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The Body and its Place in Immersive Journalism

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ABSTRACT

Immersive journalism allows first-person experience of events, primarily using virtual reality technology that provides a sense of embodiment (SoE) for a deeper sense of immersion. Immersive and experiential experiences induce sensory and physical stimulation, and provide users with immersive news content that can cause bodily, psychological and behavioral reactions. This article addresses these issues and aims to reflect on the body and its place in immersive journalism. The methodologies used in this paper include an analysis of immersive journalistic products and of immersive production processes, in addition to a reception study conducted with users. Our results allowed us to identify and present five paradoxes related to the place of the body in immersive journalism, which include knowledge compared to dispersed attention, a sense of presence, reality compared to simulation in virtual reality, mediation, immersion compared to cybersickness, and the perception of manipulation.

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Introduction

Czech writer Franz Kafka's (1883-1924) powerful novella "The Metamorphosis" (1915) tells the story of a young salesman who wakes up to find himself transformed into a giant insect. All his forms of interacting with the world are altered due to this new bodily experience (Kafka 2019). Immersive journalism, defined by De La Peña et al. (2010) as a way of producing news that allows first-person interaction with events in news reports, offers a sense of body displacement similar to the plot in Kafka's work. In immersive journalism, the user wears virtual reality glasses and is transported into another space-time as a witness to an event.

Studies that address immersive journalism look at technological, narrative and ethical aspects, at production processes and reception studies, and at conceptual approaches that consider empathy, presence, illusion, and immersion, among others. However, although transporting imaginative minds to virtual worlds (Murray 2003; Ryan 2015) is frequently used in these studies on immersive journalism, little is reflected on the role of the body in virtual reality (VR) journalism. To address this gap, this study is guided by the following research question: In what ways does the body mediate the interplay between immersive journalistic formats and sensory perception within immersive journalism

experiences? Additionally, we examine a secondary question that emerges from this bodily dimension: How does the paradoxical relationship between immersive journalistic formats and the body challenge the ethical and perceptual foundations of journalistic narratives?

This article aims to reflect on the place of the body in immersive journalism inasmuch as sensory and physical experiences impacting user interaction with immersive news content. We understand that our perception of the world is intrinsically linked to our corporeality, and as such, analyses of how the mind organizes itself during an immersive experience need to take bodily mobilizations into account, which can generate this interaction or limit it. Virtual reality products (one of the main formats of immersive journalism) can trigger a sense of embodiment (SoE) in virtual environments that leads to a deeper feeling of immersion. Guy et al. (2023) define SoE as “the ensemble of sensations that arise in conjunction with being inside, having, and controlling a body, especially in relation to virtual reality applications” (2). One of the consequences is that the illusion of virtual embodiment affects not only the perception of the body, but also cognitive processes (Gall et al. 2021).

Although studies on immersive journalism address technology, ethics, new practices, and narratives, the role of the body as a central mediator of the experience remains underexplored. Because of this gap, little attention has been paid to how bodily limitations – such as cybersickness or sensory fatigue – destabilize the utopian promise of total immersion, central to the rhetoric of virtual reality journalism. By mapping these bodily paradoxes, the research fills a critical gap: it recognizes the body not as a mere technical conduit but as an ambiguous protagonist that redefines the boundaries between sense of embodiment and the perception of reality in immersive journalism.

This paper presents reflections derived from two doctoral research projects conducted in a postgraduate program at the Federal University of Bahia, Brazil (Fonseca 2020; Lima 2022) that problematize the concept of immersive journalism in light of analyses of journalistic products and production processes, as well as a reception study with users. We concluded that the place of the body in immersive journalism is demarcated by several paradoxes including understanding compared to dispersed attention, a sense of presence, reality compared to Virtual Reality (VR) simulation, mediation, immersion compared to cybersickness, and the perception of manipulation.

Contextualizing Experience, Immersion and Presence

To understand the place of the body in immersive journalism, one needs to look at three elements: experience, immersion and presence. These concepts are different, but interconnected. Experience is a core element of immersive journalism in terms of news content that aims to promote first-person experiences of events (De La Peña et al. 2010). As such, the public experiences a mediated version of events using digital technological equipment to represent an authentic sensory experience of events, of the “here and now” (Fonseca, Lima, and Barbosa 2020).

The body is an essential element in the aesthetic experience as it is “[...] the *center of sensitivity*: it is a means of sensitive perception, of language, and of all types of participation in the sphere of action or expression” (Valverde 2010, p. 68, emphasis added by author). The body is what makes the experience possible since it occurs within it (the

mind, senses, perceptions, and physical reactions). Experience is a source of knowledge that is produced not only by human brains, but by entire bodies as they interact with the environment (Archetti 2022). This is ultimately individual and personalized according to how each individual is affected.

