired by Mike Pondsmith's series of tabletop role-playing games (Pondsmith, 1993), the game is located in *Night City*, a dystopi-

DOI 10.36158/97912566929418

an metropolis of the future dominated by megacorporations, cybernetic augmentations and clandestine subcultures. This contextual overview is not merely descriptive, it serves as a foundation for understanding how the game's world-building and narrative system can be transformed into a site of ethnographical inquiry. References to science fiction (Luckhurst, 2005), classic dystopias in science fiction literature (Savoye, 2011), cyberpunk aesthetics (Murphy, Schmeink L., 2018) are consistent and easily discernible throughout this fictional universe. The development of the game has been a very famous case throughout the gaming community. Widely anticipated, eagerly awaited – not least due to CD Projekt Red's earlier success with *The Witcher* series – its launch was characterised by controversy of various kinds, caused by technical problems and inconsistent performance, particularly on older gaming hardware. After a probematic launch (Escourido-Calvo, Martínez-Fernández, 2022), *Cyberpunk 2077* has received substantial updates regarding game mechanics and further development of both the storyline and graphic performance. The game takes advantage of cutting-edge technologies, including ray tracing, advanced artificial intelligence and dynamic world-building, to offer deeply immersive experiences. Drawing inspiration from literary works such as William Gibson's *Neuromancer* (Myers, 2001) and films such as *Blade Runner* (Kerman, 1991), the game encapsulates themes of transhumanism (Fukuyama, 2004), digital surveillance (Bauman, Lyon, 2013), digital post-capitalism (Betancourt, 2015) and socio-political stratification. The imaginative connections to classic sci-fi is reinforced by the inclusion of the actor Keanu Reeves – extremely-iconic for his role in *The Matrix* – whose likeness was digitally reproduced to embody Johnny Silverhand, one of the game's central characters. These thematic layers also provide a conceptual connection to the sociological and phenomenological frameworks later applied in this study, especially in relation to alienation, identity and the city as a site of technological mediation.

The portrayal of *Night City*, the pulsating core of all the videogame's events, is that of a living, breathing urban entity, complete with different factions, interactive Non-Playable Characters (NPCs) (Uludağlı, Oğuz, 2023) and emerging narrative mechanics (Batylda, 2020; Li, 2024). This dynamic representation of urban life makes *Night City* terrain for ethnographic explorations, a place where the boundaries between environment, technology and social behaviour can be observed and analysed. These are some of the elements that contributed to making the game an interesting laboratory not only for technical, but also theoretical reflections. From its complex narrative structure to the visual and thematic representation of cybernetic futures, *Cyberpunk 2077* lends itself to be used as a model to explore the intersection between future screen technologies and digital urbanism and, in general, to initiate reflections on the imaginaries of the future of urban spaces and how humans, and technology, can interact with and within them. Starting from this consideration, we will attempt to clarify how future screen technologies, represented in *Cyberpunk 2077*'s *Night City*, reshape the relationship between urban space, narrative practices and digital community interactions in immersive virtual environments, and we will do so by applying the ethnographic method to game practices (Caliandro, 2016). The following methodological section will outline how this ethnographic engagement was structured and how data were gathered and interpreted within this complex digital setting.

DOI 10.36158/97912566929418

Figure 1. Johnny Silverhand.

1.2. *The Participatory City: Modular Storytelling and Player Agency*

The playful and narrative dimension of this platform presents certain peculiarities that make it of particular interest for the purposes we propose here. Firstly, one of these is the procedural nature of story construction. One of the distinctive features of *Cyberpunk 2077* is its modular narrative approach, in which players influence narrative outcomes through a dynamic decision-making process. Unlike traditional linear narratives, the game exploits procedural storytelling techniques – a system generated and adapted by algorithms in response to player choices, allowing for multiple paths and outcomes – to create unique and personalised experiences (Short, Adams, 2019). The city itself reacts to the player's decisions through adaptive artificial intelligence (Гаранін, Моісеєнко, 2018), enabling a process in which content is not simply displayed. In this system, users actively shape the paradigms of interactive storytelling. This dynamic interaction reinforce the notion of player agency, the user capacity to co-produce meaning and narrative within the constraints of programmed systems (Murray, 1997). Within the media universe of *Cyberpunk 2077* there is also a very complete incorporation of technology and bodies (Downey et al., 1995). The integration of the Internet of Things and wearable technology within *Night City* enables participatory content consumption. Intelligent implants, virtual reality overlays and brain-machine interfaces allow real-time access to information, transforming the role of the player and his or her character from passive observer to active participant.

DOI 10.36158/97912566929418

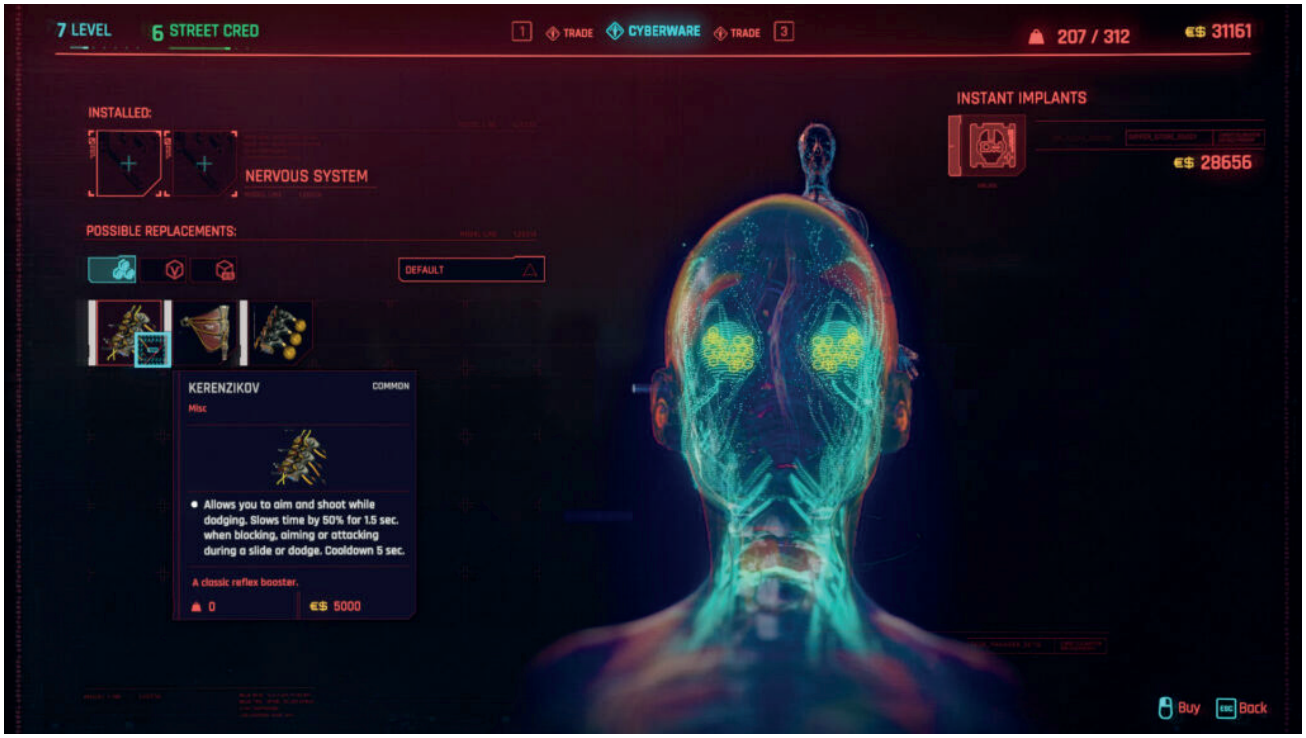

Figure 2. Example of a neural implant for body augmentation in *Cyberpunk 2077*.

This level of integration, besides being a fundamental element of the game dynamic, also represents a potential trajectory of the media industries, where digital platforms facilitate forms of co-creation and personalised interaction (Spurgeon et al., 2009). It would seem that we are indeed confronting a media and technological product that transcends traditional conceptions of immersive videogames. This evolution very much exemplifies what future screens are: media interfaces that no longer simply display information, but actively mediates, augments and co-produces user experience. For these reasons, *Cyberpunk 2077* positions itself within the technological sphere that we might define as the "screen of the future", capable of transcending traditional visualisation technologies to include augmented, virtual and integrated media that amalgamate synergistically, in an organic manner, with human perception and spatial configurations. These screens do not merely present information, but actively mediate interactions, enabling immersive experiences that influence identity, behaviour and urban spatiality. Within this framework, *Night City* operates both as a medium and as an environment, a living interface through which observe how screen-based technologies transform urban spatiality and embodied experience. This conceptualization directly informs the ethnographic approach outlined in the following section.

2. Methodology: Digital Ethnography

This research adopts a qualitative digital ethnography (Hine, 2020; Paoli, D'Auria, 2021) designed to observe, record, and interpret the socio-spatial and aesthetic configurations of *Cyberpunk 2077*'s *Night City*. The study combines in-game fieldwork, visual documentation, and reflexive analysis to investigate how players experience and perform urban life within this immersive environment. Following Gold's (1958) typology of field roles, the researcher positioned himself as a

DOI 10.36158/97912566929418

"participant-as-observer", taking an active part in the gameplay while keeping analytical distance. This allowed for both experiential immersion as well as critical reflection on the structures that shape interaction and representation within the digital environment. Such gameplay sessions were performed for about 87 hours, divided into several sessions. Spatial observations, interactions with NPCs, environmental hints, and moments of narrative choice regarding the story were written down in details during these sessions. Screenshots and video captures were also collected to complement the textual notes with visual evidence. All fieldnotes and screenshots were reviewed and thematically coded using an inductive approach (Thomas, 2003). Codes have been iteratively refined to capture three analytical dimensions: (1) spatial configurations and mobility, (2) embodiment and technological augmentation, and (3) participatory and community practices. This was done by following the logic of reflexive interpretation typical of qualitative ethnography (Delli Paoli & D'Auria, 2021). Fieldwork delved more deeply into the lived experiences of *Night City*'s inhabitants, both players and non-playable characters (NPCs), to understand how screen technologies inform community structures, power dynamics and narrative agency. The observation focused not only on the player's own trajectory but also on NPCs and environmental interactions as ethnographic "actors" within the digital city. Drawing on sociological theories, the research situates *Night City* as a microcosm of emerging digital realities. In order to conduct the research, the choice was made to use, of all the possible characters available to play the game, that of the nomad. Selecting the Nomad path also aligned with the methodological principle of studying marginal perspectives as vantage points for understanding digital societies (Bauman, 2000; Hine, 2020). This outsider position mirrors the ethnographer's stance, both embedded in and detached from the observed environment. This choice was motivated by several reasons, deriving mainly from the sociological literature and the plot that this choice enables. Firstly, by using this character, the first steps in the game are taken outside the city, into which one only enters later. Given the nature of *Night City*, a digital megalopolis of the future, as we briefly began to explain, the choice was made to experience its conflictual dimension and otherness, choosing to use a character who embodies this aspect in the most marked way possible, the "nomad" precisely. In this way, the experience of the metropolis as an "other", alien space was experienced and deepened precisely through this particular point of view. The game sessions have been used in the manner of a participant observation (Kawulich, 2005), visual (Pink, 2021) and textual materials generated by the in-game interactions have been collected in the same manner as a field diary (Blommaert, Jie, 2020). Throughout the fieldwork, reflexive notes were used to track emotional responses, interpretive decisions, and ethical considerations, acknowledging the researcher's presence as part of the digital field (Bovone, 2010; May, Perry, 2014). All texts generated in this way were sampled and transcribed, and similarly, images were captured and used to develop descriptions of the game environments and subsequent theoretical reflections. Reflexivity was treated as a methodological tool rather than a limitation. Navigating through an avatar required recognising how perception, embodiment, and interaction were technologically mediated. The researcher's agency was thus intertwined with that of the digital environment, echoing the notion of the digital ethnographer as participant (Berg, 2022). Therefore, such reflexive and conceptual work made it possible to translate gameplay experience into analytical insight.

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2.1. *V as the Stranger: A Nomad's Journey Through the Simulated World*

From the very beginning of the game, the protagonist, V, played in the "nomad" mode (a choice that, as we have explained, is methodologically motivated), turns out to be a foreigner ante litteram, a "vagabond" (Bauman, 2000), an archetype that echoes Simmel's (1908) concept of the *Stranger*, whose position of proximity and detachment allows for a distinct perspective on social structures. He is a solitary figure, traversing arid and desolate landscapes, estranged from the community, family and the world he is about to enter. In this reading, the Nomad becomes not only a narrative role but a methodological stance, reflecting the ethnographer's own position in a digital field – simultaneously inside and outside the observed environment (Bovone, 2010). The game starts outside the city, in an area called Badlands, which stretches like a merciless desert. Once part of a clan, now isolated, V's first steps are defined by exile, both spatially and in terms of identity. V's arrival in *Night City* is not an act of coming home, there is no sense of belonging. As such, this outsider gaze serves as an analytical device that, through the avatar's embodied journey, reveals the mechanisms of exclusion and assimilation at work in the city. *Night City* appears as a corporate-decadence and technological saturated entity, a place built on illusion and power where everybody speaks a language that V has not learned. Every encounter, every place, is a potential danger a device of alienation, holding him in his alien status. One of his earliest interactions, with a mechanic, fully illustrates this sense of hostility and rejection of the foreigner. The following in-game dialogue exemplifies how otherness and marginality are performed within the ludic narrative, translating sociological categories into interactive experience:

> V: You said it was nothing serious when i came in, you said you were sure.
> Mechanic: Guess I was wrong. You can always look for another shop where they won't ask a low nomad while he's hugging the border.

This outsider status gives Nomad V a unique perspective. Like the Stranger V, he has a disenchanted view of the city, which is seen and experienced with cynical realism: it is not home, it is not a harbinger of entertainment It is a melting pot of possibilities and threats, each to be sifted with the utmost circumspection. Such disenchanted observation recalls Schütz's (1944) notion of the *well-informed stranger*, who must reconstruct social meanings from fragments of interaction. In *Night City*, the player-avatar enacts this interpretive effort through exploration and choice. Human relationships within this space are dangerous, approached with circumspection and caution. V himself offers resistance to the city, to assimilation, bringing with him the spirit and rebellion of the margins: the desert, the street, the clan values of loyalty, survival and, at times, harshness.

> V: I don't know why but I felt I could count on you. Belonged to a nomad family too once, city doesn't change us all that much, I guess.
> Panam: That's hard to deny.

In the moment they are forced to upload a synthetic consciousness, a body augmentation compulsory to stay in *Night City*, their detachment deepens. The presence of this form of digital consciousness, called – as we have already mentioned – Johnny Silverhand in his mind further increases the alienation, making him an outsider even to himself, not only to the city and its inhabitants. This internal conflict turns the character into

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a double outsider, externally, to the society around him, and internally, to his own body and consciousness. This moment of enforced hybridisation turns the body into a site of contested identity production, a digital-phenomenological condition exemplifying the mediated self (Chouliaraki, 2010; Soukup, 2013). To interpret the Nomad as the Stranger is to consider *Cyberpunk 2077* not only as a metaphor for power, technology and rebellion, but as a study of alienation, identity and the quest for meaning in a simulation-built world. The nomad does not want to belong to *Night City*. He observes it, walks through it, he questions it and then selects what he chooses to take and what to leave behind. His trajectory thus echoes the ethnographic process in and off itself: observing, engaging, and selectively interpreting the field transforms gameplay into a reflexive act of knowledge production.

2.2. *Re-configuring Space: XR, Urban Topographies and Material Culture*

The game practice also allows one to experience the topographical diversity of *Night City*, testifying to the fusion of digital architecture and cultural expression. In ethnographic terms, spatial exploration within the gameworld is treated as a process of digital wayfaring (Frömming et al., 2017), where movement through virtual space produces situated forms of knowledge and sensory engagement. The city's diverse neighbourhoods, from the corporate-dominated centre to the rebellious and infamous streets, illustrate how urban spaces are designed as reflections of socio-political and economic hierarchies (Nas, 2011; Egoreichenko, 2018). By incorporating elements of extended reality into gameplay, *Cyberpunk 2077* allows one to experience a fluid reality within which digital overlays inform all aspects of existence. These superimpositions include holographic billboards, immersive advertisements and networked street environments, generating imagery and visions of a future in which technologies would seem to dictate spatial awareness and behavioural patterns in urban landscapes. From a methodological standpoint, these XR elements were documented through visual fieldnotes and screenshots, analysed as digital artefacts (Arnold, 2016) that convey the interplay between perception, technology, and social behaviour (Berg, 2022). The economic logic embedded in *Night City*'s visual saturation aligns with the notion of the *society of the spectacle*, where the urban landscape becomes an interface for mediated consumption (Debord, 2024). Like contemporary metropolis, *Night City* is divided into several strongly characterised neighbourhoods, each with its own unique and distinctive atmosphere, ambiance, architectural style and socio-political elements. Its urban landscape reflects a mixture of advanced technologies, corporate domination and social decadence. In this way, the following analysis continues with a brief description of the urban characteristics of these spaces and their imagery. Moving through the districts and streets of *Night City* it is quiet easy to identify a set of themes that recur, not only through storytelling and narration but also through the aesthetics and architecture in the digital environments. Each neighborhood was analysed ethnographically, not merely described, to interpret how architectural aesthetics and interactive design embody power, inequality, and cultural identity.

