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Digital Reshaping in Immersive Journalism: Technological Mediation, Reality Representation and Ethical Challenges

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Abstract

This study examines the evolution of immersive journalism and its significant impact on news formats and user experiences through technological mediation. It investigates key technological shifts within the industry, notably the transition from traditional virtual reality to the development of virtual scenes and the increased adoption of multi-source data collection. These advancements have facilitated a transformation of news presentation from two-dimensional to three-dimensional formats, shifting interfaces from tactile to technical, thereby deepening audience engagement and understanding of news content. The methodology employed involves an in-depth analysis of these technological transitions and their implications for journalistic practice. The research assesses the influence of these changes on journalistic objectivity and ethical norms. Findings highlight the dual challenges and opportunities presented by immersive journalism, stressing the necessity for a balanced approach that aligns economic interests with societal responsibilities. The result of this research emphasizes the crucial role of maintaining journalistic integrity amidst the adoption of technological innovations that enhance news reporting. This study contributes to the broader understanding of how immersive technologies can be ethically integrated into journalism to benefit society and enrich public discourse, setting a foundation for future explorations into responsible media practice.

Keywords: immersive journalism, technological mediation, virtual reality (VR), multi-source data collection, news consumption technology, journalistic objectivity, ethical norms in journalism, media evolution

1. Introduction

Immersive journalism represents a seminal shift in the paradigms of news dissemination, fundamentally driven by the integration of virtual reality (VR) and augmented reality (AR) technologies. These technologies are profoundly redefining user engagement and transforming the narrative experience in news consumption. Soler-Adillon and Sora posit that immersive journalism engenders first-person experiences that centralize the audience within the narrative, utilizing technologies such as VR to amplify storytelling and foster empathy [1]. Wu further elucidates the transformative potential of VR, AR, and mixed reality technologies within the journalistic domain, emphasizing that innovation and enhanced user experience are pivotal to this evolutionary shift [2]. This dynamic landscape indicates a critical juncture in journalism, characterized by technological mediation that not only augments the presentation of news but also fundamentally restructures the interactions between journalists and their audiences, as well as the very essence of audience engagement.

Kaplan-Rakowski and Meseberg articulate that immersive media technologies such as VR and AR represent not ephemeral trends, but rather essential evolutions within the sphere of digital interaction [3]. Our study builds upon these insights to delve into the specific alterations that these technologies introduce to journalistic practices and

audience interactions. This inquiry addresses a scholarly lacuna highlighted by Jones, who articulates the need for a deeper understanding of how immersive journalism diverges in narrative form and style, thus impacting its influence on narrative construction and journalistic style [4]. This exploration is pivotal in comprehending the nuanced ways in which immersive technologies are reshaping journalistic methodologies and the broader implications for media consumption and interaction.

Despite the substantial body of research on immersive journalism, there persists a noticeable void in the thorough analysis of user experience and ethical dimensions. Existing literature predominantly emphasizes the technological enhancements and their capability to foster engaging narratives, yet it frequently overlooks the critical ethical challenges posed by these innovations. Such challenges include the biases inherent in user experiences and the complex balance required between journalistic integrity and the allure of new technologies. Our study seeks to bridge these gaps by offering a comprehensive examination that assesses both the opportunities and risks associated with immersive journalism. This balanced inquiry is designed to ensure that technological advancements are harmoniously aligned with the foundational values of journalism.

Methodologically, this research utilizes a diverse array of case studies across various platforms that integrate immersive journalism technologies, from virtual reality (VR) to augmented reality (AR). This empirical strategy facilitates a detailed investigation into the array of journalistic practices and user interactions emerging within these advanced media settings. Distinctively, we introduce media ecology theory and mediation theory to our analytical framework. These theories serve as lenses through which we examine the dynamic interplay between technology and human interaction, offering new insights into how immersive technologies both influence and are influenced by journalistic environments.

Incorporating media ecology theory, our analysis focuses on the roles immersive media inhabit within the broader media ecosystems, scrutinizing how these technologies impact and are impacted by other media forms. Mediation theory further assists in elucidating how these technologies function as intermediaries that transform the relationships between news entities and their audiences. This dual-theoretical approach not only enriches our analysis but also sets our work apart from traditional studies, which tend to concentrate solely on the technological implications without accounting for the overarching media systemic influences. By merging in-depth case study analysis with these theoretical perspectives, our study provides a holistic exploration of both the practical applications and the socio-technological ramifications of immersive journalism. This integrated approach aims to cultivate a refined understanding of the capabilities and challenges posed by these technologies in the contemporary media landscape.