The body is the place where the experience occurs, and therefore immersive journalism productions are either provoking or potential vectors of that experience (Lima 2022). The experience itself is not stated in the information as it is not part of the content; it is part of the new temporalities which the individual encounters with this other media message. The information is intended to provoke, but the experience only occurs in real-time encounters (Duarte 2010). The experiential potential of content is based on the ability to use the user “[...] as a being who is acted upon (affected by emotions that move their body) and as an agent (guided to act, in some way, through bodily movements)” (Longhi and Caetano 2019, 87).

The experience that immersive journalism seeks to provide is a mediated one built to approach the event using technical devices and intentional production strategies that privilege the experiential character (Fonseca 2020). For the user, this experience develops through a deep immersion that leads to a sense of presence (Lima 2022).

For immersion to occur, physical work is necessary through the individual’s mind. In addition to the capabilities of an immersive system, the voluntary action of maintaining focus, suspending criticality, and accepting immersion are what make the experience happen. Murray (2003) posits the idea of intentional suspension of disbelief as being a relativization of criticality to consent and living an experience in an intentional movement to make the immersive process work. For Murray (2012), immersion is mistakenly confused with sensory stimulation as “[...] it cannot be a property of an artifact. Immersion is experiential and not a function of the size or volume of the stimulus, but of the engagement or distractibility of the interactor” (101).

Shin (2017) emphasizes that the technical qualities of the system do not necessarily result in a better immersive experience for users, since “[...] immersion is a multifaceted concept broadly encompassing media, users, and contexts” (p. 12). According to the researcher, immersion depends on the relationship between the subjectivity of users and the objectivity of technology. Shin and Biocca (2018) point out that immersion is a fluid state, one that is processed and determined by the user. Therefore, the mechanisms related to the system only work when technical qualities are translated into cognitive qualities. “[...] users apply conscious efforts and intentional work toward immersion, especially for VR content. That is, users voluntarily initiate their intrinsic cognitive processes to engage in and enjoy effortful cognitive activities within VR” (Shin and Biocca 2018, p. 15).

The sense of presence, for many researchers, is a phenomenon that occurs in two stages, immersion being the first. Schubert, Friedmann and Regenbrecht (2001) understand the sense of presence as a subjective experience resulting from the interpretation of cognitive processes that involve at least two components: concentrating on the virtual environment while ignoring the real environment (which we understand as immersion), and the sense that we are placed and acting within the virtual environment (which we understand as a sense of presence).

Steuer (1992) defines presence as “the sense of being in an environment” (75). With regards to VR, Steuer adds that since the perception of presence is mediated by a

communication technology, the individual perceives two separate environments at the same time: the physical environment where he or she actually is and the virtual environment presented through the medium. In other words, despite focusing your attention on a virtual environment, you are still aware of the fact that you are in a physical environment.

Researchers who study immersive journalism define the sense of presence as the feeling of “being there”. For De La Peña et al. (2010), Domínguez (2015) and Aronson-Rath et al. (2015), the sense of presence can be so strong that the user feels like they are actually witnessing the event, which in turn has the ability to change the public’s understanding of the stories. Shin and Biocca (2018) state that, similar to immersion, the sense of presence does not depend solely on devices; it is a process developed in the user’s perception.

For Lima (2022), the sense of presence starts with immersion; however, as it is a multi-faceted concept, it is not influenced solely by immersion, but it is essential for its development. The sense of presence results from the user’s psychological process and how he or she begins to feel the sense of being present in a virtual environment that they know they are not physically in. The user feels present in the virtual world, but also perceives the physical world. It is a complex perception for which sensory stimuli are necessary, but not sufficient.

Immersion is the result of a psychological process that leads to a change from one mental state to another (Grau, 2003), initiated by an individual’s willingness to immerse (Murray 2003, 2012; Shin and Biocca 2018). It involves focus, attention, and concentration, and can be triggered by strong sensory stimuli and mental energy (Busselle and Bilandzic 2009; McMahan 2003). It leads to a shift in attention in space and time (Fonseca 2020). Regardless of what triggers the immersion, one’s level of awareness of what is around them is somewhat lost.

With the advancement of immersive technologies such as VR and AR enhancing tools for user interaction with content and other users, more concepts can be added to the experience, such as social presence, which “[...] refers to the degree to which two people interacting through a technological medium feel as if they are together” (Shin 2013, 9). For the researcher, sociability is a highly relevant factor that adds to the experience.