- City Center: the city centre, characterised by towering skyscrapers, neon advertisements and a refined corporate aesthetic. The environment of this district is marked by cleanliness, technological sophistication and the presence of powerful corporations dominating the skyline. Its modern architecture is functional, austere and utilitarian, with a cold and impersonal futuristic atmosphere. This neighbourhood

DOI 10.36158/97912566929418

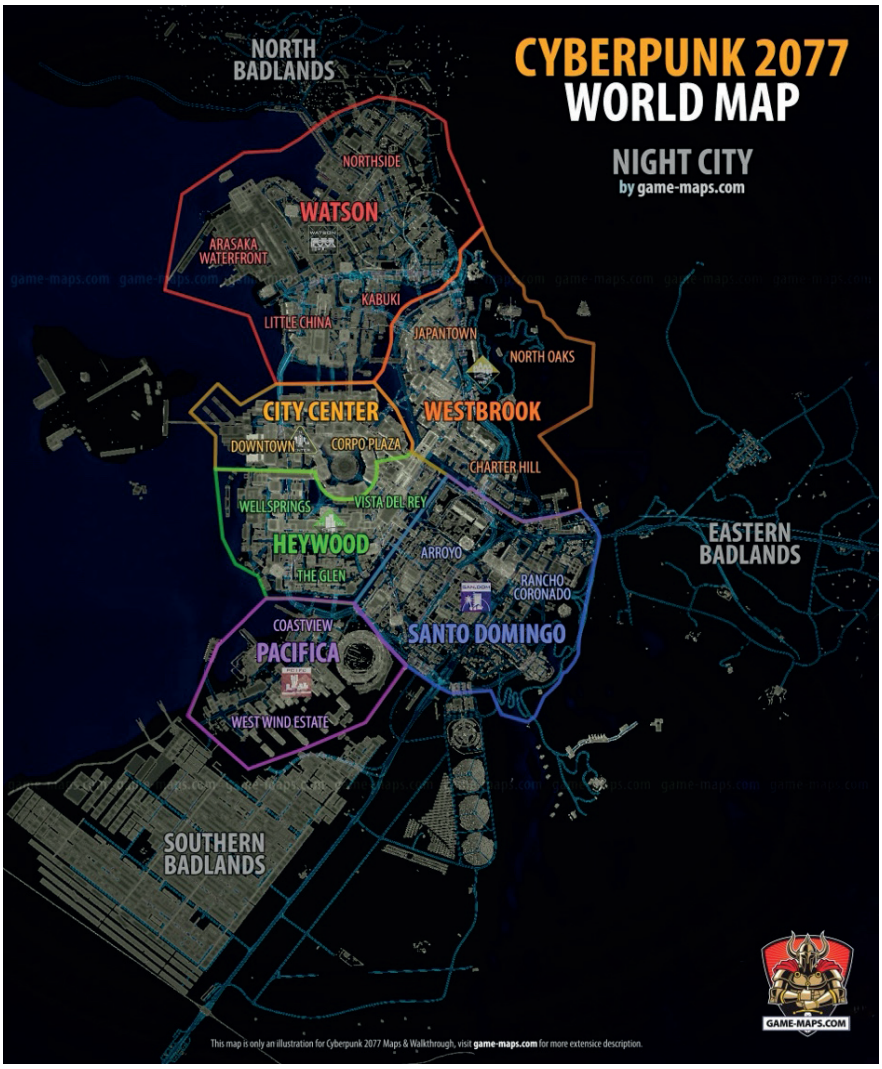

Figure 3. *Night City* map. Source: https://game-maps.com/C77/Cyberpunk-2077-World-Map.asp.

represents the pinnacle of capitalistic excess and the social divide between the elite and the poor (Böhme, 2017).

- Westbrook: it is the neighbourhood of the rich and the opulent. it is full of luxury hotels, high-end residences and well kept streets. Its ambience is well-groomed, upscale, dominated by shopping malls and neon-lit nightclubs (Elshater, Abusaada, 2022). The architecture blends futuristic luxury with a hedonistic nightlife culture, where extravagance and excess are on display, representing, again, the disparity of wealth that defines *Night City*'s social hierarchy (Hae, 2011).
- Watson: it is a neighborhood that combines a rapidly growing working class and immigrant population. It shows a juxtaposition of older, more industrial structures alongside newer, high-tech developments. The area is characterised by busy streets cluttered with makeshift shops and neon signs. It has a more chaotic and lively atmosphere, where technology and poverty coexist. The architectural style here varies, with decaying buildings alongside gleaming corporate complexes, illustrating the disjunction between progress and decadence (Lee et al., 2014).
- Santo Domingo: Santo Domingo is a working-class industrial district, which hosts factories, power plants and technological production sites. Its environment is austere and utilitarian, with a pervasive sense of pollution and neglect in the area. The

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architecture of the district is predominantly industrial, characterised by large, functional structures with little concern for aesthetics. The constant hum of machinery (Morillas et al., 2018) and the smell of industrial work give the area a raw atmosphere, reflecting its role as the backbone of *Night City*'s economy (Stilgoe, 1982).

- Heywood: it is a residential neighbourhood, generally associated with working-class families and poorer communities. It is characterised by a mix of urban sprawl, with dense apartment blocks and suburban-style housing developments (Baldassare, 1992). The environment is claustrophobic, characterised by crowded streets that convey a feeling of suffocation. The architecture reflects a more old-fashioned, lived-in style, with concrete structures and occasional patches of greenery and parkland. The atmosphere of the neighbourhood is more personal and intimate than the more corporate sectors of *Night City*, with several elements of urban decay (Breger, 1967).
- Badlands: they are located on the outskirts of *Night City*, a stark contrast to the urban areas. This district is characterised by desolate desert landscapes, abandoned structures and a sense of isolation. The environment is barren, harsh and desolate, with the remains of old highways and industrial ruins dotting the landscape. The architecture is stark and utilitarian, with a post-apocalyptic aesthetic (Hicks, 2016; Walter, 2019). The Badlands embody the collapse of civilisation beyond the city walls, a place where survival becomes the primary concern.
- Pacifica: once destined to become a luxury resort, the area has fallen into a state of disrepair, becoming chaotic and lawless, dominated by gang activity and social unrest. The environment is in a state of decay and neglect (Du Toit, 2010), with crumbling buildings, overgrown streets and crumbling infrastructure. Pacifica's architecture combines modern and traditional elements, with colonial-style buildings and Victorian-style houses.
- Corpo Plaza: situated in the heart of the guild-controlled sectors, Corpo Plaza is an elegant and sterile environment that accommodates the elite of *Night City*. The area is dominated by corporate headquarters and luxury establishments, characterised by clean lines and modernist architecture. The district exudes wealth and power, with minimal human presence outside of corporate executives and security personnel. It serves as a symbol of corporate hegemony and the growing gap between the elite and the general population (Monnet, 2011).

Across these environments, the juxtaposition of affluence and decay reveals how digital urban design reproduces material hierarchies while simulating agency and mobility (Manovich, 2006; Graham, 2016). This approach treats *Night City*'s cartography as a symbolic system rather than a topographical one. Each of *Night City*'s neighbourhoods presents a unique reflection of classic cyberpunk themes such as class stratification, corporate control, technological advances and social decay, contributing to the narrative of the city, its dynamics, and a constant element of resistance and struggle, typical of dystopian storytelling (Merrifield, 2000). The inhabitants of *Night City*, as well as the environments in which they move and in which they act, express their identity not only through belonging to a certain place or district, connoted both spatially and stylistically, but also through a complex interaction of cybernetic enhancements, digital fashion and interactive objects. Wearable screens, retinal displays and neural interfaces enable seamless integration with the city's pervasive technological infrastructure. This media-based material culture underlines the impact that future screen technologies will

DOI 10.36158/97912566929418

have on self-representation and community interaction, further dissolving the boundaries between physical and digital embodiment. From an ethnographic perspective, mediated bodies like these are paradigmatic exempamples of how digital material culture extends embodiment into hybrid techno-social spaces (Hickey, Smith, 2020). Their screen-based self-representations become empirical traces of the future screen's social and aesthetic functions.

3. The Metropolis and the Stranger: A Reflection on *Night City* Through Simmel and Schütz

The case at hand, while providing a vivid depiction of technological saturation, urban alienation and fragmented identities, also stands as a fertile cue to revise, through the lens of classical sociological theories, the metropolis of the future (Hardy, 2022) and the figure of the Stranger within it. Likewise, *Cyberpunk 2077*'s *Night City* offers an environment full of insights and stimuli, that easily recall the concepts pioneered by Georg Simmel in *The Metropolis and Mental Life* (1950) and *The Stranger* (1908). In fact, the possibility of interacting with different characters, often alien to the city itself, is offered as a cue to thematise otherness, a notion finding consistent theoretical roots, such as those provided by Alfred Schütz's phenomenological interpretation in *The Stranger* (1944). These founding concepts, although developed in a completely different context and historical moment, may prove to be still valid tools for interpreting the more psychological, social and existential dimensions of individuals navigating both the spaces of the gaming platform and the hypermodern, technology-mediated urban spaces that are more and more becoming a tangible and widespread reality. By examining the lived experience of the inhabitants of *Night City*, both the playing character V and the multitude of NPCs, we can create a parallel with Simmel and Schütz's ideas on detachment, anonymity and the struggle for meaning in an oppressive urban landscape (Øversveen, 2022). This reflection will consider the way *Night City* represents the intensification of modern urban experiences and creates an environment that amplifies both the aloneness of the individual and his existential disorientation. Within this framework, the digital ethnographic observation of *Night City* allows for the revisit of these classical notions through player embodiment, mediated perception and interactive agency, situating Simmel and Schütz within a future screen context.

3.1. *The Metropolis and Mental Life: The Intensification of the Stimulus in* Night City

This analytical section situates the findings within a phenomenological and sociological framework. Drawing on Simmel's (1903) reflections on urban experience and Schütz's (1944) analysis of the social world as a structure of meanings, the study interprets *Night City* as a mediated metropolis is interpreted as technologically reshaping perception, distance and interaction. This interpretive framing allows the ethnographic material to be read as empirical articulations of Simmel's and Schütz's theoretical intuitions. In *The Metropolis and Mental Life* Simmel argues that urban existence is characterised by an overwhelming onslaught of sensory stimuli, resulting in a "blasé" attitude, defensive adaptation to cognitive overload that manifests today in mediated environments saturated with data and images (Lash, 2002), an adaptive detachment necessary

DOI 10.36158/97912566929418

for psychological survival in an environment saturated with information, movement and economic transactions. The metropolitan dweller is thus forced to develop protective devices, prioritising rationality over emotion in order to juggle the impersonal and alienated nature of city life. *Night City*, in an extreme, futuristic form, embodies this intensification of urban stimuli that is already being experienced in factual reality (Prokofyeva, Somkhishvili, 2023). The incessant movement, frantic activity, ubiquitous advertisements and cacophony of voices, both analogue and digital, create a sensory environment that mirrors Simmel's description of the modern metropolis, but in an exaggerated, cybernetically enhanced form. The characters that animate *Night City*, much like Simmel's city inhabitants, display a mixture of emotional withdrawal and hyper-rational pragmatism. The game's NPCs, be they corporate elites, street mercenaries or marginalised lower-city townspeople, display this detachment as they navigate a world defined by transactional relationships, rapid technological change and the ever-present pressing need to survive within *Night City*'s hyper-capitalist economy (Paris, 2005). This economy of attention and transaction aligns with the vertical stratification of power in digital urbanism, where accessibility and privilege are spatially encoded (Graham, 2016). Through ethnography, the situatedness of the players grasp this tension: participation becomes a mode of observation of how systemic constraints are internalized and reproduced within digital ecologies. This tension, this struggle between the individual, selfishly self-referential action and the oppressive determinism of the metropolis, is the real subject of V's journey, a mercenary who wants to climb the hierarchical levels of the town's underworld (Delanty, 2000). The player's options are apparently broad, yet utterly conditioned by systemic structures that come from the city (megacorporations, cybernetic enhancement and digital surveillance), which only corroborates the theory of impersonality and calculated rationality, already identified by Simmel in his observation of the modern metropolis in its auroral phase.

3.2. *The Stranger: Simmel and Schütz in the Cyberpunk Context*

Simmel's concept of the *foreigner* describes a figure who is physically present within a social system, but remains psychologically and socially detached, neither completely foreign nor completely integrated into the community. The stranger embodies mobility and objectivity, existing in a liminal space where identity is fluid but unstable. This concept is also taken up and explored by Schütz, but he does so by focusing on phenomenological experience. He describes the foreigner as someone whose habitual knowledge structures are disrupted when he enters a new cultural system. Deprived of the implicit and taken-for-granted knowledge possessed by actors in the same frame of action, the stranger must engage in an active, often exhausting process of interpretation and adaptation (Ålund, 1995). Even with regard to these reflections, their application in the contemporary continues to be fruitful and effective (Ålund, 2020). This process takes the form of the continuous negotiation made by the player with *Night City*'s unfamiliar codes in language, social hierarchies, and techno-cultural rituals, the interpretive labor of which recalls the notion put forward by Schütz. The ideas expressed by both Simmel and Schütz regarding the foreigner are blended into the figure of V within *Cyberpunk 2077*. As a mercenary moving through *Night City*, V is simultaneously part of the metropolis and perpetually on its margins. Unlike the elite corporate or gang members deeply entrenched, he acts within a liminal space (Thomassen, 2016) in his attempts to belong to a group and at the same time stay detached from it, often unconsciously. Whatever

DOI 10.36158/97912566929418

path the character eventually goes for – to align himself with the corporate interests or to become a digital ghost, or an eternal nomad – the solution represents the existential problem of the stranger who continuously has to redefine his identity in a fluid and very often hostile environment (Jackson et al., 2017). This liminality also reflects the ethnographer's position in the digital field: both immersed and distanced, required to interpret meaning from within an unfamiliar symbolic system (Davies, 2012). Furthermore, the cybernetic augmentation and digital consciousness present in the *Night City* context intensify this sense of alienation. For example, V's interactions with Johnny Silverhand, the digital phantom embedded in his consciousness (Humphreys, 2015), make Schütz's notion of habitual knowledge disruption literal. V is not only socially alienated, but also ontologically, as his very sense of self is destabilised by the technological intrusion (Foucault, 1988; Gergen, 1996). The boundaries between self and other, between man and machine, blur in ways that allow the theoretical elaborations of Simmel and Schütz to be applied to the imaginative and speculative context developed by fiction and the spaces of cyberpunk (Heuser, 2003).

3.3. Night City *as a Space of Alienation and Possibility*

Beyond the alien's individual experience, *Night City* itself functions as a manifestation of urban alienation. The metropolis of *Cyberpunk 2077* is a space simultaneously characterised by radical freedom and overwhelming determinism, where characters can reinvent themselves in a multitude of different ways, but are simultaneously constrained by the technological, political and socio-economic structures of the city (Van Leeuwen, Maas, 2010). The city thus operates as a macro-field where individual trajectories intersect with structural forces, enacting a production of space as socially and technologically mediated (Lefebvre, 2014). Simmel's insights into the dual nature of urban life, the liberation of the individual from traditional bonds and the contemporary sense of isolation, deeply permeate and characterise *Night City* in its entirety. The city's digital interfaces, from virtual reality spaces to neural implants, further exacerbate the fragmentation of identity, reinforcing the theme of alienation in hyper-technological environments (Kellner, 2006). Documenting these environments through ethnographic observation reveals how digital architectures reproduce the same dynamics of alienation and control described by Simmel, but within the immaterial infrastructures of data, code, and simulation (Baudrillard, 1994).