2. Technological Evolution of Immersive Journalism

Immersive journalism has undergone three pivotal technological transformations that have reshaped the news industry's business models: firstly, evolving from basic audio-visual displays to the creation of sophisticated virtual environments; secondly, advancing to the detailed construction of these environments; and thirdly, incorporating complex data collection techniques. Each phase signifies a progression in the technical sophistication of news production. These advancements have shifted the focus of news from merely portraying reality to actively constructing and simulating it through digital tools. This transition represents a significant departure from traditional, two-dimensional media approaches to a dynamic, three-dimensional digital framework. By moving from simple real ity capture to comprehensive virtual reconstruction, these changes underscore the growing impact of technology on the evolution of news content, paving the way for innovative business models that capitalize on enhanced user engagement and new revenue streams in journalism.

2.1 Virtual reality (VR) principles and application in news dissemination

Since its advent in 2013, virtual reality (VR) technology has established a significant presence within the realm of news communication, demonstrating its profound potential to transform the field. The introduction of "Harvest of Change" by The Des Moines Register was a seminal event, showcasing the transformative capabilities of VR in journalism and setting the stage for subsequent technological advancements. The rapid adoption of VR by prominent media outlets such as ABC News VR and The New York Times, which have produced compelling VR-driven news stories, further accentuates the pivotal role of VR in enriching the delivery of news.

Historically, the entwining of VR and journalism extends beyond its recent mainstream acclaim. Research by Rocha and Pase elucidates that the roots of VR in journalism can be traced back to the 1990s, thus providing a comprehensive historical framework for understanding its progressive integration into the media landscape [5]. Moreover, the assimilation of VR into newsrooms, propelled by technology companies dedicated to mainstreaming VR, has introduced new complexities and challenges in journalistic norms and practices [6].

VR employs panoramic cameras coupled with advanced post-processing software to create a fully immersive news environment. The integration of aerial drones and mobile broadcasting systems enriches the news narrative by providing a range of visual perspectives, adding depth to the storytelling. VR headsets, equipped with binocular displays and head movement tracking, offer users a real-time, three-dimensional experience that is profoundly immersive. These headsets capitalize on the "3I" principles of VR—immersion, interactivity, and imagination—to provide a robust foundation for VR-driven news delivery.

Despite its advancements, VR journalism continues to rely heavily on traditional TV news production techniques, particularly in content generation. This reliance ensures that VR journalism remains grounded in the established tenets of news reporting while incorporating innovative technology to enhance viewer engagement. However, the integration of VR in journalism is not without challenges. High production costs, expensive equipment, and the niche audience reach pose significant barriers to widespread adoption. These issues necessitate further technical refinement and the development of adaptable business models to fully realize VR's potential in journalism and mitigate its current limitations, bridging the gap between traditional practices and futuristic technology.

2.2 Virtual environment construction and digital transformation in journalism

In 2010, journalist Nonny de la Peña developed the concept of immersive journalism in Newsweek. Unlike traditional VR reporting, which focuses solely on obtaining real photographs, immersive journalism employs powerful computer graphics, including 3D modeling, graphical rendering, and motion capture. It aims to imitate and reconstruct real news occurrences. This approach mixes the "synthetic environment" formed through design with reproductions of actual occurrences, symbolizing the merging of photography and computational tools in content development.

Ana Luisa Sánchez Laws discusses how immersive journalism projects like "Hunger in Los Angeles" which produced by de la Peña's team, have sought to use virtual reality and 360 video to create deeper engagement and empathy with audiences, providing a basis for understanding the transformative impact these technologies can have on journalism.[7] This project employs the Unity 3D gaming engine to design virtual scenarios and includes motion capture to enhance the realism of its virtual characters. This economical production strategy not only sets the door for immersive journalism but also breaks the mold of typical passive news consumption, achieving worldwide appeal on platforms like Steam. Another milestone is "Project Syria", which is considered as one of the most thorough and technologically innovative immersive journalism pieces to date.