The Body in Virtual Reality and Immersive Journalism

The concept of body in immersive journalism has been present since a seminal article by De La Peña et al. (2010). It was based on empirical experiences through virtual reality and the building of virtual environments using mainly computer-generated images (CGIs). To illustrate their theoretical discussions, De La Peña et al. cite an empirical experiment they conducted based on a virtual reality experience that aimed to transport people into a virtual cell. The participants, in addition to wearing virtual reality glasses with visual and sound stimuli, were seated, with their hands behind their backs, in the same position as a virtual body seen in the digital environment. The participants’ breathing patterns were recorded and then reproduced in real time by the avatar.

This virtual body experience involves understanding the concept of Sense of Embodiment (SoE), which refers to the sensations related to the act of being in control of another

body through virtual reality applications (Kilteni, Groten, and Slater 2012). According to the authors, SoE is composed of three subcomponents: the sense of self-location, the sense of agency, and the sense of body ownership. Sense of location (SoL) is related to the spatial experience of being in a virtual body. Sense of agency (SoA) is the feeling like you are causing the actions in the other body. Sense of body ownership (SoBO) is the feeling that the virtual body has become your own physical body.

According to Kostopoulos (2024), the interaction of these three elements amplifies emotions and enhances immersion. Emotional responses to virtual events can be similar to responses in the real world, and the body expresses these emotions through physiological reactions such as altered heart rate. In the study, the researcher discussed SoE based on the influence that an avatar's characteristics can have on an individual's behavior and attitudes. "By manipulating avatar attributes such as appearance, race, or age, users often unconsciously align their behavior with the perceived traits of their avatars" (5).

Gall et al. (2021) point out that the illusion of virtual embodiment not only affects perception, but also cognitive processes, ranging from awareness of the location of the physical body, spatial orientation, effects on attitudes in social groups, impacts on the modulation of pain perception, body weight, and memory processes. "These findings suggest that virtual embodiment might have a general effect on information processing processes" (2).

Immersive journalism is a way of experiencing the news through one's own body, which is mentally transported to the event through sensory stimuli and narratives. As such, "[...] his or her actual location has been transformed to the location of the news story, and more importantly that the participant's actual body has transformed, becoming a central part of the news story itself" (De La Peña et al., 2010, 293). These researchers base the idea of body transformation on arguments from neuroscience that state that the human brain has a high degree of plasticity in the representation of the body, making it perfectly capable of inducing illusions related to the sense of ownership of a virtual body. According to these same authors, this may result in the public developing more intense feelings and emotions about the news story.

For Greber et al. (2023), one of the differences with immersive journalism is the emotional response that allows users to "feel the news" from a first-person perspective and embodiment through an avatar. According to Gall et al. (2021), emotional reactions are so important in immersive systems that they can lead to motivation, attention, memory, performance and decision-making in this type of interaction.

For immersive journalistic narratives, experiences with virtual bodies have the potential to increase reliability as users tend to perceive their actions as their own and thus better understand the other person's subjective experience (Shin 2018). Bruin et al. (2022) also argue that immersive journalistic products that use virtual bodies can make it easier for users to accept the virtual environment as real.

The concept of presence is one of the main aspects of immersive journalism. According to De La Peña et al. (2010), the feeling of being physically present in the news story can lead the audience to have a stronger connection with the story and, consequently, to change how they understand the story. De La Peña et al. continue by stating that virtual reality immersive journalism could help reestablish the public's emotional involvement with events. This idea has led to discussions about empathy and emotional impact.

The sense of presence and empathy is further strengthened when embodiment is also part of the immersive journalistic narrative. Shin (2018) highlights that empathy refers to the mind and the avatar being used by the user's entire body. The consequences of this synergy between mind and body, according to Shin, is that understanding and empathy are stimulated, thus producing greater credibility.

Lima (2022) also investigated understanding and credibility in immersive journalistic products in a reception study with participants who experienced 360° video reports. With regards to understanding, most participants felt that they understood the content well, but not fully, and most did say they felt confused or lost at some point during the narrative. The reception study reported a cognitive overload as a result of the mental effort to develop the sense of presence, in addition to the use of a narrative language not yet appropriate for the peculiarities of VR. The idea of mental overload was also linked to the credibility results, being one of the justifications for the high level of credibility demonstrated by the participants. Based on Sundar, Kang, and Oprean (2017) and Vettehen et al. (2019) the researcher explains that, when exceeding the mental processing capacity, the brain can suspend the development of critical thoughts, leading to the non-questioning of credibility.