4. Conclusions

The conclusions presented here stem from the digital ethnographic fieldwork conducted in *Cyberpunk 2077*, interpreted through classical and contemporary sociological frameworks. Through an ethnographic approach to the game platform and the theoretical contribution of classical sociology, *Cyberpunk 2077* can be conceived no longer as a mere playful environment, but as a device that offers a vision of the metropolis that is both a logical extension of modern urban conditions and an extrapolation of future technological alienation (Skotnicki, Nielsen, 2021). This dual reading – empirical and theoretical – demonstrates how ethnographic practice can be extended to simulated environments, treating them as spaces of social meaning rather than fiction. *Night City* embodies the exasperated rationality, sensory overload and impersonal

DOI 10.36158/97912566929418

transactions described by Simmel, while at the same time reinforcing Schütz's idea of the stranger – an experience also amplified by the protagonist's status as a "nomad" – existentially disoriented, struggling to juggle unfamiliar cultural landscapes and indifferent, aseptic and, at times, openly hostile human relationships. Cyberpunk as a genre, by its very nature, often has the function of reflecting, in an amplified manner, contemporary urban realities (Abbott, 2007). In an age where digital mediation increasingly shapes identity and interaction (Thompson, 2020), the themes of detachment, adaptation and existential uncertainty remain as relevant as ever. *Night City*, with its fusion of digital consciousness, corporate hegemony, and individual struggle, represents the culmination of these sociological tensions: a metropolis in which everyone is an outsider, but no one is truly free from the deterministic grip of its actual reality. *Night City* thus becomes a laboratory within which to observe the intersection of future screen technologies, digital urbanism and participatory media. From a methodological standpoint, conceiving the game as a laboratory underlines the potential of digital ethnography to explore hybrid social phenomena, where interaction and observation coincide within technologically mediated environments. By mapping the material culture, behaviour and spatial dynamics of its inhabitants, this experimental ethnography highlights the transformative impact of emerging media on narratives, imaginaries (Dunn, 2018), community interactions and urban reconfigurations. While digital and physical realities are incessantly on the move, often spiralling out of control (Brenner, Schmid, 2014), the study of speculative urban environments offers insights into the evolving shifting relationship of cities, their life within them, and technological infrastructures. In this sense, speculative urban spaces function as heuristic models that help anticipate and critically analyse future techno-social conditions. Future screens will not only reflect reality, but actively construct it, structuring how people live and move, not only in the network, but also in the factual realities. This finding supports recent research on the performative nature of digital infrastructures (Couldry & Hepp, 2018), where media architectures not only represent but actively organise social life. From a theoretical point of view, this raises crucial questions about the identity, autonomy and ethics of digital augmentation. The increasing entanglement of virtual and physical spaces space requires reconsidering the notion of human action in such mediated environments. Theories of posthumanism (Badmington, 2000) and digital embodiment (Taylor, 2002) suggest that such hybridised realities are not merely speculative fictions, but have predictive potential, and this potential makes them glimpses of a near future in which digital interconnectivity determines socio-political and personal existence. The future screen technology then emerges not only as an instrument of representation, but as a fundamental force in the ongoing transformation of cultural and urban spaces. The ethnographic reading of *Cyberpunk 2077* thus contributes to a broader understanding of the future screen as both an object of study and a methodological interface – an active medium through which contemporary urban experience can be observed, theorised, and anticipated.

4.1. *Rethinking Urban Engagement*

Beyond alienation, the ethnographic observation of player interactions and in-game collectives highlights emergent forms of digital community – temporary, networked, and often performative (Ohler, 2010). However, *Night City* also offers possibilities for new forms of community and meaning-making. If the status of foreigner initially leads to experiencing upheaval and disorientation, there is also a potential creative, synthetic di-

DOI 10.36158/97912566929418

mension in it: finding ways to integrate oneself into the new system or redefining one's role within it are present and experienced goals. This aspect should not be underestimated, as much in the game experience as in the reflection on its possible validity for contemporary social life. In the cyberpunk world, this dimension often takes the form of subcultures, hacker collectives or nomadic networks that resist the dominant corporate order, presenting themselves as an alternative from below to capitalist power dynamics seemingly without alternatives (Fisher, 2022). These virtual formations parallel the subcultural logics (Williams, 2011) identified in *Night City*'s player communities and NPC factions, suggesting that resistance and adaptation coexist even within systemically controlled environments. These countercultural movements, just like contemporary digital subcultures, represent alternative pathways to belonging in an otherwise alienating urban landscape, as well as potential stimuli for re-appropriating ever-changing urban spaces and as a possible community escape from new, ever-present forms of alienation. Beyond mere entertainment, the experience of this study provides possible insights into forms of urban and community design and human-computer interaction. This points to the heuristic value of experimental ethnography in digital contexts, whereby simulated interaction can reveal patterns relevant both to urban sociology and design research. If the city of the future is moving in the same direction as the *Night City* of *Cyberpunk 2077*, then it will also be necessary to revise current forms of citizenship, considering new experiences of digital citizenship. Understanding how immersive environments influence human behaviour provides valuable insights into the integration of smart city technologies and ethical considerations related to surveillance, data privacy and algorithmic governance. In this light, the ethnographic engagement with *Cyberpunk 2077* underlines the necessity of integrating sociological reflection into the design of future mediated urban systems.

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DOI 10.36158/97912566929418

The Gamification of Online Dating

Exploring the Intersection of Play, Choice, and Romance in Digital Spaces

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| abstract

The rise of online dating platforms has transformed the way individuals approach romantic relationships, with many users increasingly engaging in these platforms as a form of entertainment in addition to finding meaningful connections. Central to this shift is the growing phenomenon of gamification, the incorporation of game-like elements, into non-game contexts. This article proposes to explore the gamification of online dating, examining how these game mechanics shape user behaviours, influence romantic choices, and impact relationship outcomes. By analysing the ways in which dating platforms integrate game-inspired features, this study will also assess the implications of gamified experiences for the nature of dating in the digital age. Online dating platforms have revolutionised traditional dating practices, offering a more efficient and accessible way to meet potential partners. Over the past decade, however, a significant trend has emerged: the gamification of dating experiences. In the context of online dating, elements such as swiping, rankings, badges, and instant feedback have become common features that encourage user interaction. This article seeks to investigate the relationship between these gamified elements and the broader implications for identity construction, decision-making, and romantic engagement in online dating environments. Furthermore, this work aims to highlight potential implications of future gamified elements, such as the inclusion of immersive technology. The concept of gamification has gained significant academic attention across various fields, including education, marketing, and health. In the realm of online dating, previous research has explored the impact of swiping behaviour on attraction and decision-making, but there is a lack of comprehensive studies examining the gamified aspects of dating platforms. This article will draw on literature from social psychology, game studies, and digital culture to contextualise how gamification functions in online dating, and its implications on future romantic behaviour. This article will adopt a qualitative approach, utilising original research data to explore user experiences with gamification. These qualitative insights will help illuminate how users perceive gamified features, how these elements influence their dating behaviour, and whether they believe gamification enhances or detracts from the dating experience. The article will discuss the implications of gamification on the dating experience, exploring both the positive and negative consequences. On one hand, gamified features may enhance user engagement and create a sense of excitement. On the other hand, gamification may encourage superficial interactions, reduce the perceived authenticity of online connections, and foster a "game-like" mindset where users approach relationships with a transactional, competitive, or fleeting attitudes. The gamification of online dating is a complex and rapidly evolving phenomenon that has profound implications for how people approach relationships in the digital age. By examining how gamified elements impact user behaviour, romantic expectations, and identity construction, this article will contribute to a deeper understanding of the intersection between digital technology, romance, and play. The findings will be relevant to academics of digital culture, psychology, and social interaction, as well as to designers and marketers seeking to understand the effects of gamification on user engagement and experience.

DOI 10.36158/97912566929419

1. Introduction

The emergence of online dating platforms has profoundly transformed the ways in which individuals engage with romantic relationships, introducing new dimensions to both the pursuit of meaningful connections and the pursuit of entertainment (David & Cambre, 2016). As users increasingly treat these platforms not merely as tools for dating, but as interactive environments offering elements of amusement, this shift aligns with the broader trend of gamification, the integration of game-like features into non-game contexts (Rodrigues et al., 2019). Gamification, which has received significant academic attention across various domains, has been extensively studied in fields such as education (Zeybek & Saygi, 2023), marketing (Hofacker et al., 2016; Lucassen & Jansen, 2014), and health (Edwards et al., 2016). Within the context of online dating, the bulk of existing research has centred on individual user behaviours, such as swiping, and the impact of these actions on attraction and decision-making processes (David & Cambre, 2016). Despite this, a notable gap persists in the literature regarding the broader implications of gamified features within dating platforms, particularly in terms of how these elements influence the construction of romantic relationships.

In parallel, the growing integration of advanced screen technologies into the dating experience raises critical questions about how these technologies reshape users' understanding of intimacy. As dating platforms continue to blur the boundaries between physical and digital realms, they offer new modes of interaction that have the potential to redefine traditional notions of connection and closeness (Atkinson, 2019; Bonner-Thompson, 2017; Chambers, 2021). One such development is the advent of "future screens", wherein users engage with a digital interface that adapts to their preferences and behaviours, creating a dynamic experience that anticipates their romantic desires. This evolving digital landscape introduces complexities that challenge conventional understandings of intimacy, suggesting the need for further research. Specifically, there is a pressing need to examine how gamified features within online dating platforms not only shape users' behaviours but also fundamentally transform the very nature of intimacy itself.

In addition to existing critiques, the dynamics described throughout this paper can be further illuminated through the combined application of Ultra-Realist criminology and Octalysis gamification theory. Ultra-Realism, rooted in transcendental materialism and late-capitalist subjectivity (Hall & Winlow, 2015; Winlow & Hall, 2013), emphasises how harm emerges from the interaction between structural economic conditions, commodified identities, and the internalisation of market logics. This framework argues that digital platforms actively shape desiring dispositions, creating subjects who increasingly pursue stimulation, recognition, and emotional intensity through mediated interactions. Octalysis (Chou, 2015), by contrast, provides a micro-level motivational map explaining how specific platform design features harness and intensify human drives such as competition, reward-seeking, unpredictability, scarcity, and social validation. When combined, these theories reveal that online dating platforms do not merely facilitate connection but function as behaviour-shaping environments that monetise desire and cultivate emotionally volatile digital subjects. This integrated lens provides a more comprehensive explanation of why gamified dating environments produce such acute experiences of alienation, addictive cycles, emotional harm, and relational instability.

DOI 10.36158/97912566929419

2. How the Digital has Shaped Modern Relationships and Recreation

The development of dating practices and leisure activities are intricately linked, with both reflecting broader societal shifts, technological advancements, and changing cultural norms (Bandinelli, 2022). Over time, both dating and leisure have evolved from highly structured and controlled practices to more individualised and informal activities (Hill, 2024; Stoicescu, 2019). This transformation reveals much about societal values, the changing nature of personal relationships, and the increasing freedom individuals have to shape their own experiences (Finkel et al., 2012). Examining the development of dating and leisure together highlights how both have adapted to new social dynamics and how these shifts have affected the way people interact, form relationships, and spend their time. In earlier societies, dating and leisure were often heavily regulated by family expectations, religious norms, and social structures (Bergström, 2022). Leisure activities were frequently communal, with social events such as church gatherings, family picnics, and local fairs (Rojek, 1995; 1999; Stebbins, 2009) serving as opportunities for both entertainment and potential courtship (Lamont, 2013; Niehuis, 2008). Similarly, dating practices were formal and regulated by cultural norms, where courting was often done with the supervision of family members, and interactions between young men and women were highly prescribed (Bogle, 2008; Timmermans and Courtois, 2018). These structured forms of dating and leisure reflected a society that valued order, respectability, and clear social roles (Haywood and Ghaill, 2003; Lamont, 2013).

Over the course of the 20th century, profound societal changes including the rise of individualism, urbanisation, and the rapid expansion of new technologies began to reshape the practices surrounding both dating and leisure (Kennedy, 2017; Winlow and Hall, 2013). Central to this transformation was an increasing emphasis on personal autonomy, which led to more informal and individualised approaches to dating (Garcia et al., 2012; Timmermans and Courtois, 2018). People began to exercise greater freedom in choosing their partners, with minimal familial oversight or societal expectations dictating their choices (Bogle, 2008; Illouz, 2007; 2019). This shift paralleled the rise of digital technologies (High et al., 2024), especially the proliferation of mass media such as television and film, and later the Internet, which played a significant role in shaping individuals' understandings of love, relationships, and romantic expectations (Bergström, 2022; Crary, 2022). As these technologies spread, they not only influenced cultural norms but also contributed to a growing shift toward the pursuit of personal fulfilment, often at the expense of traditional notions of social conformity (Fullick, 2013; Homnack, 2015; Liew et al., 2023; Lutz and Ranzini, 2017). Leisure, too, underwent a radical transformation during this period, moving from structured, community-centred activities to more individualised, often digital, forms of entertainment. The advent of mass media, and later the Internet, introduced new ways for individuals to spend their free time, providing access to a broader range of leisure activities (López-Sintas et al., 2017). In the mid-20th century, the rise of consumer culture further accelerated this shift, as entertainment options grew more diverse and commercially accessible, marking the beginning of leisure's commercialisation (Raymen and Smith, 2015, 2019; Smith, 2014; Stebbins, 2009). Digital platforms, particularly those powered by the Internet, played a crucial role in reconfiguring leisure practices, enabling individuals to curate their experiences in ways that were previously unimaginable (Hamad and Jia, 2022; Zhou et al., 2024).

The onset of the digital age brought about significant changes in dating practices, which became especially evident with the development of online dating platforms

DOI 10.36158/97912566929419

(Bergström, 2022 Crary, 2013; Illouz, 2007, 2019; LeFebvre, 2017). Websites such as Match.com and, more recently, Tinder revolutionised how individuals meet potential partners, creating new opportunities for connection that transcend geographic and social boundaries. These platforms, initially designed for dating, have laid the groundwork for the growing convergence of dating and leisure in the digital realm (Blackwell et al., 2014; Bonilla-Zorita et al., 2020; Finkel et al., 2012; Gottschalk, 2018; Timmermans and Courtois, 2018). Furthermore, the proliferation of social media platforms such as Facebook, Instagram, and Twitter further altered the dynamics of romantic engagement. These digital spaces allowed individuals to cultivate and curate their online identities, providing new forms of self-expression and interaction that extended into both social and romantic contexts (Beer and Burrows, 2007, 2010; Ellison, 2007). In addition to these shifts, dating and leisure practices became increasingly intertwined through platforms that promoted shared interests or activities (Finkel et al., 2012; Whitty and Buchanan, 2009). Dating apps, for instance, increasingly allowed users to meet based on common hobbies or experiences, blurring the lines between romantic pursuit and recreational activities. As a result, dating itself began to be framed as a form of leisure, with couples now meeting through apps or social media based on mutual interests, often in virtual or real-world spaces (Dobson and Ogolsky, 2021). In this context, relationships themselves became a form of digital entertainment, reshaped into a spectacle consumed by a broader audience (Heino et al., 2010; Illouz, 2007). This intersection of dating with digital leisure spaces therefore raises critical questions regarding the authenticity of modern relationships, particularly in light of the role that public personas and curated digital identities play in private romantic engagements.

Viewed through an Ultra-Realist lens, these transformations are not merely cultural but structurally generated. The rise of digital dating coincides with the intensification of neoliberal individualisation, the collapse of stable communal spaces, and the marketisation of identity (Giddens, 1992; Illouz, 2007). Ultra-Realism argues that individuals increasingly rely on commodified forms of leisure and app-based romantic encounters to generate fleeting moments of recognition and relief (Hall & Winlow, 2015). When analysed through Octalysis, this shift is strengthened by platform design that deliberately activates Core Drives such as Scarcity, Accomplishment, and Unpredictability, engineering environments where users are compelled to pursue constant emotional stimulation and reward feedback (Chou, 2015). Thus, digital dating becomes a site in which economic precarity, cultural consumerism, and behavioural design converge to produce a relationship marketplace characterised by disposability, intensity, and emotional volatility.