Central to immersive journalism are instruments such as head-mounted displays (HMD). These gadgets provide users with intense immersion, with the first-person perspective delivering a unique divergence from the typical third-person viewpoint, creating a genuine sensation of presence. The integrated sensors within HMDs enable for real-time modifications to the virtual scenes, improving the immersion experience.

Between 2012 and 2016, there was a substantial shift in news production. It went from the "documentation and dissemination" of traditional media to the "creation and crafting" emblematic of digital platforms. This transition includes technologies including high-definition video capture, 3D modeling, graphics rendering, binaural audio, motion capture, and head and eye tracking. This evolution signals a pivotal turn in digital journalism, as the approach to storytelling transitioned from just representing reality to digitally rebuilding it. As immersive journalism continues to evolve, it is clear that the merging of digital technologies with traditional journalistic techniques is setting a new standard for how news is produced and consumed, offering unparalleled opportunities for audience engagement and the realistic depiction of events.

2.3 The application of multi-source sensors in authentic immersive journalism

From 2016 onward, the value of data obtained from sensors in producing immersive journalism began to emerge. The expanding acceptance of varied sensor technologies in fields such as government, industry, research, and personal use is clear, as evidenced with technologies like the Global Positioning System (GPS) and Radio Frequency Identification (RFID). These sensors can be generically classed based on their placement as stationary, mobile, or wearable, meeting diverse data collection needs.

The New York Times, for instance, has integrated photogrammetry into its immersive journalism production. Using this technology, large landscapes and intricate items are 3D scanned and generated. Computational algorithms then evaluate the pixel data, adding a heightened sense of realism to the virtual landscapes and objects. Productions such as "Finding Pluto's Frigid Heart" and "Augmented Reality: 4 Athletes You've Never Seen" stand as testaments to the success of these approaches in immersive journalism. They ensure the perfect duplication of real-world surroundings and objects, boosting the overall impression of realism and breaking the restrictions of traditional news transmission.

The integration and optimization of multi-source sensors across various sectors underscore the scalability and adaptability of these technologies in immersive journalism. Notably, advancements in multi-sensor fusion are essential for enhancing the precision and efficiency of data collection within sensor networks. This improvement is particularly relevant to immersive journalism, where it enables more nuanced and dynamic representations of news stories [8]. Recent technological advancements have also made the production of immersive news more accessible. For instance, the integration of structured light and time-of-flight (ToF) sensors in mobile devices has expanded the capabilities of 3D scanning and modeling techniques. These sensors provide detailed data on spatial depth, which facilitates more accurate 3D reconstructions. Consequently, this enhances the authenticity and immersive quality of news reports, offering audiences a more engaging and realistic experience

Figure 1 encapsulates the three pivotal shifts in news technology evolution, highlighting the transition from Virtual Reality (VR) in news dissemination, to the digital transformation with immersive environments, and finally to the integration of multi-source sensors, each stage marked by its unique technological advancements and applications in journalism

