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RESEARCH ARTICLE

Virtual reality as a technology of memory: Immersive presence in Polish politics of memory

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Abstract

Experiences that take place in virtual reality (VR) become part of users' autobiographical memory. As memories can impact users' self-perception, personal beliefs, and social interactions, storyliving in VR narratives can be used to manipulate memory and mould users' self according to the preferences of the VR narrative creators. Poland's Ministry of Culture and National Heritage has, in recent years, generously invested in the production of VR films that depict events from the Polish historical canon. VR is a spatial technology that positions users 'inside' a virtual storyworld and leverages users' sense of body position and movement to enhance memory and a sense of presence. Three dimensions of presence – self, social, and spatial – are relevant to understanding the role of VR in the politics of memory. The article interrogates a recent Polish VR production, *Wiktoria 1920* (2020, dir. Tomasz Dobosz), and argues that VR representations exploit a sense of presence to shape users' memory, perspective, and emotions in relation to the past.

Keywords: virtual reality; technology of memory; presence; politics of memory; prosthetic memories; Poland

Introduction

Poland's Ministry of Culture and National Heritage, under the auspices of the ruling illiberal right-wing Law and Justice party (Prawo i Sprawiedliwość, henceforth PiS), has, in recent years, generously invested in the production of cinematic virtual reality (VR) films. These films depict significant events from the Polish historical canon. They can be accessed free of charge in digital and physical locations around Poland, on YouTube, and via an exhibition at the Virtual Theatre of History. VR is becoming increasingly ubiquitous in museums and heritage sites. It is a spatial, interactive, and embodied technology that places users 'inside' a virtual scene or a storyworld. VR leverages users' sense of body position and movement to enhance a feeling of presence as well as learning and recollection. The adoption of this cutting-edge technology in memory politics is part of the political strategy of PiS in the ongoing efforts to define and shape the national narrative (Hackmann 2018; Meijen and Vermeersch 2023; Peters 2016).

In this article, I examine how the Polish PiS government aims to shape users' perspectives and emotions toward the past by appropriating the logics of self-presence, spatial presence, and co-presence in immersive VR representations of Polish history. VR is the latest iteration of a digital 'technology of memory' (Sturken 2008; Van House and

Churchill 2008) that shapes what is remembered and how, in terms of individual, political, and cultural memory (Assmann 2009). One unique feature of VR is that it enables users to acquire *embodied*, first-person point-of-view memories of events that they did not live through personally. Going beyond storytelling, users can engage in 'storyliving' in VR (Arora 2017) within a spatial immersive context, enhanced by a diverse range of visual, auditory, kinaesthetic, and tactile cues. VR experiences become part of the personal, or autobiographical, memory, as opposed to 2D videos, which are integrated only into more shallow episodic memory (Fivush 2011; Schöne *et al.* 2019, 2023). This means that VR experiences are remembered as something that *personally happened to me-the user*, as part of users' personal biography/experience, rather than as a video they watched on a screen. VR foregrounds the self as the experiencer of the event.

The characteristics, roles, perspectives, and experiences of the virtual self are blended with those of the users' self in VR. Using a modified version of Wang's (2022) theory of self, I employ two meanings of the term 'self' in the article: (1) the self of users in terms of the traditional notion of selfhood (James 1890; Neisser 1988; the 'represented self' in Wang 2022) and (2) the VR self, which is the characteristics, roles, perspectives, experiences assigned to the user within the virtual environment by its creators. The sense of presence, as further discussed in detail, promotes the integration of the two selves.

Experiences that take place in VR and that become part of the autobiographical memory are perceived as 'real' by individual users (Kisker *et al.* 2020; Schöne *et al.* 2019, 2023). They are also co-constituted by a particular technological system and a specific virtual environment/story, which are created by entities with distinct interests and embedded within a particular political, cultural, and historical context (Evans 2019; Kazlauskaitė 2022a; Lanier 2017). VR memories are both 'in-the-head' and 'in-the-wild' (Barnier and Hoskins 2018; Fawns 2022; Hoskins 2016). Moreover, memories of VR experiences are 'in-the-body' too. VR achieves presence by engaging the entire body, including the motor system, the sense of balance, and the sense of body position in space. In contrast to other media devices, each component of VR must operate in precise coordination with the movements of the human body (Lanier 2017).