Despite the new freedoms and opportunities for self-expression these developments offer, there are significant concerns about the informalisation and commercialisation of dating and leisure (Baxter, 2013; Constable, 2009; David and Cambre, 2016; Fullick, 2013; Heino et al., 2010; Hess and Flores; 2016; LeFebvre, 2017; Timmerman and Courtois; 2018). For example, the rise of "hook-up" culture reflects a move away from traditional dating rituals, favouring casual, often fleeting encounters over long-term commitments. This shift has sparked debates about its potential impact on the values historically associated with enduring relationships (Bogle, 2008; Braboy Jackson et al., 2011; Lutz and Ranzini, 2017; Sales, 2015; Thompson, 2018; Vera Cruz et al., 2024). Similarly, the commodification of leisure through apps, streaming services, and social media platforms has led to a highly curated, at times superficial, understanding of enjoyment and fulfilment (Stebbins, 2001; 2015). This transformation can result in the normalisation of transient experiences,

DOI 10.36158/97912566929419

with both leisure and dating being increasingly treated as disposable, rather than meaningful, pursuits that require long-term investment or personal growth (Homnack, 2015; Stebbins, 2015; Vera Cruz, 2024; Wong AnKee and Yazdanifard, 2015). The rise of casual encounters, combined with the pervasive influence of digital platforms, has the potential to foster social isolation or unhealthy relationship patterns. The relentless pursuit of constant stimulation whether through entertainment or romantic experiences can also contribute to feelings of emptiness and dissatisfaction, emotions that are often exacerbated by the very technologies designed to facilitate these pursuits (Homnack, 2015; Illouz, 2019; Nowland et al., 2017; Smith and Alheneidi, 2023).

At its core, the intersection of digital technologies with dating and leisure practices highlights a society increasingly oriented toward immediate gratification and personal pleasure (Birnholtz et al., 2014; Lapidot-Lefler and Barak, 2012; Sutko and De Souza e Silva, 2011). However, this trend also points to the potential neglect of deeper, more enduring forms of connection and fulfilment (Fetters and Tiffany, 2020; Klein, 2022; Wade, 2017). Simultaneously, these evolving practices underscore a growing emphasis on autonomy, choice, and self-determined enjoyment (Fisher, 2009; Hall, 2012; McCreanor et al., 2013), offering the possibility of creating more inclusive, diverse spaces where people can challenge traditional norms, explore new identities, and express themselves in ways that were once unimaginable (Wong AnKee and Yazdanifard, 2015).

While these developments offer new avenues for freedom and self-expression, they also raise pressing questions about the nature of human connection, the role of authenticity in relationships, and the pursuit of lasting fulfilment (Strubel and Petrie, 2017). The integration of immersive technologies such as virtual reality (VR) into dating practices, while offering novel modes of engagement, also challenges traditional notions of intimacy and emotional connection. As these technologies evolve, so too will the ways in which individuals navigate both romantic and recreational interactions, influenced by ongoing technological innovation and shifting societal norms (Glover, 2024). Therefore, implications for authentic relational experiences in such environments warrant ongoing scrutiny and critical examination.

3. Methodology

Previous criminological research on online dating has predominantly focused on the direct harms experienced by its users. These harms often include, but are not limited to, unwanted sexual advances and aggression (Banet-Weiser and Miltner, 2015; Hakala, 2015; Hess and Flores, 2016; Lapidot-Lefler and Barak, 2012); misogyny and sexual harassment (Anderson et al., 2020; Barton and Mabry, 2018; Jane, 2016; Lundquist & Curlington, 2019; Thompson, 2018; Timmermans and Courtois, 2018), romance fraud (Cross et al., 2018), and sexual assault (Ahillon, 2019). While such research has provided valuable insights, it has often overlooked the broader factors influencing users' experiences, particularly the role of technological advancements in shaping online dating dynamics. By shifting the focus to these structural and technological influences, this research aims to highlight how digital innovation may not only exacerbate existing harms but also generate new, socially corrosive issues. It further explores how online dating, leisure, gamification, and relationship construction are deeply intertwined due to the enmeshment of the digital with everyday life (Bonner-Thompson, 2017; Cochoy, 2017; Gottschalk, 2018; Koch and Miles, 2020).

DOI 10.36158/97912566929419

To capture the nuanced, subjective experiences that shape user interactions with dating apps, a qualitative approach was employed (Johnson et al., 2023). Participants were selected based on the criteria of being over 18, actively using online dating platforms, and residing in Plymouth. The final sample included 19 individuals: 14 females and 5 males, including one bisexual participant, one gay male, and three lesbians. Data were collected through face-to-face, semi-structured interviews lasting between 1–3 hours. These extended interviews allowed for rapport-building and the collection of rich, in-depth data about participants' experiences, while supplemental netnographic engagement with social media groups provided insight into digital interactions and content. This combination of methods offered a holistic perspective, bridging the real and virtual worlds and highlighting the reciprocal influence of each on user experiences.

The interview data were analysed using an inductive thematic approach (Braun & Clarke, 2022), enabling themes to emerge directly from the participants' accounts rather than being imposed a priori. This approach, informed by critical realism (Bhaskar, 2020) and ultra-realist criminology (Hall & Winlow, 2015), allowed the study to capture the interplay between individual experiences and the broader structural forces shaping them. The analysis revealed patterns of harm, emotional labour, and behavioural adaptation that would have been difficult to identify through quantitative methods alone, demonstrating the value of in-depth qualitative research in understanding online dating dynamics.

Building on these findings, this study introduces the Ultra-Realist Octalysis Framework for Digital Dating Harm (URODDH), which synthesises structural criminological analysis with behavioural design theory. At the macro level, Ultra-Realism explains how the political economy of late capitalism shapes cultural expectations around intimacy, fostering subjects oriented toward stimulation, recognition, and rapid emotional consumption (Hall & Winlow, 2015). At the micro level, Octalysis accounts for how platform architectures operationalise these tendencies by activating motivational drives embedded in gamified systems (Chou, 2015). Together, URODDH conceptualises dating platforms as behavioural-economic environments in which user subjectivity, emotional labour, and interpersonal relations are patterned to maximise engagement.

The framework identifies three interrelated layers of harm:

- Structural Harm – the socio-economic and political conditions underpinning digital dating, including commodification of intimacy, competitive individualism, and precarity (Illouz, 2007; Raymen & Smith, 2019).
- Design-Induced Motivational Harm – the activation of Octalysis Core Drives such as Scarcity, Accomplishment, and Unpredictability, creating compulsive usage loops and intensifying emotional volatility.
- Subjective Harm – the experiential consequences for users, encompassing alienation, identity fragmentation, emotional turbulence, and manipulated desire.

By integrating these layers, URODDH frames online dating platforms not as neutral intermediaries but as systems that actively shape, discipline, and monetise emotional life. This conceptual lens situates the harms observed in the study as emergent outcomes of both structural socio-economic forces and platform-level behavioural design mechanisms, illustrating the intertwined realities of digital and offline experiences in contemporary dating.

DOI 10.36158/97912566929419

4. The Influence of Gamified Elements on User Behaviour and Engagement

The integration of gamified elements in online dating platforms has significantly transformed the landscape of digital romance. Gamification, the application of game-design principles such as rewards, progression, and competition, aims to enhance user engagement and interaction (Mackinnon, 2022; Nader, 2024). In the context of online dating, these elements are strategically incorporated to shape user behaviour, foster consistent platform engagement, and optimize match-making outcomes (Cicchirillo et al., 2025). However, while gamification has proven effective in maintaining user interest, it raises questions about its long-term impact on user experiences, relationships, and perceptions of intimacy.

Beyond psychological and behavioural effects, gamified design must also be understood in relation to the broader attention and distraction economy that structures digital platform capitalism. Dating apps, like social media platforms, monetise user engagement rather than relational success. Their profitability depends on sustaining cycles of swiping, matching and messaging, not on facilitating long-term connection (Bandinelli and Bandinelli, 2021; Rochat et al., 2023). As such, gamified mechanics, scarcity, unpredictability, intermittent rewards, competitive ranking, function as tools for capturing and retaining attention, generating data, and extending users' presence within the app.

From an Ultra-Realist perspective, this reflects the wider dynamics of libidinal capitalism, wherein platforms capitalise on subjects' desire for stimulation, novelty and recognition (Hall and Winlow, 2015; Winlow and Hall, 2013). Octalysis helps clarify how these profit motives become operationalised at the micro level: features that maximise retention (Drive 7 Unpredictability, Drive 2 Accomplishment, and Drive 6 Scarcity) are precisely those that intensify emotional volatility and compulsive interaction (Chou, 2015). In this sense, gamification is not simply a design choice, but a commercial strategy embedded in the political economy of the attention market.

Online dating platforms have long struggled with the challenge of sustaining user engagement. With an increasing number of competitors in the market, platforms must consistently innovate to retain their users (Huang et al., 2024). Gamified elements have been introduced to address this issue, tapping into the fundamental human desire for achievement, recognition, and competition (Hall and Winlow, 2015; Wakeman, 2017), gamification uses structures such as rewards, progression, swipes, and competition to encourages sustained interaction (Mackinnon, 2022; Nader, 2024; Cicchirillo et al., 2025) through positive reinforcement (Hand, 2017; Gardiner, 2012; Timmermans and De Caluwe, 2017; Vera Cruz et al., 2024). By providing users with a sense of accomplishment and progression, dating apps make the experience more interactive and rewarding (David and Cambre, 2016; Timmermans and De Caluwé, 2017; Wu and Trottier, 2022). However, while these features maintain interest, participant accounts reveal how gamification can foster compulsive engagement, superficial connection, and misrepresentation.

Through setting up systems where users receive instant gratification through positive reinforcement, dating platforms engage users in repetitive behaviours, often leading to prolonged app usage. One participant, a 34yr old, bisexual female acknowledged this ease and prolonged use:

> Participant 3: *Well, I've been using them [dating apps] for a few years now, not like constantly, but on and off. I just find them easier to use, like, I can look at and talk to people anytime,*

DOI 10.36158/97912566929419

> *anywhere and I don't have to guess who is interested in me. It's clear [through likes]. I can sit and swipe for hours, and I prefer that. It's so hard trying to meet people now, and I've always been bad at knowing when someone likes me, especially women, and I don't exactly find it easy to flirt in person either. So, yeah, this way I guess, I guess I get to also see how many likes and messages and how much interest there is too.*

This illustrates how swiping, likes, and feedback activate Octalysis Core Drives, Accomplishment (Drive 2), Social Influence (Drive 5), Scarcity (Drive 6), and Unpredictability (Drive 7) thus creating repetitive engagement cycles (Chou, 2015). These loops resemble gambling systems, generating both gratification and compulsion (Nieborg and Poell, 2018). This was also noted within a social media thread on a page called "To Catch a Catfish", which is designed for users to interact with one another about potentially fraudulent profiles, as well as any concerning behaviour from other online dating app users. Within this thread one user posted an image of a male asking if anyone else was speaking to him as she felt their connection could be progressing toward a serious relationship. One group member commented:

> *He's on all of the dating sites, I see him all of the time! Has been for years! Probably just likes all the attention he gets* 🙄.

This evidences not only the competitive and superficial dynamics, amplified by gamified design but also the addictive nature of online dating platforms, and the impact of their instantaneity with individuals focusing on the thrill of the interaction rather than the depth of connection (Varsava, 2017; Wiederhold, 2015). Additionally, this comment highlights another critical gamified element within many online dating platforms, competition. Features like ranking systems, badges, or the ability to see how many people have liked a profile introduce an element of social comparison (García-Jurado et al., 2021). Users are not only interacting with potential matches but also competing for attention and validation. This gamified competition is particularly evident in apps like Tinder, where the "swipe" feature places users in a competitive environment, constantly comparing their desirability and social status with others (Gottschalk, 2018; Hakala, 2015; Thompson, 2018). While competition can encourage users to present their best selves, updating profiles, uploading more attractive photos, and engaging in more frequent interactions (Egan, 2003; Fullick, 2013; Singh, 2004; Toma and Hancock, 2010; Whitty and Carr, 2006), this can also lead to negative outcomes. The pressure to win in the dating "game" can result in users curating idealised versions of themselves, leading to a misrepresentation of identity and, consequently, the potential for disappointment and dissatisfaction when real-world interactions fail to meet the expectations set by the gamified interface (Bandinelli and Gandini, 2022; Chen et al., 2023; Ellison et al., 2006; Fullick, 2013; Hobbs et al., 2017; Homnack, 2015; Wong AnKee and Yazdanifard, 2015). Users' focus on competition and attention mirrors structural pressures identified in Ultra-Realism. Dating apps operate within libidinal capitalism, cultivating subjects oriented toward stimulation and recognition to offset boredom, alienation, and precarity (Hall and Winlow, 2018; Raymen and Smith, 2019). For many of the participant the experience of misrepresentation and dissatisfaction had occurred numerable times as evidenced by participant 18, a 24year old male, heterosexual student.

> Participant 8: *I think one of the most difficult things with judging connection online is that you don't really know who you're connecting with, not really, not until you meet. I wouldn't*

DOI 10.36158/97912566929419

> *say I've had any really bad encounters where the person that I met was nothing like their profile, but there have been times where they've used old photos, edited or filtered pictures you know. I do remember I met this one girl who blatantly lied about her interests too. She said she adventurous and loved going on dog walks and that, when we met, I asked where her favourite places to walk were and she just started laughing. I know they may not seem like big things, but if you're willing to lie or even twist the truth a little, what does that say if you get into a relationship?*

This phenomenon is often referred to as the "paradox of choice", where users are faced with an overwhelming number of options but are unable to find lasting or meaningful connections due to the shallow nature of interactions spurred by competition (Pronk and Denissen, 2019). While gamified elements in online dating platforms are designed to enhance user engagement, they also have complex psychological effects. The constant pursuit of validation through likes, matches, and competition can lead to an unhealthy fixation on external approval, which in turn can affect an individual's self-esteem and emotional well-being (Berdychevsky and Carr, 2020; Berdychevsky et al., 2013; Tepper, 2000). The "dopamine loop" generated by gamification may also contribute to addictive patterns of behaviour, where users engage with the platform excessively, hoping for the next reward or validation. This cycle can distort users' perceptions of dating, turning it into a game rather than a genuine social activity (Abolfahti and Santamaria, 2020 and Albury, 2017; David and Cambre, 2016). Another participant, a 19yr old male student elaborated on their use of the platform Tinder:

> Participant 6: *I use it all the time, it's sounds bad probably. I'll go on it when I wake up, on my way to uni, in lectures, it's definitely addictive. Me and my housemate's even use it at pre's [predrinks] checking each other's profiles, swiping for each other, betting on who can get the most matches. So yeah, I dunno it's definitely a habit now, almost like a game. I often use all of my 100 swipes in a day so quickly as well, just because like I don't even really realise, I've swiped that much. It's like oops all my lives have gone; do you know what I mean?*

It is this emphasis on instant gratification and short-term rewards that can hinder the development of meaningful, long-term relationships (Illouz, 2007). Users may become more focused on the immediate excitement of new matches rather than the deeper emotional investment that sustained relationships require, where users are viewed as "points" or "achievements" rather than individuals thus contributing to feelings of emotional disconnection and dissatisfaction (Aron, 2012; Diener and Seligman, 2002; Finkel et al., 2012). The "paradox of choice" further amplifies superficiality: endless options paired with gamified reward structures encourage rapid cycling through potential matches, hindering meaningful connections (Pronk and Denissen, 2019). The combination of gamification and Ultra-Realist socio-economic pressures explains why users remain engaged despite dissatisfaction and fleeting connection. From an Ultra-Realist perspective, these gamified dynamics reflect broader socio-economic logics in which individuals are conditioned to internalise competitive behaviours, instrumental rationality, and the perpetual search for stimulating experiences (Raymen and Smith, 2019).

The user testimonies in this study reveal subjectivities shaped by what Hall and Winlow (2018) describe as libidinal capitalism, wherein individuals seek emotional intensity to offset feelings of boredom, alienation, and existential drift. When analysed via the Octalysis framework, key features of dating apps such as limitless swiping, real-time

DOI 10.36158/97912566929419

feedback, match counts, and reward loops, activate Drives 2 (Accomplishment), 5 (Social Influence), 6 (Scarcity), and 7 (Unpredictability). The result is a self-perpetuating behavioural cycle that mirrors the reward structures of gambling and fast-paced mobile gaming (Chou, 2015; Nieborg and Poell, 2018), fostering compulsive engagement even when users report dissatisfaction. This aligns with Ultra-Realism's argument that harmful behaviours persist not because individuals are unaware of the harm (see Žižek's cultural injunction to enjoy), but because the platform architecture provides momentary relief and identity-affirming stimuli. It is apparent that these features have transformed the dating experience into an interactive, reward-based activity that sustains user interest in the short term. However, the long-term effects of these gamified elements raise concerns regarding their impact on the authenticity of connections, emotional well-being, and perceptions of intimacy. As online dating platforms continue to innovate, it is crucial to balance the mechanics of gamification with an understanding of its psychological consequences, ensuring that users can engage in meaningful and fulfilling relationships in a way that transcends the gamified elements of the platform.