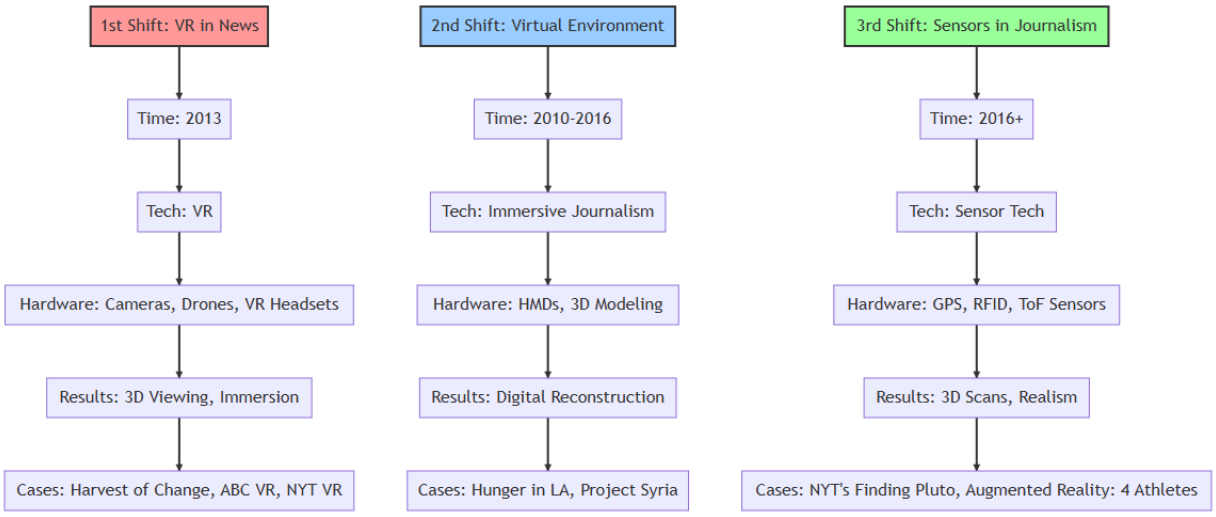

Figure 1 Evolution of technological innovations in immersive journalism (2010-2016+)

3. Immersive Journalism: Technological Transformation in Engagement and Scene Recreation

The growth of immersive journalism starkly displays the dual impact of technology on both news presentation and audience participation. First, in terms of presentation, technology has changed journalism from static two-dimensional displays to dynamic three-dimensional vistas, offering consumers with a richer and more immersive news experience. Next, from an experiential viewpoint, the incorporation of virtual tools allows users to travel beyond their local surroundings and engage in a "technological embodiment" within the virtual world. These two

advances show the extent to which technology dramatically reshapes the techniques and experiences of news transmission and consumption.

3.1 Scene engagement evolution: From "artificial flatness " to "3d embodiment"

The trajectory of technology growth has consistently modified the techniques of news dissemination. Historically, human communication was constrained to two-dimensional representations, ranging from ancient cave drawings and written texts to maps and modern computer screens. This strategy, frequently referred to as "flat representations,"[9] was developed to simplify information for fast transmission and interpretation. This age-old cultural practice intended to convert transitory experiences into enduring visual media, boosting the clarity, manageability, and retention of information.

However, with the development of digital technology, the limitations of these "flat representations" have become clear. Although electronic screens diversified communication conduits, their two-dimensional nature limited the depth of material portrayal. In response, entrepreneurs have worked to utilize new digital tools to reinvent and enhance the way information is presented.

The concept of "synthetic 3D embodiment" provides an enhanced intermediary format, employing three-dimensional computer graphics to offer dynamic, interactive tri-dimensional representations within digital worlds. This strategy not only deepens user immersion but also more precisely matches the real-world's subtleties. By adopting this technique, news reports can provide a three-dimensional picture of an event's environment, allowing people to examine the situation from different perspectives, leading to a thorough comprehension. This transition raises news presentation from standard two-dimensional visuals to three-dimensional immersive visualizations, delivering audiences a more authentic and engaging news experience.

Immersive journalism marks a fundamental transition in news communication, indicating the evolution from "planar media" to "three-dimensional media." This technology-driven transformation reimagines not just the visual depiction of news but also adds levels of complexity to journalistic ideals and creative processes. It needs that journalists adapt by understanding both traditional reporting skills and emerging digital technologies, including 3D modeling and dynamic simulations. This growth, while challenging, presents new options for journalism. By incorporating these cutting-edge tools, news tales can engage consumers with richer and more diverse information, thereby drawing a bigger audience and enhancing their market impact.

3.2 Body engagement evolution: From "tangible" to "technological self"

Historically, the bodily part of communication was often disregarded, the body consigned to a passive role in the transmission of information. Traditional techniques of communication were predicated on the "tangible self," depending on two-dimensional routes of information transfer. However, as technology's significance in our lives expanded, so did the acknowledgment of the body's vital function in communication. The introduction of powerful technical instruments introduced the concept of the "technological self," permitting deeper and more immersive encounters with information.

Breakthroughs like virtual reality (VR) and augmented reality (AR) have changed the domain of journalism. These platforms transform the body's position from a passive recipient to an active participant in the news consumption process. Instead of only witnessing, folks are now involved in the story, virtually navigating the events, and engaging with their environment. This merging of the physical self with the digital sphere enables individuals to get a more sophisticated understanding of news items, increasing their sensory experiences. As a result, the paradigm of news consumption has moved from mere "inherent sensing" to intense "virtual immersion," indicating a tremendous leap in how we engage with and understand the world around us.