The concept of immersive journalism served as the basis for several studies focusing on a wide range of journalistic productions developed throughout the world, mainly between 2015 and 2018 (Fonseca, Lima, and Barbosa 2019). These immersive and experiential pieces were produced predominantly using 360° video, within the scope of virtual reality technology. VR is an interactive technology that incorporates *feedback* between the body and the system, transforming the user into an actuator and updater of virtual scenes. This allows narratives or events to be experienced as a result of "[...] *hardware* sensory interfaces that record, transmit and conduct the body's performance" (Domingues 2006, 80). This means the body transmits information based on the dialogue between the senses and the artificial environment.

In terms of levels of body action and sensory stimulation, 360° video is considered a visual technology as it works with images and sound. The images are predominant in news stories as there has not been much investment in immersive audio (Silva 2022). Furthermore, 360° video by itself does not tend to induce the sense of ownership of a body in the virtual world. Within the scope of virtual reality, there are other resources that can provide greater bodily involvement, such as computer-generated images, volumetric capture, and photogrammetry. These are referred to as corporeality technologies (Rose 2018) because, in addition to choosing the viewing angle, they allow the user to change the position of the body in the virtual environment and move objects; however, they have rarely been used in news productions.

What 360° video has in common with these other techniques is that the 360° view of digital environments allows the user to choose the viewing angle. Even though there is less bodily stimulation, studies show that 360° video can provide experiences that include levels of immersion, presence, more emotions, satisfaction, and greater credibility (Aitamurto 2019; Hardee and McMahan 2017; Lima 2022; Vettehen et al. 2019).

In addition to VR, the concept of immersive journalism has also been used for news stories that use augmented reality (AR) (Pavlik and Bridges 2013), digital gaming technologies (Domínguez 2015), and Artificial Intelligence resources (Acquarone, 2023; Guo et al., 2022; Micó, Casero-Ripollés, & García-Orosa 2022; Pérez-Seijo, Barbosa, and Vicente, 2023).

The Body and its Place in Immersive Journalism

Trying to answer the question about the body and its place in immersive journalism leads to a number of paradoxes. While some advantages and benefits of this product have been demonstrated in a normative manner (and even through experiments), other results and reflections indicate that there are many challenges that still need to be overcome for this type of experience. The presentation on how the relationship between the virtual body and immersive journalism is established in the form of paradoxes is especially advantageous because (a) it takes into account journalism's commitment to ethical aspects that guide the activity, such as objectivity, accuracy, and its narrative characteristics; (b) it reflects on the activity's strategies between informing accurately and in depth, as well as maintaining the public's trust and expectation for innovations; (c) it highlights the levels of complexity that need to be overcome to include technologies, such as immersive technologies, for non-fictional narratives; (d) it warns of the importance and challenges of generating empathy and connection to the stories and situations narrated; and (e) it highlights the gaps that producers of immersive journalistic content need to overcome for this product, apart from financial sustainability and audience development.

The place of the body in immersive journalism was observed based on the multiple solutions adopted in immersive news products, as well as through reception studies carried out in the doctoral research of Fonseca (2020) and Lima (2022) (Table 1). A number of capabilities and gaps in immersive technologies used in journalistic narratives were identified in both aforementioned studies, such as the possibility of innovation in journalism, new forms of interacting with information, the sense of presence and how it helps users better understand the stories, and the greater tendency towards dispersion in the interaction process.

This study addresses methodological rigor through a robust framework structured in four phases: (1) Sampling, (2) Data Collection, (3) Analysis; and (4) Validation. Transparent protocols at each phase and double check data analysis strengthen reproducibility, while the integration of empirical data with embodiment theory ensures findings align with broader scholarly debates. Our methodological framework is outlined below in Table 2.

Tensions indicate that the application of technology enabled by SoE to enhance understanding and emotional connection (Bruin et al. 2022; Gall et al. 2021) offers so much contextual information in the virtual environment that it turns an immersive journalistic narrative into an experience in which attention is dispersed (Fonseca 2020). It triggers the voluntary suspension of disbelief, a position required in fictional narratives, in journalistic content and non-fictional content (Fonseca 2020; Dalby, 2016). It is called reality but involves simulated environments and situations; it wants the user to forget the physical space-time for a better SoE, but the interfaces are still very visible (Lima 2022). It aims to achieve the sense of presence in another environment, but can cause *Cybersickness* in the physical body and coexists between more technical possibilities of manipulation in production and the greater perception of non-manipulation by users. Next, we shall detail the tensions encountered.