Ultra-Realism suggests that immersive dating technologies represent an intensification of the market's ability to shape desire by producing hyper-stimulating digital environments that compete with, and potentially overshadow, offline relational life (Atkinson, 2019). VR and AR spaces extend the logics of consumer capitalism into affective interaction, enabling platforms to manipulate desire through sensory immersion and personalised digital architectures. Octalysis helps identify why these environments are particularly potent: VR dating leverages Core Drive 3 (Empowerment of Creativity) through avatar design, 1 (Epic Meaning) via immersive shared experiences, and 7 (Unpredictability) through dynamic virtual environments. These systems create deeply engaging experiences that may surpass the emotional resonance of physical dating. Ultra-Realism warns, however, that such technological intensification risks deepening subjective fragmentation, as individuals oscillate between curated virtual identities and less gratifying offline realities (Chou, 2015; González-Padilla et al., 2025).

Ultra-Realism offers a critical framework for understanding why the emotional and behavioural patterns observed in this study emerge so consistently across digital dating contexts. Rather than viewing problematic engagement as the product of individual deficits, Ultra-Realism locates these harms within the wider structural and cultural conditions of late capitalism, including precarity, fragmented social bonds, commodified identities, and the persistent search for excitement and meaning (Hall and Winlow, 2015; Winlow and Hall, 2013). The dating app environment aligns closely with what Ultra-Realist scholars describe as a libidinal economy, wherein individuals pursue short bursts of stimulation, validation, or emotional relief to counteract boredom, alienation, and ontological insecurity (Raymen and Smith, 2019). The compulsive swiping, constant comparison, and rapid transitions between potential partners identified by participants therefore reflect deeper socio-economic pressures that shape desire and self-worth.

Gamification theory, particularly Chou's (2015) Octalysis framework provides a complementary micro-level account of how digital platforms operationalise these conditions through design. Core Drives such as Unpredictability, Accomplishment, Scarcity, and Social Influence are activated through swipe mechanics, limited-time boosts, algorithmic visibility, and match notifications. These gamified structures generate reinforcement loops that resemble gambling systems (Nieborg and Poell, 2018), producing a cycle of reward anticipation and emotional instability. What Ultra-Realism adds is an understand-

DOI 10.36158/97912566929419

ing of why these mechanisms are so effective: users are already primed, through wider social and economic conditions, to seek intense but fleeting affective experiences that offer temporary relief from everyday pressures.

Combined, Ultra-Realism and Octalysis reveal that dating apps function not just as tools for connection but as behaviour-shaping environments that monetise attention, desire, and emotional insecurity. They demonstrate that dating platforms amplify pre-existing vulnerabilities by providing rapid, gamified routes to recognition and stimulation. This integrated theoretical lens is essential for interpreting the findings of this study and for understanding why the harms associated with digital dating persist despite widespread user dissatisfaction.

5. Technological Developments in Online Dating: The Use of Technology

It is evident that recent technological advancements have significantly transformed the landscape of online dating, and that the inclusion of gamified structures have impacted the way in which individuals interact with both the applications and each other. Whilst traditionally, dating platforms have primarily utilised basic digital tools such as text-based communication and photos to facilitate connections between users (David and Cambre, 2016; Finkle et al., 2012), there is now an advent of immersive technologies specifically Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), which are beginning to redefine how individuals interact in the digital dating space (Bailey, 2017).

VR, AR, and MR each offer unique possibilities for enhancing online dating experiences. VR technology, for example, allows users to immerse themselves in fully virtual environments, offering the opportunity to simulate face-to-face interactions without the need for physical presence (Wiederhold, 2016). Through VR headsets, users can create avatars and engage in lifelike simulations, participating in dates, social gatherings, or even entire virtual worlds designed for interaction (Bailey, 2017; Sharabl, 2022). The sense of presence facilitated by VR can enhance feelings of connection and intimacy, which are often challenging to establish in text-based or video-chat settings (Sharma and Muise, 2025). Similarly, AR overlays digital elements onto the physical world, providing users with the ability to interact with virtual components in their real-world environment (Appel et al., 2023). In online dating, this could translate into features like virtual avatars interacting with users in their homes or AR-enabled apps that enhance profiles with interactive elements (Wang et al., 2023). MR, which blends elements of both VR and AR, takes this concept a step further by allowing users to interact with both the real and virtual world simultaneously, offering a richer and more dynamic experience. MR can enable users to see virtual profiles or avatars in real-time within physical spaces, further blurring the lines between the virtual and real worlds (Bonner-Thompson, 2017; Chambers, 2021; Partner, 2020). It is this notion of connection and intimacy irrespective of distance, or time, which many participants found alluring in the context of online dating, particularly during the Covid-19 pandemic, which saw a surge in the use of dating applications (De' et al., 2020).

> Participant 9: *Well I had actually planned to meet someone just before the lockdown hit, and when they said we needed to isolate I was like "oh shit". I really liked them, and we'd been talking for a couple weeks, and I was excited to actually physically see them and connect. It*

DOI 10.36158/97912566929419

was like a huge come down because I didn't know when we'd see each other. Luckily, we were able to do a sort of video date and ended up spending loads of time like that really.

Participant 4: *I'm a busy person you know, I have a full-time job, kids, a whole life. I don't have time to get all dressed up, go to all these places and try to meet someone. I hate being single though, I do get lonely, and it's sad. I can't say the apps have worked their magic for me yet, but the option to do it [date] in my own time and from home, when I'm most lonely, it just works for me. I can chat to someone, build a connection, even some sexual intimacy, though it's not really physical it's on my terms.*

Immersive technologies, when combined with gamification, intensify reward-driven engagement. Octalysis Core Drives of Empowerment of Creativity (Drive 3), Epic Meaning (Drive 1), and Unpredictability (Drive 7) are activated via avatars, shared experiences, and dynamic virtual environments. It is therefore evident that one of the key benefits of online dating, and the inclusion of immersive technologies is the potential to create deeper emotional connections between users (Appel et al., 2023; Wang et al., 2023), something which traditional text and image-based communication can often lack, offering only a superficial sense of engagement (Varsava, 2017). With VR, for instance, users can have "real" experiences with potential partners, navigating virtual environments and engaging in shared activities that promote authentic interaction (Bailey, 2017). The ability to simulate face-to-face interactions in a virtual world could foster a greater sense of presence and closeness compared to the traditional online dating experience, where users rely on pictures and brief descriptions (Wiederhold, 2016). This could provide a potential solution for social barriers, such as the lack of physicality in the dating process, which often induces feelings of apprehension, sweaty palms, and tied tongues (Frazzetto, 2009). Additionally, for individuals who experience anxiety in face-to-face interactions or feel self-conscious about their physical appearance, VR or AR can offer a way to engage without the same level of vulnerability (Spytska, 2024). Furthermore, for those with disabilities, these technologies could offer a more accessible and inclusive platform for connection, eliminating the physical limitations of real-world dating (Stendal et al., 2010).

Despite these potential benefits, the integration of immersive technology in online dating raises several ethical and psychological concerns. The ability to create and interact with avatars that are not bound by physical reality could lead to a disconnection between virtual and real-world identities. Users may become overly attached to their avatars, blurring the lines between their digital selves and physical reality. This dissonance could lead to issues of identity confusion and distorted self-perception, particularly if the avatars present an idealised version of the user that is unattainable in real life (González-Padilla et al., 2025). Furthermore, the emotional effects of immersive dating experiences are not fully understood. While they can create engaging and lifelike experiences (Bailey, 2017; Wiederhold, 2016), the emotional depth of these connections may not translate to the physical world (Varsava, 2017). Users may experience a form of "disembodiment" or emotional detachment, where the virtual relationships lack the tangible and sensory elements that come with real-world intimacy (Moura et al., 2021), a concern already established in research surrounding traditional dating platforms (Finkel et al., 2012; Varsava, 2017; Wong AnKee and Yazdanifard, 2015). Additionally, the anonymity afforded by avatars and virtual personas, much like the freedom to curate an idealistic dating profile (Hakala, 2015; Hess and Flores, 2016; Homnack, 2015; Lapidot-Lefler and Barak, 2012; Toma and Hancock, 2010) may encourage deception or

DOI 10.36158/97912566929419

misrepresentation, leading to distrust or disappointment when users meet in person (Schultze and Leahy, 2009). This sense of disappointment was highlighted throughout this study, with participants acknowledging the opportunity for curation throughout the dating process.

> Participant 2: *I guess because you have time, so anyone can say anything. Like I could message someone in the morning, they read it and then they have as much time to think about how they want to respond. Its not like a normal conversation, they could literally make anything up, tell you what you want to hear, then once you meet, they already know all of your likes and dislikes so can try and go around them if they really want to.*

> Participant 18: *Sometimes it's like scrolling through a sea of the same pictures, the same style, the same haircut, the same bio's because everyone has this image of what perfect is, and what's going to get them the most attention. The sad thing is that they're not going to get anyone, not long term anyway. Who's gonna want to be with someone who's not being themselves, its shit for them and the person talking to them, like just be honest.*

It is evident that the integration of gamified structures, and immersive technology into online dating platforms has the potential to revolutionise the way people connect and interact in the digital world. These technologies offer unprecedented opportunities for engagement, offering users a chance to build more immersive and meaningful relationships. However, as with any technological advancement, the rise of immersive dating experiences is not without its challenges. Issues surrounding identity, privacy, and emotional well-being must be carefully considered to ensure that these innovations contribute positively to the evolving landscape of online relationships. These reflections illustrate the tension between engagement and authenticity, whereby immersive gamified environments enhance perceived connection, yet can encourage curated self-presentation, superficial interaction, and transactional relationality.

6. The Long-Term Implications of Immersive Technology on Online Dating

As immersive technologies continue to develop apace, and become increasingly integrated into the online dating industry, they also introduce significant ethical and safety concerns. For developers and marketers involved in immersive technology, understanding the long-term implications of these innovations is crucial in ensuring that products and platforms are not only engaging but also safe and responsible. Immersive online dating platforms promise to replicate the sensory and emotional experiences of in-person interactions. As users engage with virtual avatars and environments, the line between the digital and physical worlds becomes increasingly blurred (Bailey, 2017). For developers, this raises critical questions about how to establish clear boundaries and enforce ethical behaviour in virtual spaces. In traditional online dating, communication is often mediated through well-established norms of what constitutes acceptable interaction (Hakala, 2015; Hess and Flores, 2015; Thompson, 2018). However, in immersive environments, where physical proximity and movement are simulated, users may feel emboldened to push boundaries in ways that might not be socially acceptable in the physical world (Karapatakis, 2025; Porta et al., 2023).

DOI 10.36158/97912566929419

One of the most pressing concerns surrounding immersive technology in online dating is the potential for virtual sexual assault (Henry and Powell, 2015; Karapatakis, 2025) In these spaces, unwanted interactions such as an avatar engaging in inappropriate touch or sexual gestures could cause significant emotional harm to victims, even if physical harm is not possible (Trotter, 2024; Vallance, 2024). For tech developers, addressing the issue of consent and harassment in virtual environments must be a priority. Creating systems for explicit consent, where users can clearly communicate their boundaries and indicate whether they are comfortable with specific interactions, is essential for preventing virtual sexual assault. Furthermore, developers need to consider the psychological impact of these interactions (Henry and Powell, 2015). Even though virtual sexual assault may not involve physical touch, the emotional and psychological effects on victims can be profound (Vallance, 2024). This can be likened to the receival of unsolicited images, or sexual messages on traditional dating platforms which are arguably comparable to real life street harassment (Hakala, 2015; Thompson, 2018). For several of the female participants the impact of these experiences were apparent:

> Participant 4: *I don't know what it is with them [men] sending dick pics, its gross! They'd never just flash you in public, would they? Oh, and don't get me started with some of the ridiculous messages I've had asking for a shag, or for me to send naked pictures, it really gets to me. Sometimes I just think, why am I bothering? Surely, I'm worth more than just sex.*

> Participant 15: *People literally just use it [online dating] for sex now. I think I get more messages asking for sex or making some sort of rude, and ludicrous comment about me. It's depressing, and I guess kind of ironic, like I use these [dating apps] to find someone to be with, connect with, and actually I just get treated like some sort of sex toy, like I don't matter.*

Within the realm of traditional dating platforms, an emphasis on image, and connotations of sex and instant gratification are regularly normalised (Lapidot-Lefler and Barak, 2012; Vera Cruz et al., 2024). As virtual interactions become increasingly realistic, the potential for objectification and commodification of individuals, particularly women grows (Kteily and Landry, 2022). In immersive spaces, users may feel empowered to treat others as mere objects for gratification, dehumanising them in the process, exacerbating pre-existing issues of sexual harassment and inequality that are already prevalent in online and offline dating environments (Derk, 2016; Finkel et al., 2012; Hess and Flores, 2015).

As immersive technologies continue to evolve, developers and marketers in the online dating industry must prioritize ethical development practices and responsible marketing strategies to help mitigate these harms, and the development for new future harms. Tech developers have a responsibility to build platforms that prioritize user safety, privacy, and consent. This involves not only creating technological safeguards to prevent harassment and exploitation but also considering the broader social and cultural implications of these technologies. For developers, addressing this challenge requires a deep understanding of the social dynamics at play in immersive environments, including broader influences of commodification, addiction and societal ideologies. Features that promote mutual respect, inclusivity, and diversity should be integral to the design of virtual dating platforms, as should working closely with psychologists, sociologists, and other experts to ensure that their platforms do not inadvertently encourage the normalization of exploitation or harmful behaviours. Marketers, too, have a critical role to play

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in shaping how immersive dating platforms are perceived. By emphasizing positive aspects of the technology and encouraging healthy relationship dynamics, marketers can help counteract any potential negative effects of immersive technology within dating platforms. Campaigns which promote discussions about consent, mutual respect, and online safety can help to raise awareness of the potential risks associated with immersive dating technology.

These concerns become more acute when immersive technologies are contextualised within the commercial imperatives of platform capitalism. VR/AR/MR dating environments introduce novel, monetisable forms of user engagement, including premium virtual spaces, avatar customisation, exclusive events, and AI-mediated relational experiences (Bailey, 2017; Hamad and Jia, 2022). As platforms increasingly adopt microtransaction-based and subscription-based revenue models, the economic incentive shifts toward deepening emotional entanglement with the platform rather than facilitating successful relational off-ramps (Liew et al., 2023). Immersive architectures therefore risk reinforcing the core dynamics of the attention and distraction economy: extending time-on-platform, amplifying emotional dependency, and foregrounding technologically mediated intimacy that is profitable precisely insofar as it remains unresolved or incomplete (Varsava, 2017; Bandinelli, 2022). This raises significant questions regarding whether digital dating companies operating within such economic structures can meaningfully prioritise user wellbeing or long-term relational success while relying on engagement-driven design for financial viability.

Ultra-Realism situates these harms within structural conditions, dating platforms operate as libidinal economies where users' desires for recognition, stimulation, and emotional relief are monetised and exploited (Raymen and Smith, 2019). Octalysis reveals the design logic of gamified features provide immediate feedback, competition, and reward, reinforcing compulsive engagement while amplifying emotional vulnerability and identity fragmentation. Together, these frameworks indicate that online dating platforms are behaviour-shaping environments, offering engagement and perceived connection while reproducing harm. Ethical and structural interventions are therefore essential in design, marketing, and regulation to mitigate these harms while preserving opportunities for meaningful engagement.

7. Conclusion

The integration of gamification and immersive technologies within online dating platforms marks a profound evolution in how individuals experience connection, intimacy and relational possibility. These systems introduce dynamic and highly stimulating environments that enable users to interact, experiment and curate their identities in novel ways. Immersive technologies such as virtual, augmented and mixed reality promise more embodied and emotionally resonant encounters that extend beyond the limits of traditional digital communication. Yet, as this article has demonstrated, these technological innovations also raise significant ethical and sociological concerns. The commodification of personal relationships, the potential for manipulation through addictive design features and the amplification of harmful social stereotypes present substantive challenges for developers seeking to serve users responsibly. Platform designers therefore hold a responsibility to implement ethical principles that prioritise well-being, transparency and authenticity. This includes ensuring clarity in al-

DOI 10.36158/97912566929419

gorithmic decision-making, protecting user privacy and fostering environments that promote healthy relational dynamics rather than rewarding superficial markers of desirability or popularity. Although immersive technologies offer opportunities for deeper emotional resonance, developers must remain aware of their potential to exacerbate social isolation, distort expectations of intimacy or construct unrealistic relational templates that undermine offline relationships.