With the integration of technology into news consumption, the body's role has grown beyond its biological constraints, evolving into a conduit for cultural and societal engagement. This concept, termed "cultural embodiment," is crucial in comprehending the shift in news media dynamics. The body doesn't only passively absorb and process news tales; it becomes an active agent, influencing and being influenced by the narrative's delivery mechanism, content, and its engagement with others in the virtual domain. It's a dynamic dance between the individual, the technology tools, and the cultural meanings of a story.

To assess the sensory implications of immersive journalism, de la Peña introduced the RAIR framework, a tool that measures the impact of news from a bodily perspective [10]. This framework evaluates user discernment and involvement within the virtual environment, as well as the consistency of news narratives, emphasizing that sensory experiences go beyond mere factual accuracy. It highlights the significance of immersive experiences, emotional engagement, and narrative resonance, arguing that these elements are essential in the digital era. The RAIR framework thus marks a shift towards a more corporeal approach in media consumption, fostering new standards for content creation and evaluation that reflect the evolving nature of journalism in a digital context.

Subsequent research has expanded upon these findings. Aitamurto examined the effects of augmented reality (AR) on user presence and knowledge acquisition, noting that while AR enhances the sense of immersion, it does not necessarily improve information retention, pointing to potential areas for further development in immersive technologies [11]. Similarly, Van Damme explored the impact of 360° video journalism on user engagement and emotional response to remote events, highlighting the intricate relationship between immersive media and user perceptions [12]. These studies reinforce the transformative potential of VR and AR in journalism and underscore the need for refined approaches to maximize the advantages of these technologies, ensuring they meet both journalistic goals and audience expectations.

4. Technological Mediation of News Authenticity: Societal and Ethical Impacts

The advent of "digital reconfiguration" through modern technologies has significantly revolutionized journalism. These advancements provide innovative methods and tools for disseminating news while simultaneously influencing news selection, narrative techniques, and stylistic developments. However, as virtual environments increasingly mimic real-world scenarios, the task of verifying news authenticity becomes more complex. This convergence threatens to obscure ethical boundaries, potentially leading to deviations from journalistic integrity. Immersive journalism, while striving for detailed presentations, must preserve a balance to ensure narrative coherence and depth, thereby upholding the crucial societal responsibilities inherent in the journalistic profession.

Technological innovations introduce fresh potentials and ethical challenges for journalists. The creative possibilities enabled by these technologies can sometimes overshadow the fundamental societal duties of journalism. Therefore, journalists are tasked with maintaining a delicate balance, ensuring that the core values and social commitments of the media are not compromised by the allure of technological advancements. This equilibrium is essential for sustaining the integrity and trustworthiness of journalism in an era dominated by rapid technological change.

4.1 Technological norms: Shaping and challenging immersive news narratives

The pervasive influence of technology has profoundly impacted news production, significantly altering content development and narrative techniques. Media theory articulates that media are not merely passive conduits but actively shape various aspects of information dissemination, including the sources of information, content structure, and the spatial and temporal presentation, as well as modes of interaction. Each medium possesses its unique grammar and operational logic.

In the realm of immersive journalism, the technological imperatives such as extensive data processing and 3D modeling are pivotal. This framework tends to favor detailed, "product-centric" journalism over the immediate demands of breaking news scenarios [13]. While this technological approach enhances the immersive quality of the news, it may sometimes prioritize aesthetic appeal over analytical depth, particularly in coverage of significant events that require thorough investigation. Immersive journalism's focus on sensory experience can lead to occasional compromises in the breadth and depth of the content. Although technology facilitates unique narrative opportunities, it is crucial to ensure that its use does not overshadow fundamental journalistic principles, such as comprehensive analysis and relevance. This balance is essential to maintain the integrity and the informative value of journalism in the age of digital transformation.

The inherent technological demands of immersive journalism often challenge the traditional subjective approach to news production. Standard editing techniques and fundamental rhetorical elements such as metaphors and metonymy face limitations within this immersive format, which could potentially reduce the media's capacity to critically evaluate societal issues. Despite these constraints, immersive journalism provides users with a highly

interactive experience. It enables users to engage with information in a unique way, utilizing their insights to construct virtual narratives [14]. This level of autonomy, while empowering, also poses the risk of overwhelming users if the narrative lacks sufficient context. Additionally, expansive storylines may overshadow essential details, potentially distorting public perception.