Better Understanding Versus Dispersed Attention

Since the first reflections on virtual reality back in the 1990s, researchers have argued about the potential for expanding human perception and cognition abilities (Biocca

Table 1. Immersive journalism products supporting the reflections in this article.

Methodology	Product/Medium	Summary	About the Analysis
Exploratory	The Party: the virtual experience of autism (2017) ^a <i>The Guardian</i>	360° video that addresses autism spectrum disorder by placing the user in the shoes of Layla, a 14-year-old girl, who is attending her mother's birthday party. We are given access to her thoughts, her anxieties, and her fears. The video simulates what the girl is seeing and hearing.	A tool that allowed the collection of data on products for later analysis was developed to observe reports and products following previous, flexible and replicable criteria in the stories. This allowed us to characterize information about the products and aspects of the narratives.
	El Peligro de Deportación (2017) ^b <i>Univision Noticias</i>	360° video series that tells the stories of illegal immigrants in the United States, after the election of Donald Trump and his anti-immigration policy. They talk about their fear of being deported, about their routines, and about how they created ties with the USA.	
	VICE 360 Refugees in São Paulo (2017) ^c <i>Vice</i>	360° video that tells the story of a Syrian refugee couple in São Paulo. The reporter follows the couple's work and home routines. The interview is interspersed with images of the war in Syria, which appear when the characters recall the difficulties they experienced in their home country.	
Reception Study	Bento Rodrigues – A vila que deixou de existir (2016) ^d <i>Vejaontocom</i>	A 360° video report showing the aftermath of the dam disaster in Bento Rodrigues, a rural area in the municipality of Mariana, in the state of Minas Gerais, one year after the dam owned by the Samarco mining company collapsed - a tragedy that left more than 200 people dead.	User tests were carried out in 2021 with a sample of 80 people, all over 18 years old, in the state of Paraíba, Brazil. These people were divided into 4 groups of 20. The interactions were through VR glasses and a notebook and, at the end, a questionnaire was applied. 24 people from the sample were also interviewed.
	Patrulha em Aleppo com os White Helmets sírios (2016) ^e <i>El País Brasil</i>	360° video report showing a volunteer rescue group in the province of Aleppo, Syria, as they search for survivors of bombings.	

Source: prepared by authors.

^aAvailable at: <https://www.youtube.com/watch?v=OtwOz1GVkDg>

^bAvailable at: https://www.youtube.com/watch?v=GJ4TIWRv_PM

^cAvailable at: <https://www.vice.com/pt/article/vice-360-refugiados-em-sao-paulo/>

^dAvailable at: <https://www.youtube.com/watch?v=fVrWfZdVKyl&t=1s>

^eAvailable at: <https://www.youtube.com/watch?v=B4KfPv5zb84>

1996). The possibility of offering a greater volume of information and first-person experiences that very closely simulate everyday life with high sensory fidelity were the reasons for defending this argument. Bruin et al. (2022) and Gall et al. (2021) highlight that the combination of a visually-crafted narrative and sound enhances the emotions, the feeling of empathy, and the connection with the story.

Other reflections that consider immersive journalistic narratives improve understanding include the fact that interaction with these products causes users to isolate themselves from other visual stimuli while wearing virtual reality glasses and induces greater sensory access to objects, environments, and the people involved in the story (Brautović, John and Potrebica 2017; Jones 2017). On the other hand, researchers have observed that

Table 2. Methodological framework.

	Actions	Additional Details	Expected Outcome
Exploratory Phase			
Sampling	<ul style="list-style-type: none"> – 88 journalistic products observed (based on Brazilian/ international awards) – 12 products selected for analysis (criteria: geographic, media, and format heterogeneity) – 3 products chosen for in-depth discussion (diverse regions/ media/formats) 	<ul style="list-style-type: none"> – Selection criteria: One U.S. product (Hispanic community-focused), one Brazilian, one British. – Rationale: Maximize diversity of immersive strategies and cultural contexts 	Enhanced representativeness of immersive journalism practices across different contexts
Data Collection	<ul style="list-style-type: none"> – Creation of a narrative analysis tool (tested and refined) – Data collected between May-June 2019, revalidated in September 2023 	<ul style="list-style-type: none"> – Tool structure: 48 questions across 5 sections: (1) Collection metadata, (2) Media profile, (3) Product details, (4) Narrative aspects (sources, conflicts, realism strategies), (5) Free observations 	Systematic data collection to analyze immersion-enhancing narrative techniques
Analytical Techniques	<ul style="list-style-type: none"> – Qualitative analysis (thematic approach) – Integration of data with literature on embodiment and immersion 	A narrative description of the products and collected data, cross-referenced with theoretical frameworks, underpins the interpretation of findings	Clear mapping of body-related paradoxes in immersive journalism
Validity & Reliability	<ul style="list-style-type: none"> – Peer validation (doctoral thesis defense and journal peer review) – Methodological triangulation (product analysis + literature) 		Important conclusions aligned with theoretical and empirical frameworks
Reception Study phase			
Sampling	<ul style="list-style-type: none"> – 80 participants – 2 pieces of 360° audiovisual journalism 	<ul style="list-style-type: none"> – Convenience sampling – Pieces in Portuguese with themes related to human suffering (war) were chosen, which presented an attempt to use VR tools – The experiment included 2 types of consumption: VR glasses and notebook 	Conduct an experiment that could provide varied data on the user experience and the elements studied (immersion, presence, comprehension, credibility and ethics)
Data Collection	<ul style="list-style-type: none"> – Questionnaire – Interview 	<ul style="list-style-type: none"> – All participants answered the questionnaire. – 24 participants were interviewed 	Collect quantitative and qualitative data that we could gain a broader view of the user experience
Analytical Techniques	<ul style="list-style-type: none"> – Product analysis – Statistical analyses (mean, standard deviation, median, 	The discussion of the results was carried out based on a dialogue between the results of all analyses	Test hypotheses and describe the experience lived by participants