Mediated narratives of past events, which users have no lived experience of, become a personal memory in VR, enabling users to assert, 'It felt as if I was there; as if it happened to me; as if I witnessed it in person,' as opposed to, 'I watched a video about it.' Alison Landsberg's (2004) term of 'prosthetic memory' seems to be an apt metaphor for memories produced through and acquired in VR, with one caveat (cf. Berger 2007; Hutton 2022; Tybjerg 2016). Landsberg (2004, 2) defines the concept as 'a new form of memory', which 'emerges at the interface between a person and a historical narrative about the past, at an experiential site such as a movie theater or museum,' where 'the person does not simply apprehend a historical narrative but takes on a more personal, deeply felt memory of a past through which he or she did not live.' Landsberg envisioned prosthetic memory as a politically progressive form of cultural memory. However, the case of VR memory prosthesis in the context of Polish politics of memory reveals how prosthetic memory can be deceptive and manipulative in its use of immersive presence (Kazlauskaitė 2022a).

Moreover, I would argue that VR does not stop at generating 'prosthetic memories;' it also extends to the creation of 'prosthetic perspectives' and 'prosthetic emotions.' By providing a sensory-rich and immersive experience, VR plays a pivotal role in shaping how people approach and make sense of past and current events. For example, it can both support and undermine users' ability to enter a dialogical relationship with the experiences of individuals in the past and to shift from one perspective to another. It can also enable or prevent users from noticing their own projections onto the experiences of others and differentiating between self and others in their respective contexts (for discussion on how VR could contribute to politically progressive cultural memory, Kazlauskaitė 2021, 2022b).

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Therefore, adopting particular perspectives and emotions through VR experiences becomes a profoundly political exercise with the potential to either strengthen or undermine social ties across differences. Furthermore, considering the profound impact memories can have on our self-perception, personal beliefs, and social interactions, the act of experiencing VR stories can be employed to manipulate memory and mould the user's self in alignment with the intentions of the creators behind the VR narrative (Bonnail *et al.* 2023; Kazlauskaitė 2022a). When VR experiences are widely disseminated and reinforced by complementing narratives in news and social media, museums, film, television, and educational curricula, VR can emerge as a powerful tool that harnesses the illusion of immediacy to transform a larger cultural memory narrative into personal memories. This prosthetic effect in VR hinges on the sense of presence.

In this article, I will first provide an overview of the current research on the phenomenon of presence in VR and discuss its broader implications for memory politics. I then examine a recent Polish VR experience, entitled *Wiktoria 1920*, and inquire how the dimensions of spatial presence, self-presence, and social presence are invoked in the experience via a range of storytelling and cinematographic techniques. I conclude by discussing the potential impact and limitations of the employed 'presence techniques' on users' perspectives and emotions toward the past (and the present).

Presence in VR and why it matters in politics of memory

The concept of 'presence' derives from 'telepresence,' a term that was first coined by the computer scientist Marvin Minsky in 1980 to refer to a sense of transportation to a remote space via teleoperation. Since then, many definitions of 'presence,' both overlapping and in conflict with one another, have emerged in computer science, communication, engineering, education, and psychology, but what most of them share is the idea that presence conveys a sense of 'being there' (Lombard and Jones 2015, 22). In other words, it conveys a sense of being present in a particular space or environment. For example, Sheridan (1992, 120) proposed that 'presence' refers to a 'feeling like you are actually there at the remote site.' Steuer (1992, 76) defined presence as 'the extent to which one feels present in the mediated environment, rather than in the immediate physical environment.' Based on a review of earlier conceptualisations, Lombard and Ditton (1997) defined presence as 'the perceptual illusion of nonmediation,' or a perception that technology is not involved in an individual's technology-mediated experience.