The technological foundations of immersive journalism present both challenges and opportunities for traditional news methodologies. They offer the potential to enhance user engagement and interpretation significantly. It is imperative for journalists to integrate professional standards with effective audience education to ensure that technology enhances rather than dominates the fundamental tenets of journalism. This balanced approach is crucial for ensuring that the innovative capabilities of immersive technologies are harnessed to support, not undermine, the critical role of journalism in society.

4.2 Unit software-centric immersion: Commercial shifts in immersive journalism

The increasing ubiquity of mobile devices has made 3D scanning and modeling technologies more accessible, catalyzing significant enhancements in immersive journalism. These advancements allow journalists to use cost-effective mobile tools to swiftly create virtual news landscapes. Furthermore, the distribution of 3D content to web browsers and smartphones no longer requires specialized technology, greatly expanding the potential audience for 3D news.

This progression illustrates a shift in immersive journalism from a "hardware-centric immersion," which relies on specific physical devices, to a more adaptable "software-centric immersion." This newer approach prioritizes content, utilizing digital technology to enable broader and more diverse distribution across various platforms. A prime example of this is The New York Times' use of augmented reality in its coverage of California's Carr Fire. This integration allowed for a seamless blend of textual narratives with animated 3D environments, enabling users to explore multiple perspectives without the need for additional hardware, thus enhancing the overall mobile user experience. This transition not only democratizes access to immersive news but also underscores the evolving landscape of journalism, where digital agility and accessibility are paramount.

The advancements in mobile 3D scanning and modeling are highlighted by innovations such as the Mobile3DScanner, which allows high-quality object reconstruction using mobile devices, demonstrating the practical applications and accessibility of these technologies for professional and everyday use in immersive journalism [15]. This enhancement of mobile capabilities enriches the potential for more interactive and engaging news presentations, effectively broadening the scope and reach of journalistic content.

The underlying driver of this evolution is the quest for commercial viability. Traditional "intensive immersion" faces scalability challenges due to device dependencies and limited audience reach, whereas "subtle immersion" opens up greater commercial opportunities by providing more engaging narratives and reducing barriers for user entry [16]. For instance, The New York Times leverages its immersive news offerings to potentially attract premium subscription fees.

This transition from favoring "technological logic" to emphasizing "business logic" illustrates the news industry's desire to create a balance between technology breakthroughs and sustainable business practices. It shows the delicate relationship between technology and business in news transmission. The change from "hard immersion" to "soft immersion" illustrates the news industry's strategic adaptability, negotiating the tight line between technology standards and commercial imperatives, all while seeking for larger technological adoption and maximized commercial gains.

4.3 Reframing truth and navigating ethical complexities

However, the notion of a seamless transfer of "digital truths" through technological intermediaries does not guarantee an unblemished portrayal of objective reality. Inherent biases are frequently embedded within these systems, arising from programming idiosyncrasies and the methodologies employed in data sourcing and processing. The presence of noise—in the form of random or irrelevant data—and entropy—indicative of the disorder or unpredictability within information systems—can further skew the accuracy of digital outputs. Moreover, the potential for digital manipulation exposes the susceptibility of these representations to alteration,

thus compromising their authenticity. This paradigm of digital intermediation thus presents a complex dichotomy: while it purports to offer a direct and pristine capture of events, it simultaneously reveals the vulnerabilities and distortions introduced by technological mediation [17]. These issues underscore the critical need for rigorous scrutiny and ongoing refinement of the technologies used in news dissemination to mitigate bias and enhance the fidelity of the digital narrative [18].

Thus, in the world of immersive journalism, news sources are tasked with managing this complicated interplay of traditional subjective interpretation with the apparent objectivity afforded by digital technology. Balancing these various modalities becomes crucial to sustain the integrity and trustworthiness of news narratives. The ethical complexity grows, as journalists must not only remain careful of their intrinsic biases but also be critically astute about the possible hazards and limitations of technology.