(Continued)

Table 2. Continued.

	Actions	Additional Details	Expected Outcome
Validity & Reliability	Wilcoxon tests, Spearman correlation coefficient)		
	– Qualitative analysis of interviews		
	– Peer validation (doctoral thesis defense and journal peer review)	The research was authorized by a research ethics committee	Comparison of data and confirmation of results from different data collection and analyses
	– Methodological triangulation (literature + experimental research + combination of analyses)		

even with the sensory stimulation from wearing VR glasses, users may not develop a deeper understanding as their minds may be filled with questions about the content and immersive resources, instead of just mentally diving into the experience.

Sundar, Kang and Oprean (2017) compared the impact of journalistic content in virtual reality (VR) between desktop and text. They found that, while the sense of presence in VR helped to retell the story, participants who read the text remembered more details. The aforementioned authors suggest that a higher level of presence in VR may overload information processing capacity.

Fonseca (2020), on the other hand, reflects on how a greater volume of information in immersive narratives, which mobilizes body and mind simultaneously, can cause users to lose what is most important while interacting with the story. Lima (2022) observes, based on reports from participants in the reception study, that although they understood the reports, most of them felt confused and lost while looking around the environment and thus felt disconnected from the story.

Voluntary Suspension of Disbelief and Journalism

Samuel Coleridge coined the term “Voluntary Suspension of Disbelief” to describe an action that the reader performs to obtain pleasure in fictional literary narratives. He claims that readers must temporarily and voluntarily accept what is being described by the author as true, even if it involves fantasies and impossible worlds. The process of voluntary suspension of disbelief was described in four parts by Holland (1967) and can be approximated to the concept of immersion itself. According to Coleridge, (a) we stop noticing our bodies, (b) we don’t notice our environment, (c) we don’t judge probability or real-life tests, and (d) we respond emotionally to fiction as if it were real. This would explain the feelings that users experience while watching fictional narratives, such as crying, laughter, and feelings of fear.

Immersive formats require that, even in journalistic content, users activate their voluntary suspension of disbelief to feel the pleasures and emotions induced by a given story.

However, this became a paradox because journalism uses a rhetoric of credibility and authority (Fonseca 2020).

It is a fine line between fictional and non-fictional narratives, and the voluntary suspension of disbelief in immersive journalism blurs this boundary even more. How can a user trust an immersive journalistic product while being temporarily “tricked” into enjoying the story? How does journalism continue to be critical while also asking the public to limit their skepticism? Lastly, how can journalistic content that requires the voluntary suspension of disbelief for greater user involvement not impact credibility and be perceived as a less trustworthy product?

Reality Versus Simulation and Manipulation of Stories

The film *The Party*, from *The Guardian* (a virtual reality product that puts the user in the shoes of a 14-year-old girl diagnosed with autism spectrum disorder as she attends a birthday party), is characterized by its representation of a scene but is based on situations narrated by sources. It is important to note that simulation is a device used in journalism with the intention of enhancing a narrative and allowing subjects to form bonds with the story. Used mainly in television journalism and journalism on digital networks (especially those that use databases to provide additional information), simulation is normally used as an element of illustration in narratives. However, in this case, the entire film is a performance, with a script, lighting, and actors (Fonseca 2020).