When interpreted through the combined lens of Ultra-Realism and Octalysis, the long-term risks of these developments become more sharply defined. Ultra-Realism highlights how contemporary capitalist structures shape individuals around speed, intensity, competition and self-curation, creating subjects for whom digital dating platforms serve as spaces of stimulation and temporary emotional relief (Hall, 2012; Hall and Winlow, 2015). Octalysis complements this analysis by demonstrating how immersive, gamified environments operationalise these tendencies through design features that amplify key Core Drives such as Ownership and Social Influence, embedding users in ecosystems where desirability, status and relational capital are continually quantified and publicly displayed (Chou, 2015). This convergence risks normalising new forms of affective inequality in which idealised digital selves overshadow embodied identities, deepening dissatisfaction, insecurity and emotional volatility. Such harms extend beyond individual experience and into the zemiological domain, revealing how immersive dating platforms subtly restructure cultural understandings of intimacy, authenticity and relational labour.

Gamification intensifies existing market logics by activating psychological drives that sustain engagement while potentially diminishing relational authenticity and emotional well-being. Immersive technologies, meanwhile, offer even more potent forms of behavioural shaping, raising urgent questions about the future of digital intimacy and the cultural meanings of connection. These concerns become more acute when immersive architectures are situated within the commercial imperatives of platform capitalism. VR/AR/MR dating environments introduce new monetisable forms of engagement including premium virtual spaces, avatar customisation, exclusive events and AI-mediated relational experiences (Bailey, 2017; Hamad and Jia, 2022). As platforms increasingly rely on microtransaction-based and subscription-based revenue models, their economic incentives shift towards deepening emotional entanglement with the platform rather than facilitating successful relational off-ramps (Liew et al., 2023). In doing so, immersive architectures risk reinforcing the core dynamics of the attention and distraction economy, extending time-on-platforms, amplifying emotional dependency and foregrounding technologically mediated intimacy that is most profitable when it remains unresolved or incomplete (Varsava, 2017; Bandinelli, 2022).

At the centre of these developments lies a significant structural contradiction. While users typically seek stable, long-term relationships, the commercial viability of dating platforms depends on maintaining prolonged engagement, repeat usage and continuous circulation within the marketplace of potential partners (Illouz, 2019; Heino et al., 2010). Successful relationships remove users from the platform, directly undermining revenue derived from attention, data generation and microtransactions. Platform architectures are therefore designed to support ongoing romantic possibility rather than romantic fulfilment. Gamified elements such as intermittent rewards, algorithmic scarcity and competitive visibility are thus not peripheral embellishments but central components of commercial strategy (Abolfahti and Santamaria, 2020; Mackinnon, 2022). This produces a fundamental tension between the business imperative of retention being structurally misaligned with the relational aims of users, raising concerns about whether

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dating platforms, under their current economic logics can realistically facilitate the conditions for authentic intimacy, emotional security and enduring connection (Illouz, 2007; Raymen and Smith, 2019).

Despite this tension, the goals of platform sustainability and user well-being are not necessarily irreconcilable. Emerging research suggests that slower, more reflective forms of digital dating such as "slow dating" or "intentional matching" models may support deeper relational development while fostering long-term trust and brand loyalty (Dobson and Ogolsky, 2021; Portolan and McAlister, 2021). Ethical design strategies that prioritise transparency, consent and reduced cognitive overload through limited daily matches, reflective prompts or relationship-oriented onboarding can generate revenue through subscription models that emphasise quality rather than compulsive engagement (Huang et al., 2024). Platforms may also profit from value-added relational services such as coaching, wellbeing tools, community events and premium features designed to support healthy offline outcomes. These approaches align with growing consumer demand for authenticity and digital safety (Anderson et al., 2020), suggesting that designing for relational health can itself become a viable commercial strategy. Integrating ethical gamification, user-centred design and socio-technical responsibility may therefore represent not only an ethical imperative but a sustainable commercial opportunity for the future of digital intimacy.

Ultimately, the harms associated with online dating cannot be understood solely through individual behaviour but must be situated within the broader political-economic and motivational structures that shape these platforms. Addressing these challenges requires both safer and more ethical design practices and a deeper interrogation of the socio-economic conditions that make gamified, immersive romance simultaneously appealing and harmful. Only through this dual approach can online dating evolve in ways that genuinely support the quality, integrity and authenticity of human relationships in an increasingly digital age.

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DOI 10.36158/97912566929419

Special section

Artistic dialogues

The Ring: Conversation Through Projection

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| abstract

The Ring emerged as an online art collective during the 2020 pandemic, formed by four artists – Katerina Athanasopoulou (UK), Robert Seidel (Germany), Brett Phares (USA), and Ian Gouldstone (UK) – forging connections in an isolating time. All working with the animated moving image, their practices span fine art, practice-research, festival directing, computer simulation, and curation. This diversity of perspectives shaped the collective's experimental approach into expanded animation. Meeting fortnightly on Skype, members shared and discussed their work, fostering a supportive yet critically engaged environment. A core aspect of *The Ring*'s practice involved disrupting traditional screen-based engagement. Between meetings, members submitted moving image work to each other, which was then projected onto unconventional surfaces. These interventional exchanges were not merely acts of display but became integral to the artistic process, reframing animation as a site-specific and materially embedded experience. By removing moving images from their default flat-screen digital context and placing them within new spatial and physical environments – *The Ring* sought to challenge habitual viewing practices and reveal latent qualities in the moving image work that might otherwise go unnoticed. The projections were documented and formed the ground for further in-group discussion; several works were further developed and exhibited in public events, including *Digital Graffiti* at Alys Beach, Florida (2021), LUMA projection arts festival in Binghamton, New York (2021), and *Phantom Horizons* at Künstlerhaus Bethanien, Berlin (2023). This approach speaks to larger conversations about engagement with screen-based media, as well as shines a light into the in-betweens of a small artists' collective. While the default mode of screen consumption often positions the viewer as a passive observer, the collective's projections activated space in ways that demanded new forms of attention. The re-staging of the animation in unexpected settings recontextualised the work and created hybrid encounters between the moving image and real-world materiality. In doing so, *The Ring* experimented with new forms of collective and individual engagement – bringing together installation, performance, and animation. Equally, it posed fresh questions on ephemerality, documentation, and virtuality as «the unexpected version of reality, the horizon of possible projection» (Silberman-Keller, 2009: 184). This paper takes the form of a conversation between the four founding artists that took place in February 2025, followed by a Flusserian analysis that forms the conclusions and discussion. Through persisting with its dialogic process, *The Ring* is situated within broader debates on the transformation of screen-based experiences, hybridity in contemporary moving image practices, and the ongoing redefinition of audience/artist engagement in an era of evolving screen technologies. With artistic collaboration as a catalyst for transforming limitations into opportunities for innovation beyond technological novelty, the collective reimagines the screen and the ways we interact with it.

DOI 10.36158/979125669294110

1. Introduction

The Ring was initiated during 2020 to provide structure for artists during a time when the world was greatly disrupted. It emerged from conversations between artists Ian Gouldstone [IG], Brett Phares [BP], and Robert Seidel [RS], and quickly grew to include fellow artist Katerina Athanasopoulou [KA]. While public shows were being cancelled or severely restricted, and lockdowns inhibited social contact, the collective sought a way to fight isolation and maintain their artistic practices.

Within this context, the collective treats projection as a site of practice, relation, and inquiry. While much emphasis is often placed on technological innovation – the future promise of a perfected gadget – particular attention is given to the dialogic aspect of the collaboration process, with its iterative re-stagings and improvised setups. *The Ring* was named for its intended format: participating artists would be placed in a metaphorical circle, where they would form connections with their two adjacent artists by taking on separate roles with each. Their first role was that of a *supplier*, providing moving image of their own creation to the artist to their "left". Their second role was that of a *responder*, receiving moving image from the artist to their "right" and projecting it in a way that would visually or conceptually augment the original. They would then share and discuss documentation of this projection with the original artist. This model was envisioned to allow future expansion of the collective; in practice, the collaboration took a different form. With the small number of participants, each artist could respond to all submitted work-including their own. The open structure allowed for more experimentation and expanded the dialogue between the four artists; such plurality would have been difficult to maintain in a larger group. Despite the changed shape, *The Ring* endured as a name, perhaps echoing the strengthening bond of the group. The core experimental activity of reflexive projection, happening over eight months at the height of the pandemic, has had lasting effects on the four artists; *The Ring* continues as a regular online meeting.

The collective offered its members a space for practice and reflection-in-action, but its processes of projection can also be examined through Vilem Flusser's "technical images". These differ from traditional images (such as paintings) because they are the products of apparatuses or black boxes, whose processes remain concealed (Flusser 2000 [1983], pp. 15-16). While traditional images were mirrors of the world, technical images are projectors indicating a direction; they "signify instructional programs" (Flusser, 2011 [1985], p. 50).Thinking back at the pandemic era and the lockdowns' enforced isolation while partaking in social networks and video conferencing applications – were we part of a «dialogic, telematic society of image producers and image collectors» or, rather, a «centrally programmed, totalitarian society of image receivers and image administrators» (Flusser, 2011 [1985], p. 4)? The two options, one seemingly promising, the other bleakly dystopian, were offered decades earlier but gained a sharp significance during the pandemic, as technologies of windowed telepresence were creating screens-within-screens. Conversely to this, co-projections through *The Ring* were *making room* for each other as artists, and encouraged a re-examination of spaces of everyday life, bathed in brand new electric light. Here, the term co-projection reflects the collaborative aspect as well as the members' co-presence; it relates to the concurrency of their practices while working across different time zones and geographies; it recognises the connections between the multiple projections of shared materials.

Flusser highlights how images produced by apparatuses can appear as objective windows, concealing their programme; in opposition, any criticism of technical images

DOI 10.36158/979125669294110

must be aimed at an elucidation of the black box's inner workings (Flusser 2000 [1983], p. 16). The collective's small-scale, site-specific projections (onto dishwashers, staircase walls, cages, studio detritus) render the apparatus palpable in everyday space and thereby interrupt its automaticity. Writing from a more contemporary viewpoint, Gabriel Menotti and Virginia Crisp reframe projection as a set of practices that are both situated and situating; ones that delineate movement, stage perception, and carve territories (2020, pp. 7-12). This combined lens shines a light into projection as an expressive operation whereby surfaces and sites are not backgrounds but co-authors of meaning. It also clarifies how *The Ring* imagines "Future Screens": rather than grand-scale spectacle, our shared experiments favour DIY screens built from everyday materials, interrupted routines, and dialogic collaboration. For Flusser, technical images risk forming «a collective memory going endlessly round in circles» (2000 [1983], p. 20), so how can we cultivate critical modes of making and viewing, resisting passive repetition? *The Ring* treats projection as an opportunity for such resistance, where artists act critically, as they «use images to create spaces running counter to those that are programmes within apparatuses» (von Amelunxen in Flusser, 2000, p. 93).

The following conversation, recorded in February 2025, captures the group's reflections on their collaboration, and on projection as an artistic and conceptual practice. The edited transcript enacts the responsiveness that defined the group's projection cycles, where process and exposition overlap. "Future Screens" are not only devices but *practices* and *situations*, and the dialogic format aptly *stages* rather than describes only. The dialogic method is therefore both documentary and methodological. To emphasise this aspect, the images presented in this paper stem from the online archive of moving images produced in each cycle; they allow the practice to direct the way while commented upon by their makers. Accessible to the four members, these digital video documentations offer a return to the place of projection, as a repository of experiments and a starting point for dialogue. Apart from screenshots from the individual "home" projections (figures 9-18), there are photographs from certain events where animations previously circulated and tested within the group are in public, within open-air festivals (figures 4-8), as well as two films that were distributed primarily in film festival or gallery settings (figures 2-3). Thus, what was a *homey* setting may also be rehearsing a larger-scale locale, with audiences expanded beyond the original four. However, such exhibitions were not the primary goal of the group, and the cycles archive has not been shared with a wider public as yet.

2. Conversation

IG: Where was everybody when *The Ring* started?

KA: I was at home. I remember looking at you through the screen on Skype, and glancing out through the window into a weirdly silent and empty London.

BP: London sounds like it was a wilderness. I was 90 minutes northwest of New York City. So, in the mountains, Catskills, Shawangunks. Yep, not in the city.

RS: I was in Berlin sitting in my kitchen for the most part. It's kind of obvious that being trapped in one place isn't healthy, so it was good to have you opening my mind and mood.

IG: I can relate to that. I was in London as well. For the most part, I was stuck in my flat with my partner. Towards the end of the pandemic, I could get into the studio. But when

DOI 10.36158/979125669294110

Figure 1. Screenshot from an early meeting of *The Ring* on Skype (2020) Clockwise from top left: Athanasopoulou, Phares, Gouldstone, Seidel.

The Ring started, it was just me, Brett Phares and Robert Seidel, and we were talking about who we could invite to join us, and pitched different candidates, and one of them was Katerina Athanasopoulou.

KA: I was so happy and a little nervous entering what was, until then, a trio. There was a real sense of pressure – what do I share, what do I *do*? I found some notes of early ideas and they are all expecting to be projected on a flat wall. I was thinking about projection very literally and more as a filmmaker towards a blank screen, but *The Ring* relieved me of my preconceptions.

IG: What are your favourite outcomes from *The Ring*?

BP: *The Ring* gave me a different appreciation of the pandemic as a place to reconfigure your head and your practice. Reflecting on it now, I started thinking about this notion of horizon that each of us has, literally and figuratively. The way that we project onto the world gives us a unique sense about where we are in it, but we're so habituated to it that we just don't know it. Breaks like the pandemic reveal to us this world we are in, as it is. I was projecting from my side on the outdoors. But then, with you guys doing the same, we were providing each other these overlays on our own expressions onto other locations. I was really surprised and happy to see and to have my own overlay to the world seen by others, so it's this collaboration that you just didn't know was going to happen.

IG: That's a really nice term, talking about *The Ring* and projection as an overlay on the world. I'd never really thought of it like that.

BP: And that's what we're doing, right? So that horizon is super important to me, because it represents multiple overlays.

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RS: For me, the most important part was this moment where our artistic process and the therapeutic moments collided. The fact that we had a regular meeting in these uncertain times was really helpful to keep the focus on specific ideas and not let them just slip away. For me, the most interesting result was *Hysteresis*, an experimental film finished in 2021 (figure 2), where the projection became fluid, fusing with a performer's body. Some of the film sequences I used in *The Ring* later became part of the movie itself. I think if we hadn't talked about the expanded screen ideas and the different projection surfaces, I wouldn't have had the confidence to work with someone in a very direct way, because architecture doesn't give you any feedback usually. Buildings are just a different shaped canvas, and working with the body is a whole different thing. We had discussions on a weekly basis, which is something I miss, because at this moment in time it is just complete turmoil with constant travelling. At that particular time we were limited and a lot of things stayed in an experimental stage. But *Hysteresis* is the most refined out of all that time, and it just came to me that everything was connected, even though it wasn't so obvious at that moment. We developed a second language, in a way, to think about projection.

BP: It's like we became both creator and viewer. To me, as an artist, you don't always get that opportunity – simultaneously looking at each other's work and at our work in an unexpected conversation. Of course there are other roles within this cycle, as collaborators in generating new ways of seeing the work and as critics viewing the documentation, kind of crazy, the permutations unfolding in the warmth of a digital domain.

RS: I remember sending you some of the sequences and then everyone projected them in different ways. So I was able to pick out more quickly what would potentially work. I wouldn't call it a *shotgun approach*, but an aleatory way of throwing out ideas and seeing how they refracted through our practice.

KA: Early on we weren't discussing outcomes, it really was a distant-joint studio practice. *The Ring* was about sharing an energy, without fear of exposing oneself too early.

Figure 2. Still from *Hysteresis* (Seidel, 2021).

DOI 10.36158/979125669294110

Figure 3. Documentation images of *The distance between the staircase and the sky* (Athanasopoulou, 2022) as part of *Phantom Horizons* curated by Robert Seidel, Window Display, Künstlerhaus Bethanien. Image credit: Gudrun Krebitz.