Among the many new dimensions of presence debated in the growing scholarship on this subject (spatial, social, mediated, perceived, physical, corporeal, immersive), three dimensions that are of particular relevance to the current discussion are self-presence, spatial presence, and co-presence (or social presence). Self-presence 'occurs when we perceive the body, emotions, and/or identity of a technology-based version of us as our own' (Ratan 2013). Spatial presence expresses the feeling, sense, or state of 'being there,' whereas co-presence or social presence refers to a sense of 'being there' together with others and an interaction with them (Nash 2018, 126). Co-presence can be understood as social presence (Lee 2004). It provides a user of a medium a perception of being together in or sharing a space, as well as a perception of a perceived access to another intelligence (Biocca 1997; Huang 1999) and/or an affective and behavioural engagement (Harms and Biocca 2004). In other words, co-presence or social presence refers to the perception of 'access to the intelligence, intentions, and sensory impressions of another' (Biocca 1997 22). It conveys a relationality to and an encounter with another being.

Part of this encounter is shaped by the users' orientation and mood (Evans 2019), motivation for and openness to an engagement (Shin 2018), and a history of previous

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experiences, both real and virtual, that set the context for the experiencing of VR content. An equally important aspect is how the VR experience itself models this relationality vis-à-vis an encounter with others. VR shapes the users' perspective of an environment and the represented others that are part of this environment and functions as a perspective- and emotion-training device (Kazlauskaitė 2022a, 2022b). Therefore, the question we need to ask is: How does VR shape and organise our vision and our emotions? How does it instruct us to relate to others in a virtual environment?

Kazlauskaitė (2022b) has identified four modes of relation between VR users and the past. These can be conceptualised as ideal types that typically manifest in various combinations in concrete VR experiences: projection, dialogical attention, replication, and rupture. The defining feature of projection is its emphasis on the self: the experiences of past individuals are understood primarily or exclusively through the lens of the users' own feelings, experiences, beliefs, values, and contemporary context. Rather than inquiring about how people in the past might have experienced events or circumstances in their own otherness, the projective mode propels the users to focus on how *they* would have experienced those past events had *they* been 'there.' Dialogical attention, on the other hand, requires a reflexive oscillation between self and other. It involves an active acknowledgment and consideration of the alterity of others, including their contexts and experiences, while simultaneously engaging with these others and their experiences in affective, moral, and/or ideological ways. Dialogical attention entails reflexivity about the intricate engagement between self and other across spatial, temporal, and sociocultural contexts. Replication homes in on the accuracy of a given representation and downplays the significance or attempts to eliminate the knower-feeler in the process of engagement with the past. In other words, it seeks an 'objective' view of the past as a detached, omniscient perspective 'from above.' Lastly, rupture underscores the alien, foreign, and unknowable character of the past. The paradox in this mode of relation is that one attempts to relate to the past by highlighting its absence and/or the unbridgeable distance that separates us from it. This realisation may serve as motivation for the pursuit of knowledge about the past.

A shared feature among all these modes of relation is that they mediate proximity and distance between the knower (in the present) and the represented past or the represented experiences of past individuals. In VR, this is realised through spatial presence, self-presence, and social/co-presence. In other words, the users are positioned at varying degrees of proximity/distance to the represented pasts both in space (time) *and* in perspective. VR content that provides a representation of the past may promise to literally transport users to another space and time (eg, VR as time-traveling in Meta ads), that is, to project oneself into the past. However, VR content may also reveal a constructed nature of a virtual representation of past events. This may be achieved, for example, by facilitating a virtual encounter with the author of the representation, by avoiding photo-realism, and by immersing users in spaces that the visible author-narrator constructs around them as the story unfolds (eg, The Book of Distance VR).

In terms of perspective, a user can be positioned as a disembodied ghost-like point of view hovering in space, as an embodied but somewhat distanced witness, as an embodied and more proximate participant in the depicted events, and, in extreme cases, as taking over the body of concrete individuals in the represented pasts. The latter is a radical form of projection, whereby the otherness of past individuals is negated by asserting proximity. Empirical research demonstrates that users feel more spatially present when they assume a first-person (egocentric) perspective than when they occupy a third-person (exocentric) perspective in immersive environments (Havranek *et al.* 2012; Slater *et al.* 1996). In other words, users identify more with their 'virtual selves' when they experience the virtual environments from a first-person point of view.