This is not the only illustrative example of how the boundaries between reality and simulation are blurred in immersive journalism, and raise debates from an ethical point of view. Narratives disguised as natural are also common, especially in 360° videos (Aitamurto 2019). Pérez-Seijo and López-García (2019a) point out that some simulations have a dialogue with the audience where the characters speak directly to the camera, as if they were interacting with the user. These characters are given instructions on when to move, where to look, and what gestures to make. This kind of dialogue goes against the ethical guidelines that suggest journalists should avoid interfering in the events being portrayed (Aitamurto 2019; Pérez-Seijo and López-García, 2019a, 2019b).

Lima (2022) observed the impact of these scenarios on user interaction with content and reached findings that need to be taken into consideration. The *Bento Rodrigues* story, which removed reporters from its images and included simulated face-to-face conversations, exhibited more signs of manipulation than the story from *El País Brasil*. However, the responses to the questionnaire show that the participants did not realize this. In order to assess their impressions of manipulation, one of the questions asked participants to indicate how much they agreed with the statement that the story seemed to express reality in a less manipulated way. The participants who used VR glasses did not see any significant difference between the two news stories, that is, they believed all the narratives faithfully represented reality.

Immersive journalism involving a full bodily experience, as proposed by De La Peña et al. (2010), raises even more concerns related to the simulation of reality and the illusion of embodiment. An avatar is a simulation of an individual’s body inside a virtual environment. The subject is made to feel as if the simulated body were his or her own. Madary and Metzinger (2016) point to evidence that shows relevant effects of the virtual reality experience, including the fact that individuals recognize themselves as people within

the virtual environment. Emotional responses tend to be even stronger, the potential for causing changes in behavior is increased, and there is the possibility of lasting psychological impacts. Researchers recommend that informed consent be obtained prior to the experiment so as to warn users of any possible effects.

With regards to Generative Artificial Intelligence (GAI), this tension between reality, manipulation and simulation in immersive journalism is even more worrying due to the risks and ethical challenges. The possibility of creating environments, reproducing an individual's voice (very similar to the original), and creating situations that are indistinguishable from reality increases the potential of creating events that never existed or misinformation, and compromises journalistic integrity. Once again, guidelines based on journalistic ethics and practices involving the integrated use of these technologies are central to this debate.

In this sense, researchers point out that transparency is one of the solutions to any type of manipulation-related issues. For Meier (2009), transparency has a direct impact on credibility and trust – two assets of journalistic media that build relationships with its audiences and civil society. It is therefore advisable to inform the user if any change or improvement has been made, and explain how these resources maintain a relationship with the truth (Aitamurto 2019; De La Peña et al. 2010; Kool 2016; Nakagawa 2017).

Disappearance of Mediation Versus VR Glasses

When reflecting on immersion and the digital arts, the French philosopher, artist and researcher Gregory (2011) points out that this sensation is more of an ideology than an aesthetic concept. He goes on to state that immersion does not arise in digital technologies, but it has memory; it has always been a promise and invokes a notion of non-mediation and forgetfulness of the physical world when it comes to virtual reality. However, he points to materialities of immersive technology that make this forgetfulness impossible, such as the weight of virtual reality helmets while on our heads or the discomfort of data collection gloves.

Gregory is not the only one to highlight non-mediation for a more in-depth immersive effect. Ryan (2015) states that when the interface “disappears” from the field of vision in the narrative, the distance between narrator and reader is very close to zero. Another way of visualizing these “disappearing interfaces” can be seen in the metaphor “perfect mediation”, by Bolter and Grusin (2000), when they reflect on virtual reality. However, these authors also recognize the difficulties of a non-mediated media experience.

In Fonseca, Lima, and Barbosa (2024), we reflect on *big tech* companies and their search for improvements in VR devices. Journalism relies heavily on these technology companies, not only their devices, but also their software and even financing and content circulation channels (Munoriyarwa et al. 2024; Simon 2022). Users are aware that devices are still far from a utopian non-mediation that would make the physical body “forget” while controlling a virtual body in a digital environment. Lima (2022) highlights a few negative issues pointed out by participants who used VR glasses, which include the blurry image and focus issues, the difficulty in reading what was written, and the loss of lateral vision.

Sense of Presence Versus Cybersickness

One of the barriers to the sense of presence in immersive journalism stories is the user's own physical body. Referred to as cybersickness, these discomforts that can develop

during the VR experience can result in symptoms such as nausea, dizziness, or vertigo, among others (Brautović, John and Potrebica, 2017). These symptoms occur mainly when using VR glasses (Pjesivac et al. 2021) and can affect immersion and the sense of presence (Khashe et al. 2018), as well as discourage the user from continuing the experience or using the device again.