Immersive journalism, propelled by digital technology, demonstrates its distinctive approach to factual depiction, which can be roughly segmented into three main phases. M

Script Framework: In this foundational phase, journalists employ techniques reminiscent of traditional reporting by symbolically transcribing real-world events. They gather and analyze on-the-ground data to develop a narrative structure, or "script," for the news piece. This phase utilizes natural language processing (NLP) tools to sift through vast amounts of unstructured data, extracting relevant facts and figures to form a coherent narrative that serves as the backbone for subsequent immersive presentation.

Scene Construction: Transitioning from narrative crafting to technical execution, this phase is characterized by the employment of advanced computer graphics and virtual reality technologies. Technical specialists use remote sensing and photogrammetry to create detailed 3D maps of real-world settings, which are then rendered into virtual environments. This method leverages machine learning algorithms to enhance the fidelity of these 3D reproductions, reducing dependence on artistic interpretation and ensuring a high level of realism in the virtual scenes.

Dynamic Simulation: The final phase involves a robust integration of sensor technology to bring dynamism to the virtual news environment. A variety of sensors, including LIDAR (Light Detection and Ranging), motion capture systems, and environmental sensors, capture real-time data from the physical world. These sensors convert physical inputs into digital signals that are processed using advanced simulation software to mimic the real-world dynamics within the virtual environment. This simulation enables viewers to experience the news event with an unprecedented level of immersion and interactivity, reflecting the live conditions and nuances of the actual occurrences.

The methodologies utilized in immersive journalism are substantiated by scholarly literature that documents the application of dynamic simulations and advanced visualization technologies across diverse disciplines. For example, Yuan demonstrates how similar technologies are applied in constructing dynamic 3D traffic scenes using real-world data [19]. Additionally, Behzadan and Kamat explore the integration of multiple data inputs through augmented reality to generate realistic simulations, reflecting the technological approaches common in immersive journalism [20]. These examples highlight the interdisciplinary nature of these technologies, showcasing their ability to improve real-time understanding and interaction within virtual environments. Such studies not only validate the methods used in immersive journalism but also illustrate the broad potential and adaptability of these technologies in enhancing the immersive experience, bridging the gap between virtual representation and real-world dynamics.

In Figure 2 we delineate the progression of immersive news fact presentation, starting with the foundational 'Script Framework', transitioning through the 'Scene Construction' phase where narratives take on a digital environment, and culminating in the 'Dynamic Simulation' stage, which offers a technologically-driven interpretation of news content and processes

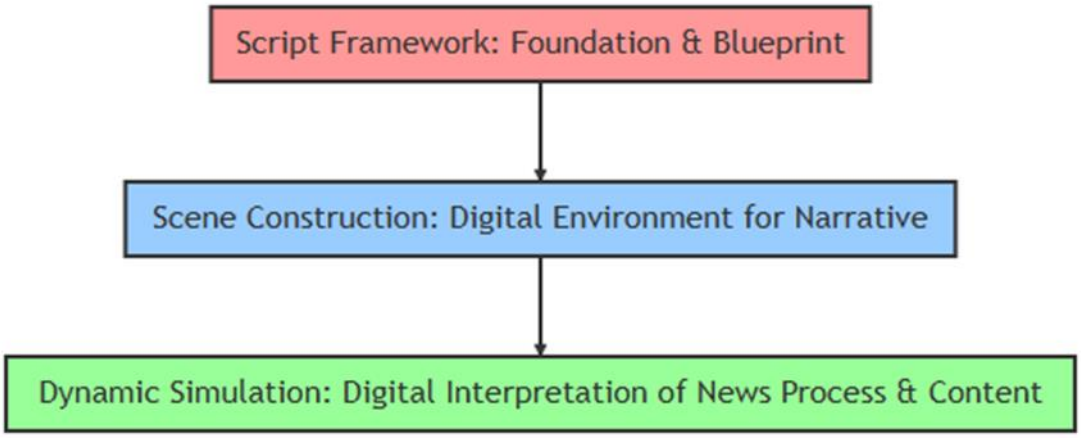

Figure 2 Stages of factual depiction in immersive journalism

4.4 Dual nature of news in the digital era

In the digital era, news exists in a dual state of factual representation, blending technologically mediated facts with raw, unfiltered realities. Immersive news reporting remains true to the core of conventional journalism by documenting events as they unfold in their natural settings. At the same time, the use of digital technology to reconstruct virtual scenes introduces a layer of technological mediation. This hybrid approach intertwines both types of facts, creating a unified news experience where virtual and real-world information converge on a single platform, thereby influencing audience perceptions and decision-making.