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The inherent danger that this technology introduces to the realm of memory politics is that VR can be employed to manipulate users' perspectives on the past, grounding it in personal experiences and memories of these events. This manipulation hinges on the exploitation of 'the perceptual illusion of nonmediation' (Lombard and Ditton 1997) and the sense of presence, which can make it difficult to distinguish between real-life experiences and virtual ones. Even if users can clearly differentiate between memories acquired in VR and those from physical reality, they may still be susceptible to the subtle influence of storyliving a personal, embodied, and emotionally charged VR narrative.

Two strands of research literature relevant in this context shed light on the role of VR in the politics of memory. The first pertains to the role of gesture and embodiment in recollection, while the second concerns the role of adopting avatars in shaping users' behaviour. Empirical research indicates that when people perform actions involving bodily movements and gestures, their memory of these actions is enhanced compared to when they are merely asked to describe the same actions verbally (Cook *et al.* 2010). Gesture and movement introduce an element of action that improves recollection and learning (Cohen 1981; Cook *et al.* 2008, 2010; Saltz and Donnenwerth-Nolan 1981). As Cook *et al.* (2010, 470) have demonstrated, bodily enactment and gesture 'facilitate encoding of information into long-term memory.' Additionally, research has shown that observing someone else performing actions can also aid in memory retention of those actions (Cohen 1981, 1983; Cohen *et al.* 1987; Mulligan and Hornstein 2003). These findings align with the conclusions of Mel Slater and his colleagues, who argue that spatial presence is grounded in performing actions and that a sense of 'being there' in a virtual environment is dependent on 'doing there' and on bodily movement (Sanczez-Vives and Slater 2005; Slater *et al.* 1998, Slater and Steed 2000).

The potential effects of VR on memory are also apparent when we consider how digital representations of oneself influence user behaviour. Research on the Proteus effect (ie, a phenomenon in which the behaviour of individuals is affected by the characteristics of their digital representation) illustrates the effects of avatars/virtual personas on users' cognition and behaviour. It also highlights the potential risks associated with 'becoming' someone else through a digital embodiment. For example, a study conducted by Peña *et al.* (2009) revealed that participants whose avatars wore black cloaks, stereotypically associated with 'evil' and 'aggression,' developed more aggressive intentions and attitudes than those participants whose avatars were dressed in white cloaks. Similarly, participants with Ku Klux Klan (KKK)-associated avatars likewise developed more aggressive attitudes than a control group whose avatars were dressed as doctors (Peña *et al.* 2009). Corresponding findings have emerged in other studies, showing that participants with taller avatars negotiated more forcefully and felt more confident than participants with shorter avatars, whereas participants whose avatars had more attractive faces behaved in a more friendly manner (Yee and Bailenson 2007). Peña *et al.* (2009) explain this phenomenon as an automatic response that occurs without conscious thought. It results from situational cues (eg, specific costumes or uniforms, bodily characteristics, etc.) linked to certain memories and stereotypes. These cues may consequently prime how one feels, thinks, and acts.

Production of a sense of presence through engaging bodily movement in virtual storyworlds, combined with a digital representation of oneself linked to specific affective, perspectival, and behavioural traits, results in a powerful technology of memory. It has the potential to instil specific attitudes, beliefs, values, and emotions, along with ways of relating to others in both past and present contexts. Users may often absorb these influences without conscious awareness. VR demonstrates how a narrative about the past is inherently intertwined with the present and the future.

In the following discussion, I will examine a recent Polish cinematic VR production, *Wiktoria 1920*, which depicts the Polish–Soviet War. My analysis will primarily centre on

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the design of self-presence, social/co-presence, and spatial presence in the VR experience via a range of storytelling elements. I will conclude by discussing their potential impact and limitations in shaping users' perspectives and emotions toward the past, which should be further examined through future empirical research on user experiences.