On an immediate level, it was special to be able to share work, and we were not too precious with our own, but we were always careful with the *other* persons' work – *that* was precious. I remember feeling that I had to find a way to honour that handing-over, that exchange. We were each other's projectionists, which is a very special job that has been eclipsed by the industry's drive for automation. We were openly handing each other our materials, but also handling each others' materials, and throwing them even further into the world. In the early days of *The Ring* I was in a difficult time in the middle of my PhD, which was on Virtual Reality that I could no longer work with, for fear of contagion. Certain experiments that I started sharing with the group became part of the main filmic outcome of my thesis, the short *The distance between the staircase and the sky* (2022), which you exhibited in Berlin, Robert, as part of the screening series *Phantom Horizons,* in 2023 (figure 3).

IG: My favourite outcome may be a cliche – but I really feel a lot closer to the three of you having gone through this process. We went through a really difficult time together and supported each other. From that perspective, I think that we did a wonderful thing together. Thinking of it from an art perspective... during the pandemic, things got really intellectual because everything was being mediated through the Internet. We were largely sat in front of screens, consuming so many verbal and written ideas, overdosing on memes and irony. We forgot our bodies. Our group brought me back into it. *The Ring* challenged me to feel my way through our work, to place it, to situate it, to augment it in ways that words could not describe. I think that helped keep me sane during that time. There were so many things that didn't make sense and were so unpredictable, and yet it felt the world was growing increasingly logical and technological. It was hard to recon-

DOI 10.36158/979125669294110

cile those two things. So, working in a way that avoided spoken language and embraced ambiguity and uncertainty felt right to me.

KA: Sharing older works brought me a feeling of freedom, and Animation tends to escape containment within screens. Working experimentally, we have so much work that never gets seen, that gets lost in the final edit of a film. We tend to produce more than is necessary because we don't normally work with a storyboard and a set plan. I work with excess, and that excess is what I started giving out.

BP: Did revisiting your personal vault and sharing that excess – those unseen or discarded pieces – help you build trust in vulnerability, or shift your relationship to what's finished or worth showing?

KA: I think that we all had a heightened sense of vulnerability back then, not just creatively but in very physical terms. I remember living in a very short-term kind of way, it was hard to plan too much ahead, so not over-thinking was liberating as well as comforting. There was less time to be precious, I had to put my hand in the hat and see what kind of rabbit I would bring out.

IG: I experienced that too, where I found that I was able to make much more gestural moving image work, and by giving it to the group, I could be surprised by what happened next, what you did with it. And there was something more. Animation can trick you into being a total control freak because it allows you to manage everything in every individual frame. This is sometimes mistaken for an expectation that all these things should be regulated or managed, but doing this often locks things down and the work suffers. The process of *The Ring* opened my work up to others' interpretation, and ultimately their interventions, and helped me resist my urges to dominate the work with a heavy hand. It was liberating and, for me, really enjoyable.

BP: That has had to be my approach curating an event like *Digital Graffiti* – working with pre-existing art and taking it to a context an artist likely has no awareness of and won't be present for. That act makes them vulnerable, because really, they have no idea what I'll do with it. That's the point though, that there is a trust that allows this spontaneity and it's nice when it works above and beyond. And thankfully it works out most of the time.

RS: When we were sending sequences around, I also added some older ones that already had been part of my films. It was a good way to give them a new chance, because each of us was very specific about the approaches. It was a fruitful review of the past in this frozen moment.

BP: The sort of randomized nature of forgotten sequences ended up working well as an overlay to the architecture, to the environment. That helped me rethink forgotten footage. If I had to programme or think through this work, I don't know what *The Ring* would have been for me. It may have been more stressful, it may have been all kinds of different. It wouldn't have contributed to being trustful and more pragmatic to the process.

IG: I'm interested in this word "overlay" that you're using. When I'm that "animator" or the "moving image maker" supplying the moving image to be projected, I'm thinking of what I'm projecting onto as the underlay rather than the overlay – there's a kind of a tussle between what takes precedence. When you're projecting on a cinema screen then the screen acts more like an underlay because the projected images are the dominant thing, whereas, when you project on architecture, it can be so powerful that this does become an overlay, and highlights different features of what's happening in the physical space.

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BP: But that's the thing about cinema screens. For you guys, it disappears. It should. For me it can't, I have to work with all surfaces. As a curator, I've had artists tell me they hate doors and windows. As animators or, say, filmmakers, you don't expect your work to be on something else. Architecture is another overlay onto the terrain and it's not something that I'm trying to make disappear. I want it to interact with the artwork. I want it to speak in other ways, and the expression of the architect has been forgotten in a lot of ways. The way I see the work I do with projection is to highlight and re-enliven those under-appreciated instances.

KA: What you're describing is what we were doing – and it seems like the very opposite of projection mapping which prepares itself for a very specific pre-existing canvas, and almost flatters it.

BP: I feel that projection mappers want to negate the surface that they're projecting onto, and an overlay becomes an underlay that's in the screen.

KA: I see the projection-mapper as honouring the surface and that's how the work is designed, as already married to that surface. Whereas when we have independent work falling onto the unexpected, there is a *wandering* taking place, and an opening for a conversation that might be a cacophony; they may be both talking at the same time, over each other.

BP: Right. Well, I want to go back to your reference to projectionists. We became that simultaneous projectionist-audience. That's interesting to me because that happened for *The Ring*. When you're interacting with other expressions, with other overlays, you allow yourself to be vulnerable. You park your self-interest, you are looking at a larger context. You're not thinking about your ego being up there and you become interested in the conversation in a much different, richer way. I just like what it does for artists. I mean, I love the way that they start, and are just taken aback. You guys would see a similar surprise. *Oh my gosh, what did you do? OK, you projected the work in the dishwasher.* Rob is like, *yeah, why wouldn't I want to use the inside of the dishwasher?* That's the kind of instinct as well as the expression. A lot of artists don't get the chance to inhabit that.

RS: The advantage of *The Ring* was that there were no technical obstacles, because I used a tiny projector and walked around my apartment looking for interesting situations. That's why I have chosen, for example, the dishwasher or my bookshelf. When one works at a festival or at exhibition scale, it becomes demanding and prevents a lot of inspirational moments. There is an enormous difference between being a *guerrilla projectionist* and working on a *real scale*. You can work virtually, at a smaller scale or at final scale. I love that it is a step out of the virtual, but still not fully formed into a professional expectation. Today's light art festivals or immersive spaces are glowy and technically perfect. I miss these hybrid, in-progress situations that can change anytime and are allowed to fail, because there is a next iteration in the following week.

IG: The main difference for me is that intimacy that we could achieve within *The Ring*. I liked how we used our personal spaces so much. It was a nice break from institutional or public settings. For example, I got to see my work projected in Katerina's house– on her stairs, in her garden too. Through *The Ring,* I made a mark of sorts in her home and I felt our lives become intertwined. Actually achieving that level of intimacy through projection and installation art can be really difficult. Oftentimes the contexts are so institutional or public. In festivals, galleries and museums, the context can be so heavy. With *The Ring*, placing work in the inside of my friend's dishwasher or the side of their garden shed or the woods beside their house is so light, so unassuming. I get jealous of painters who create a picture, an object, and it is brought into someone's home and they interact

DOI 10.36158/979125669294110

with that thing on a daily basis. They live with this picture and its real meanings are revealed in a longer term. It makes me think about how we can make new forms of animation that exist in the same way? All these advances in display technology, how do they open up ways of living with animation as opposed to it being like a special one-off thing? It changes the time scale of their existence. For me, that's a really interesting question.

KA: I love this question "how to live with animation" and it represents a very special drive. As you were talking, I remembered walking around my house in the dark, with a projector, like a detective or a burglar. Reinterpreting our most familiar spaces was shining new light over old things; this is not just a metaphor, but a very literal process. What really delights me, and this goes back to the conversation around in-house experiments versus big festivals, is that we were not hindered by a lack of sophisticated equipment, because we worked with whatever materials we had at hand. In fact, Ian lent me a small projector which was not even HD, but it was very portable and I could push and point it towards any direction, spatially and conceptually. The spectacle of immersive work creates expectations for things that are big, and grand, and very bright, whereas there should be room also for the small and the intimate; that which augments and enlightens, but you need to lean towards it. Like poetry, projection does not need to shout.

IG: That makes me think about the throw ratios of projectors. Normally, we have throw ratios larger than one, meaning that the further away the projector is from a surface, the bigger and dimmer the image gets. I wonder if you have a throw ratio less than one, do things get smaller and brighter?

BP: Ha – in a way that was the pandemic. A kind of reverse ratio: our environments did get smaller and in a way brighter, while finding ways to be outward-facing, indoors.

KA: It was not just about the projection per se, but about communing. These projections become meaningful when there are people there to move amongst them, so it is also about the ground that we share. For a long time public events indoors were halted, but, when lockdowns were lifted, some of the first things that we were allowed to partake in were outside and involved projections, like the *Digital Graffiti* or *LUMA* festivals in 2021 where you curated our works, Brett (figures 4-8).

BP: For me this has always been about getting people outside. It's cool that we didn't let the pandemic prevent it from happening in a lot of ways. And it's funny how the pandemic brought up the recognition that these tiny little projectors have their place.

IG: During the pandemic those mini projectors became really popular and desirable. For a while everybody wanted to make a little home theatre for cheap. Going back to *The Ring*: we're talking about it like projection was the final form, but what we were actually doing was projecting, and then recording that, and then sharing the recordings between us. Do you think that that makes a difference? Did that affect the experience, as opposed to actually being there and seeing that with your own eyes?

KA: It changes the experience because, apart from projectionists, we also became camera-persons, and, equally, documentarians. It expanded the ephemerality of projection but it also meant that I could take someone else's work, and make my own film based on it. At some point we favoured more of a locked camera approach, a camera on a tripod absorbing the view from a static position; an ideal, set place. But I remember thinking, how would you shoot this with movement as well? How would you choreograph it? This relates to how I work in my filmmaking, where I construct a space in CGI 3D and then explore it like a new planet. And while shooting the documentation for *The Ring* was a live performance, I also had permission to rehearse it, and try it again. It was such fun to have your works there, augmenting the world. And I also had a duty to pass it back, to re-project it to you.

DOI 10.36158/9791256692941l0

Figure 4. *Grid* (Gouldstone, 2021a) as part of *Digital Graffiti* curated by Brett Phares. Alys Beach, Florida.

Figure 5. *Grid (variation 1)* (Gouldstone, 2021b) as part of *lightStruct* curated by Brett Phares. LUMA. Binghamton, NY.

DOI 10.36158/979125669294110

Figure 6. *Sfumato* (Seidel, 2020) as part of *lightStruct* curated by Brett Phares. LUMA. Binghamton, NY.

Figure 7. *Bone Battery 42˚°N &75˚ W* (Phares, 2021) as part of *lightStruct* curated by Brett Phares. LUMA. Binghamton, NY.

DOI 10.36158/9791256692941l0

Figure 8. *Electric Screen* (Athanasopoulou, 2020) as part of *lightStruct* curated by Brett Phares. LUMA. Binghamton, NY.

IG: It's funny to hear this process described like that. I can see you're on a 2D screen authoring a virtual 3D object, and then you're rendering it down to a 2D file, and then you're projecting it into a 3D World, and then you're re-photographing it into a 2D thing. So it's kind of like a constant vacillation between the two, like a flattening and then an expansion. A compression, then a decompression. It's like breathing, I suppose.

RS: On shooting our experiments – I didn't feel like a documentarian because I was exploring the scene with a moving, hand-held camera. Shooting the dishwasher with a tripod would have been very architectural, but with the constant movement, the focus shifted to reacting to the motion and timing within the projected animations. So there was not only the breathing and the dimensionality, but also controlling the friction within the different concepts of time.

IG: Yes, and I think this was that dance with control I mentioned before. I wanted to find ways of working where I didn't have so much control. That kind of friction was great because reality pushed back.

KA: When I use the word "documentarian" I mean it in the sense of a researcher who goes out to record an event as it is unfolding, without quite knowing how it will pan out. When we were recording these projections, we were also documenting accidental sounds– someone in the room next door, a barking dog, a car horn. These sounds were also augmenting the work and the world. They were infecting and inflecting each other just like in a group show where someone's work is blasting a soundtrack to another's. BP, in the documentation from my *Electric Screen* as part of *lightStruct* at *Luma Festival*, you can hear a visitor chatting with one of the festival workers, and that dialogue is accidental and funny, and instead of looking at the projection I am trying to work out what they're talking about.

BP: It's funny, like you said, because that work of yours is also about the handshake, right? I mean, you have that chirping modem sound, and it's this handshake going on in between the people discussing your work and getting across the street for a beer. That's all part of it though, like you say, that's the bodily response that is amazing about all this. And the pandemic sort of negated that, or tried to negate, the body being in the environment. Given our in-home status, we each found ways to be public in our social and emotional isolation. Ian often interacted with a projected work, in one cycle "marking up" projected

DOI 10.36158/979125669294110

videos on a blackboard surface with chalk. Robert took to finding more internal surfaces, say projecting art into a dishwasher. Katerina and I sought the outdoors in different cycles – Katerina projecting onto a garage door with the moon stage left, while I projected onto a forest stand outside the house. All exploring a means to be public, inside.

KA: Going back into *The Ring*'s documentation archive, which exchanges stand out for you?

IG: My work submitted for round 1 depicts two geometric figures wrestling and forming unique shapes. Katerina's projection at the bottom of her stairs completed the narrative for me. It heightened the dark and humorous qualities of the work while giving it a very domestic context (figure 9). For round 5, I built an assemblage out of objects as a form to receive the images of Brett's film of a simulated horizon. Together, they formed a mood not typically present in my own work, but resonated heavily with the time (figure 10).

Figure 9. Ian Gouldstone's work projected by Katerina Athanasopoulou. Round 1, December 2020.

Figure 10. Brett Phare's work projected by Ian Gouldstone. Round 5, May 2021.

DOI 10.36158/9791256692941l0

RS: This (figure 11) was a key moment early on–taking Ian's graphic work and juxtaposing it with the different shiny surfaces in my dishwasher. The strong colour contrasts shifted the perception of the materials, reflections and shadows became very prominent. And the decoupled camera and mini-projector combination added multiple layers of movement and animation to the minimalist projection sequences. In my own work I try to avoid geometric structures and regularities. But seeing my chaos structured by the venetian blinds opened up a lot of different associations, not even related to the actual geometry (figure 12). Sometimes the projection looked like the stripes that come to life when a DV or VHS tape is fast-forwarded, at other times the changing dimensionality of the blinds added to the perceived shading.

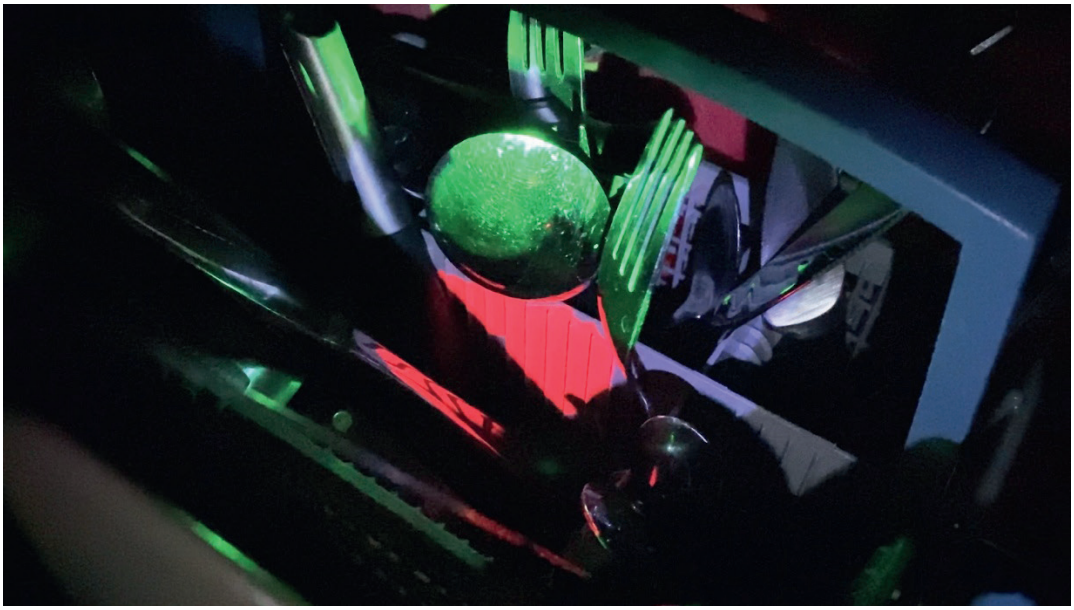

Figure 11. *The Wandering* – Ian Gouldstone's work projected in Robert Seidel's dishwasher. Round 1, December 2020.