This sophisticated analysis of technology's role in journalism is further supported by scholars such as Mabrook and Singer, who investigate the tensions between traditional journalistic integrity and the demands posed by new media technologies. They observe that while immersive technologies offer unprecedented ways to engage audiences, they also introduce potential for distortion and raise significant ethical questions concerning the pursuit of enhanced realism [21]. Additionally, Laws (2020) examines the transformative potential of immersive journalism to foster empathy and understanding among viewers, emphasizing the critical need to maintain a careful balance between the allure of technology and the accuracy of factual reporting [22]. These perspectives underscore the intricate relationship between innovative technologies and the enduring principles of journalism, illustrating the dynamic evolution of news storytelling in the contemporary digital landscape.

Technological intermediation provides journalists with innovative means to transcend sensory limitations, enabling them to capture detailed and accurate insights into events. Yet, it is crucial to acknowledge that all technical tools have inherent limitations. Even the most precise sensors may overlook certain aspects of a scenario, and it is important to recognize that technology is not inherently neutral; its design and application can carry inherent biases. As journalists integrate these new technologies into their work, they must fully appreciate their capabilities while remaining acutely aware of their constraints. Achieving the right balance between leveraging technology and maintaining an honest depiction of events is essential for the ongoing evolution of the news industry.

In this evolving paradigm, technological advancements reshape not only the methods of news production but also challenge the foundational principles and ethics of journalism. The interaction between technology and personal judgment plays a critical role in shaping the core essence and framing of news stories. This interplay demands a nuanced understanding and careful management to ensure that while embracing technological innovations, the news industry remains committed to its primary role of providing truthful and insightful reporting. Thus, as the sector advances, the imperative to balance technological prowess with journalistic integrity becomes ever more critical, defining the future trajectory of journalism in the digital age.

5. Conclusion

Immersive journalism marks a transformative approach to news distribution, reflecting not just improvements in storytelling styles but also exposing the broader ramifications of its intrinsic technical frameworks. These technical

rules don't only enable news communication; they indirectly impact cultural narratives. Immersive journalism's emphasis on sensory experience can sometimes overwhelm depth of substance. As it evolves, the technical standards typically constrain news topic selection and event portrayal, thereby confining the scope of news narratives and limiting varied interpretations. These predefined rules effect not just fundamental news communication but also shape the deeper structures of journalism and public perspectives.

From both a technological and cultural standpoint, immersive journalism leverages virtual technology to engage audiences, aligning more with entertainment and commercial requirements. This concentration, however, risks eroding the larger context and underlying intricacies of the news, potentially reducing its role in sustaining public memory. The temptation of immersive journalism might impair the news's reference value to the public. While it creates a compelling experience, its relationship to real-world events can become weak. News isn't just about correct depiction, but crucially about the journalist's in-depth examination of the underlying subtleties. Only by capturing the underlying subjectivity in news can it effectively serve its societal functions.

The continuous advancement of technology confronts immersive journalism with innovative communication outlets and concomitant obstacles. Guided by commercial concerns, an excessive concentration on form risks overshadowing the news's crucial role in conserving societal memories, leading to possibly detrimental repercussions. As journalists manage these evolving technologies, it's vital to analyze not just the aesthetic benefits but also their possible ramifications for journalism's societal obligations. While technology can augment audience experiences, the basic societal function of journalism should remain important, ensuring events' actual essence is conveyed. Immersive journalism will only achieve sustainable growth and societal advantages when technological adoption is matched with firm journalistic ethics.

In this era of technological innovation, news outlets should prioritize not just business and entertainment gains, but also develop ethical guidelines for technology use. This assures a synergistic interaction between tech improvements and journalistic values. Immersive journalism will only exist sustainably and fulfill its vital societal function when technology reinforces its primary objective of serving the public good. Journalists must skilfully combine financial incentives with civic duties, steering the application of immersive technologies towards a more principled direction.

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