Lima (2022) recorded statements from participants reporting that they felt discomfort in their eyes, nausea, and dizziness. Hardee and McMahan (2017) list factors that can contribute to or induce this unwanted reaction, such as age, posture, gender, type of hardware, image response time, lens calibration, ergonomics, length of the story, and image capture method.

For Gaggioli, Bassi and Fave (2003), presence involves a condition of belonging to two different environments, a normal and physical one and a virtual and distant one. Thus, when a virtual body experience causes discomfort in the physical body like cybersickness or the size of the device itself, the illusion of the sense of presence is not completed.

Conclusions

More than just occupying a place as an instrument for interaction, the body in immersive journalism plays a crucial role as a catalyst for an experience of being transported to another space–time through a virtual body. A number of approaches to the relationship between the body and immersive journalism can be explored, such as the performance between journalists and sources in front of the cameras, in user interaction, in the available technological resources, in the subjectivities of bodies, and in ethical aspects. In this article, we aimed to identify how the body is located in the discourses and practices of this relationship based on theoretical references, product analysis, and reception studies.

The answer to the body and its place in immersive journalism is a paradoxical one in which the SoE and the body are fundamental to this experience, however, technological barriers and the way journalistic narratives are shaped prove incompatible. Immersive news products generate effects on the information processed, and have the potential to trigger emotional reactions and even positively affect how stories are understood by creating empathy and connection, and negatively affect how they are understood by leaving people feeling confused and lost, manipulating and offering simulations that are not transparent.

Contributions made in this paper are evidence of the body in immersive journalism, warnings and recommendations for appropriate language with a focus on values such as transparency, which also facilitate understanding. Of further importance is the emotional aspect and the connection with SoE in the immersive process, as well as reflections on unresolved tensions such as the voluntary suspension of disbelief and journalism, in addition to the conflict between non-mediation and VR glasses.

Budget constraints impacted research decision-making and imposed limitations on the study's scope. The lack of sociocultural diversity in the reception study, conducted solely with participants from one Brazilian state (Paraíba), affects the inability to generalize the conclusions. While the study included participants with varied demographic characteristics (e.g., gender and age), it did not encompass individuals with disabilities, limiting insights into accessibility and inclusive design within immersive journalism. Additionally, the tests were conducted with specific virtual reality equipment (VR glasses and a notebook), which excluded the analysis of more advanced immersive technologies, such as

artificial intelligence-generated environments or volumetric capture, capable of differently influencing bodily experiences. The predominant focus on 360° video narratives, though justified by their prevalence in immersive journalism, did not encompass experiences with avatars or complex interactivity, such as embodiment in detailed virtual bodies. The case selection was also limited, with few countries and experiences analyzed, alongside a reliance on subjective reports from questionnaires and interviews, which may introduce bias in data interpretation.

Future studies should expand to diverse geographic and cultural contexts to assess cross-cultural variations in immersive journalism reception. Research must explore advanced technologies (e.g., volumetric capture, AI-generated avatars) to understand nuanced bodily experiences like embodiment and agency. Integrating biometric data (e.g., eye tracking and heartbeat) with subjective reports could objectively map bodily-cognitive interactions during immersion. The concept of social presence can be studied based on the impressions of users when they meet the characters in immersive reports, including face-to-face simulation, as if their bodies were being perceived in the scenes of the events. Another approach could explore how adaptive technologies and inclusive narratives in immersive journalism may expand the representation of diverse bodies and ensure accessible and equitable immersion, including people with disabilities. Ethical frameworks for AI-driven hyperrealism and mixed reality require urgent development to address transparency and manipulation risks. Finally, interdisciplinary collaborations (journalists, technologists, ethicists) should establish guidelines balancing innovation with journalistic integrity. In short, even though it is important to understand the diversity of bodies in their practices, identities and dimensions, we understand that the reflections in this paper are not closed doors and serve to open paths for further discussions.

Author contributions

CRedit: **Adalton dos Anjos Fonseca:** Conceptualization, Formal analysis, Investigation, Methodology, Writing -original draft, Writing -review & editing; **Luciellen Lima:** Conceptualization, Formal analysis, Investigation, Methodology, Writing - original draft, Writing - review & editing; **Suzana Barbosa:** Conceptualization, Formal analysis, Investigation, Methodology, Writing - original draft, Writing - review & editing.

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Ethics

User research was approved by the Research Ethics Committee of the Faculty of Pharmacy (CAAE 52665921.1.0000.8035), at the Federal University of Bahia (UFBA), complying with participant anonymity guidelines.

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