Figure 12. Venetian Blinds – Robert Seidel's work projected by Katerina Athanasopoulou. Round 4, April 2021.

DOI 10.36158/979125669294110

BP: I've always been frustrated with projecting my work. Usually low-contrast, low-saturation and low activity, it's tough to find an outdoor placement that doesn't absorb the detail and negate the work. In the first round of *The Ring in* December 2020, Ian and Katerina both projected onto surfaces that echo an intent in the work that was pre-pandemic (figures 13 & 14), bringing with it something bittersweet in their choices regarding being pent-up, and a kind of straitjacket I felt but was not acknowledging. On July 2021, Robert coaxed new layers of subtlety by projecting onto small clear surfaces taken from fruit packaging (figure 15), producing higher contrasts with the reflectivity of the material which then created new structural qualities for me to consider in the future.

Figure 13. Brett Phare's work projected by Katerina Athanasopoulou. Round 1, December 2020.

Figure 14. Brett Phare's work projected by Ian Gouldstone. Round 1, December 2020.

DOI 10.36158/979125669294110

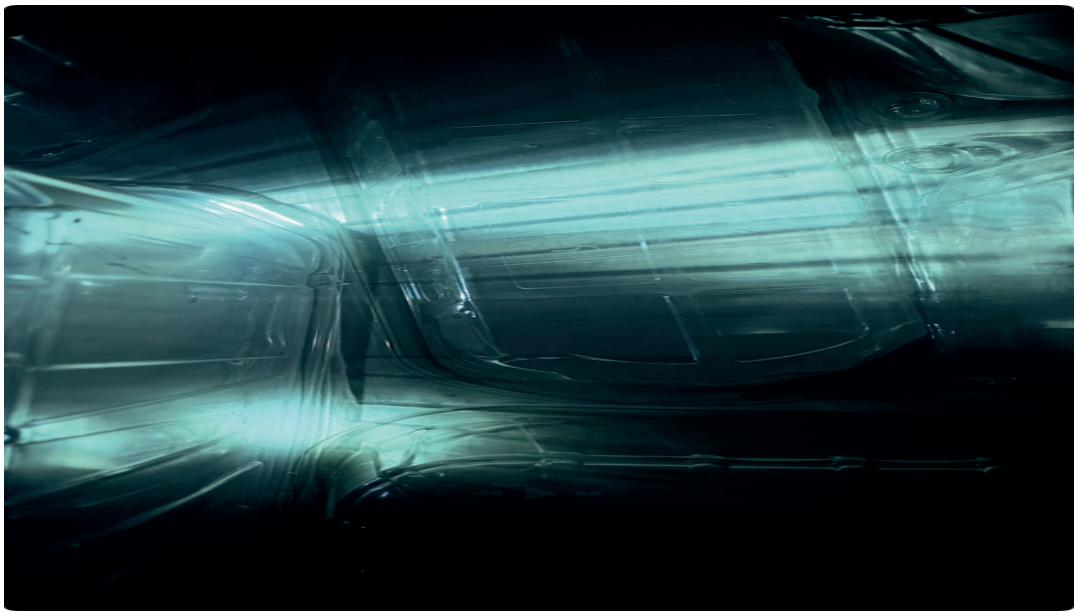

Figure 15. Brett Phare's work projected by Robert Seidel. Round 6, July 2021.

KA: For round 1, my video was of a silver-dressed figure swimming in nothingness, and the stills are from what Brett and Ian did with her. I see the two treatments, how ghostly she appears over Brett's trees (figure 16), how galactic in Ian's surface (figure 17), and it brings out projection as re-animation, but also the spectral virtuality of animation with its endless potential for reinvention. During round 4, projecting Robert's work on my staircase was like releasing a pot of electricity, everything pulsated (figure 18). I look at this documentation still and it brings back the heat of the little projector near my face, the totality of the image taking over my room.

If we were to do another round of *The Ring*, what would you do differently?

Figure 16. Katerina Athanasopoulou's work projected by Brett Phares. Round 1, December 2020.

DOI 10.36158/979125669294110

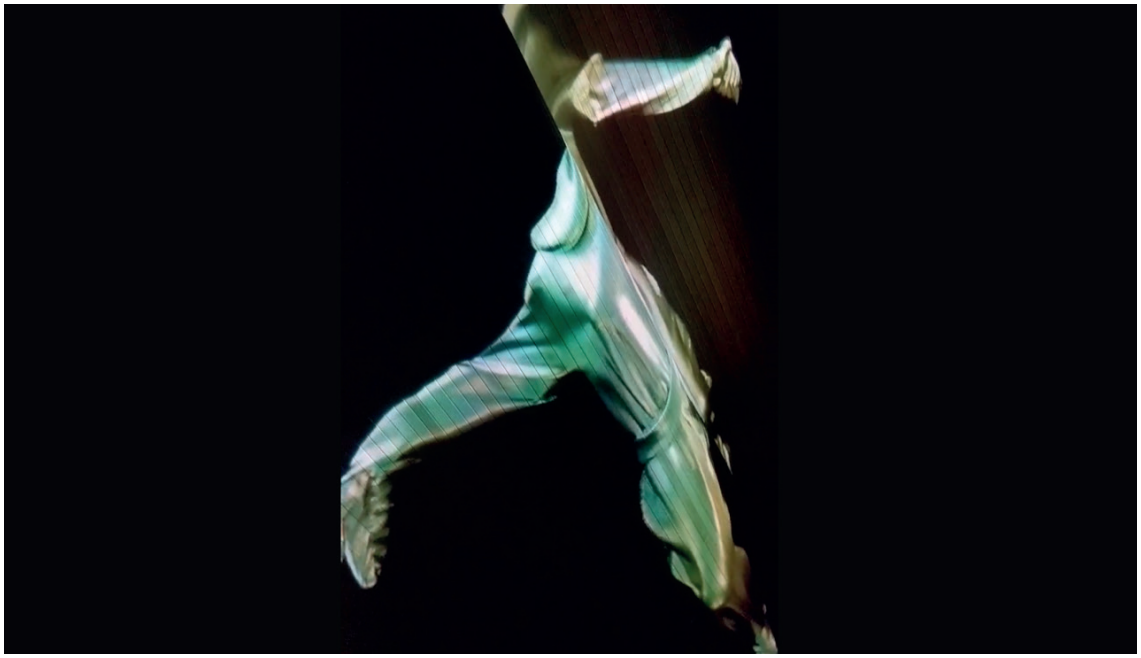

Figure 17. Katerina Athanasopoulou's work projected by Ian Gouldstone. Round 1, December 2020.

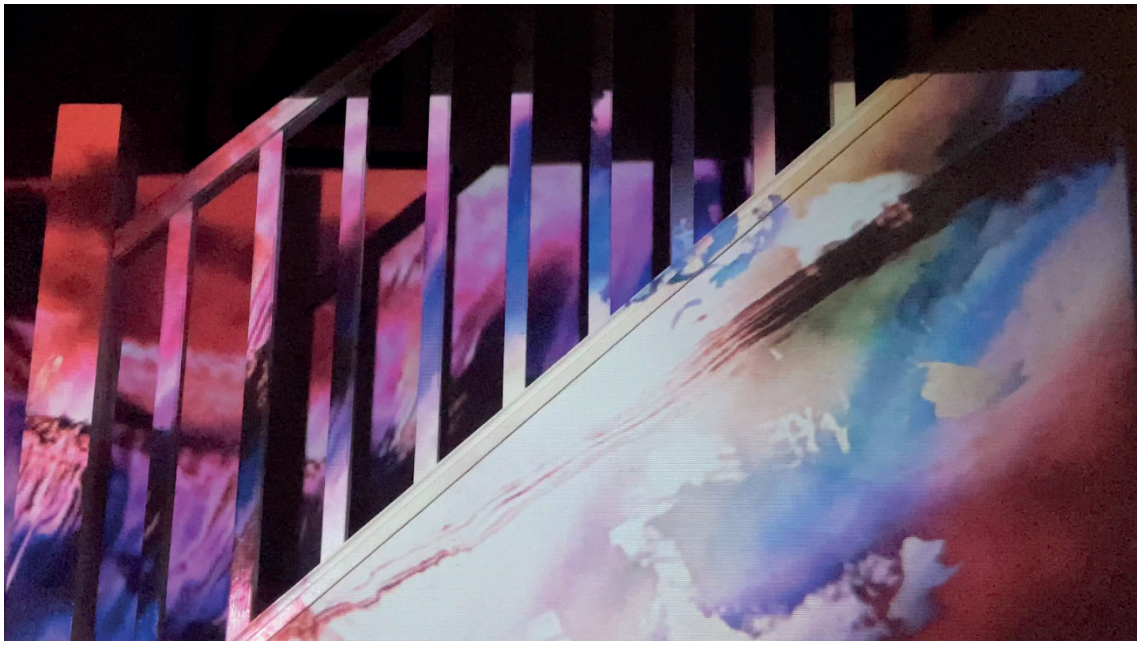

Figure 18. Robert Seidel's work projected by Katerina Athanasopoulou. Round 4, April 2021.

RS: Something like a workshop or residency where the same level of intimacy could be achieved would be important. At the moment everyone is busy, so the only chance to break out of the treadmill of life would be a retreat... or, in the worst case, the next pandemic. Something like a conference also would be amazing, even though it might chip away all the lightness of the unbound experiment... I think this kind of freedom is hard to achieve today. But with the right institution, the possibilities of contemporary technology and projection art could be fused in a way that has never been seen before.

BP: Workshop *The Ring*, procure some funding this time, and help set up other artists to do the same, equipped with portable projectors. Find artists with practices outside projection and help them see their work in a different light.

DOI 10.36158/979125669294110

KA: It would be great to continue passing the baton of projection to people outside our existing circle, but how would we carve time to watch and discuss remotely potentially dozens of works? If we forsake the online element, a chain-letter option would involve a single projector and a hard drive with the materials that we would hand (or post) to the next person. Or, there is a *messenger* doing the handover, and the artists do not choose their pairings, so there is a serendipitous collaboration on a level of work rather than personalities. Eventually, we all meet in person, and our documentations could be screened in a live event curated as a culmination of the cycle. That's where the discussion takes place, as we revisit the ground of immersive exchange, together. This option would favour local artists collaborating, and it would probably be less costly. It also carries something of the original idea of *The Ring* – although the feedback between the *supplier* and the *responder* happens at the very end.

IG: During *The Ring*, we brought others' work into our own environments, our studios, gardens, and homes. If we were to do another, I'd like to try doing a similar exercise in a new, unfamiliar environment. We'd still be projecting each others' work, but in new spaces. Our first few rounds helped us form closer relationships with the other artists and their work. By working in new environments, I think we could deepen our relationships with new spaces too. I can imagine exploring a new park, or even an abandoned building, equipped with a battery pack, a projector, and my friends' animation.

As Katerina mentions, though, it would also be great to find a way to work with more people. I learned that the process works best when we make ourselves vulnerable – either by sharing work we're still developing or handling someone else's work we're still getting to know – so we'd need to put some thought into how we could grow the group without making people feel uncomfortable. I suppose the obvious solution is to work through referrals, but I wonder if there is a way of embedding our values in the structure of *The Ring* as well. That way, it could grow to a huge number of artists without a lot of central coordination. Of course, the other way would be to share the model, as we've done here, and let other groups try it out for themselves. I'd love to see how others adapt this model of collaboration to suit their own groups.

3. Conclusions and Discussion

The Ring has been discussed as an experiment in collaborative projection, and as a method of documenting artistic practice in dialogic form; the transcript carries something of the informal immediacy of the participant exchanges, ones that would be impossible to fully recreate today; not only are we not confined in our home environments; Skype was retired in May 2025, mere weeks after this conversation was recorded. In this sense, this paper is also an archaeology of practices of projection that are destined to become obsolete but which Animation may rehearse afresh. The dialogic format of the main body of the text is not incidental but reflects the multiple cycles of exchange, emphasising process over closure and relation over linearity; most importantly, meaning emerges in conversation rather than in isolation.

The Ring engages directly with a Flusserian account of technical images that form a collective memory going endlessly around in circles, and which nothing can resist (Flusser, 2000 [1983], pp. 19-20). By projecting onto ordinary, improvised surfaces, the group interrupts this loop and draws attention to the apparatus and its contingencies. Such interventions make visible what is usually concealed – the mechanics of throw,

DOI 10.36158/979125669294110

scale, and surface; the way these materials co-create and co-determine meaning, reclaiming images from passive circulation and opening them to reflection. Some of these works were later used in new films; others stemmed from "excess" materials that found new life in new surroundings. As Menotti and Crisp also remind us, projection is an event that insinuates itself into space, and is both situated and situating; it depends on new conditions while simultaneously producing new territories (2020, pp. 7-12). *The Ring* exemplifies these qualities: in each experiment, surfaces such as domestic appliances, blades of grass, blinds, did not merely receive images but transformed them (and became transformed) through unrehearsed (and semi-rehearsed) stagings. In these unexpected arrangements between bodies, technologies, and environments, projection arranges new space rather than simply transmits content. The move away from the traditional flat surface can be discussed in terms of a "broken screen", for how the moving images meet holes, extrusions, rough edges of many kinds. This is a version of expanded animation which allows images to go wild, and to roam into unexpected facets/facades from everyday life. As proposed in the above conversation, a future iteration of the model could venture out in new spaces, carrying forth "friends' animation".

The structure of *The Ring* ensured that no image was final but always on its way to becoming something else: offered, transformed through projection, and returned. This cyclical exchange refigures process rather than product, while at the same time asks questions on authorship: with the work played back-and-forth between multiple hands, a polyphony emerges, that changes tone with every new corner illuminated by the projector. While Flusserian apparatus or black boxes risk producing closed loops, *The Ring* enacted a circle of dialogic transformation rather than passive circulation, so that repetition becomes renewal, and dialogue is affirmed. With the documentations of the projections only ever reaching the four group members, *The Ring* acted less like a public event and more like a remote studio or virtual residency, where the exchanged artwork would be relocated in a new physical space through projection. The audience here was an *insider* one rather than one comprising of passers-by.

This orientation towards a closed circuit, discussed by the artists as proven difficult to expand on a large scale, also belies its central concern with testing how images behave when re-framed and re-situated. The images did not enter the "endless circulation" of mass culture but remained within a critical loop where the apparatus was also interrogated. The stairwell and the forest produce a temporary territory and a site of reflection rather than a stage for a public crowd. Seeing *The Ring* as a small-scale residency conducted via projection, underscores the potential of projection beyond reaching audiences and as a method of sustaining artistic dialogue under restrained conditions. This distinguishes it from other pandemic-era artistic activities focusing on circulation and accessibility of the work, such as the online series TRANSMISSIONS, whereby Anne Duffau, Hana Noorali and Tai Shani commissioned artists to share their work, in response to the pandemic-induced postponements and cancellations (Somerset House, undated). Rather, *The Ring* foregrounded projection as a dialogic event, not an endpoint but a process of discovery and collaboration between humans, apparatus and surface. Crucially, the four artists emphasised the healing aspect of their collaboration, and the entrance into each other's personal space extending an invitation to "live with animation".

From these perspectives, *The Ring* proposes a vision of "Future Screens" that diverges from dominant narratives of technological seamlessness or immersive spectacle, and whereby screens appear as provisional, relational and dialogic. They are formed in the encounter between images and surfaces, shaped by the conditions of their appearance,

DOI 10.36158/9791256692941110

and opened up to criticality through shared reflection. It is a playful and serendipitous process, accompanied by metal reflections sparked when the projector's beam shines – with animated chrome – upon physical chrome (figures 10, 11, 15, 17). The modest scale of the experiments discussed by the artists and presented in process and documentation images, underscore the potential of small, situated practices as a way of questioning the automated logics of contemporary media. The persistence of using small, inexpensive projectors also suggests that the vitality (the *animation*, even) of screen culture lies not only in technological innovation but in the cultivation of practices where screens are environments rather than objects; where they function less as sites of immersion and more as occasions for dialogue, intimacy, and care.

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DOI 10.36158/979125669294110

DigitCult
Scientific Journal on Digital Cultures
vol 10, no 2 (2025)
http://www.digitcult.it

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