Self-presence, social/co-presence, and spatial presence in *Wiktoria 1920*

Since 2018, the PiS government has made significant investments in the production of historical VR films as well as in public dissemination of the VR technology in educational and cultural fields. This has positioned Poland as a leading player in this field on a European scale. The new VR films are accessible at no cost through digital and physical locations in Poland, such as on YouTube and at the Virtual Theatre of History, which showcases the VR films in the centre of Warsaw (Gallery *Okno na Kulturę*) and travels around the country as a mobile exhibition. The new VR films present a specific interpretation of Polish history, in alignment with the government's memory politics agenda (Hackmann 2018), and convey narratives of victimhood, suffering, patriotic heroism, and valour (Kazlauskaitė 2022a).

In 2023, a new partnership between Meta and the Polish government was established, aiming to mainstream VR in school history. The Polish Centre for Education Development organises seminars for schoolteachers on how to incorporate VR in the classroom. Additionally, Poland hosts an annual festival 'Immersion,' which showcases the latest VR experiences, with many of them focusing on historical themes. For instance, out of the 27 VR experiences presented at the festival in 2022, 16 were related to history, and 11 out of these 16 were Polish productions.

Exemplifying this emerging trend of history-focused VR films, *Wiktoria 1920* is a cinematic VR experience, directed by Tomasz Dobosz. It was released in 2020 with the purpose of commemorating the centenary of the Polish victory against the Soviet Russian attack in 1920. The authors of the screenplay are Tomasz Dobosz and Mariusz Laszuk. The runtime of the film is 39 min, exceeding the typically much shorter length of cinematic VR productions. The film portrays the adventures of a diverse group of characters fighting in the 1920 Polish–Soviet (Bolshevik) War. They undertake a special joint task that proves to be decisive for the victorious outcome of the war. The user is one of the members of this group and thereby takes part in the action. The film blends historiographically accurate information with fictitious elements adapted to the immersive storyline. The film was produced by the Office of the Programme 'Niepodległa' ('Independent') and co-produced by the National Centre for Culture Poland (Narodowe Centrum Kultury), a state institution responsible for the promotion of Polish national heritage, cultural education, and the maintenance and dissemination of the 'national and state tradition' (Nck.pl). The premier of the film took place at the National Museum in Warsaw (MNW) on August 14, 2020. Since then, the film has been made available online. It can be watched on a 2D screen or a VR headset on the official YouTube channel of 'Niepodległa,' a multiannual state programme dedicated to the celebration of the centenary of Poland regaining its independence. The film has also been shown in locations around Poland as part of the mobile exhibition of the Virtual Theatre of History, which promotes the history of Poland in VR. Methodologically, to discern the dimensions of self-presence, social/co-presence, and spatial presence within the film, I conducted a real-time user analysis based on my personal experience of viewing the VR film through the Oculus Quest 2 headset.

Self-presence

In this VR experience, I am positioned in the first-person embodied point of view of a Polish man named Tadeusz (Tadek), fighting against the Soviet Russian troops in the 1920 Polish–Soviet War. Throughout the experience, I can see my virtual arms and

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sometimes legs and feet. In some scenes, my character actively moves arms and hands to participate in the storyline and engage with other characters, which enhances the sense of presence. I am one of the five main characters in a group tasked with delivering a secret report to Warsaw: uhlan Władysław Bronczak, student Jan Wegielski, a female spy (posing as a photographer) named Pola Lewicka, and a pilot named Merian C. Cooper. This mission is crucial and ultimately plays a decisive role in achieving victory. The virtual self that is assigned to me and that I am expected to embody is that of a heroic, brave, and virtuous Polish man, who is fighting for the freedom of his fatherland against the Soviet troops depicted as cruel, fierce, and barbarous.

Considering the research findings on the Proteus effect, this kind of user positioning may influence their attitudes and behaviours, potentially making them more inclined to interpret Polish history in simplistic terms of antagonism between good and evil – between the 'all-good,' courageous, heroic Poles and the 'all-bad,' brutal enemies. This antagonistic framing instructs users to adopt the position of and see their in-group as an embodiment of virtue, courage, and sacrifice for the fatherland. The virtual self and its experiences in the VR story, once adopted and accepted, provide the grounds to reinforce one's self-worth and sense of belonging to a dignified group. The penultimate scene of the VR experience underscores the virtuous Polish self: after the successful accomplishment of our mission and victory in the war, the Polish Chief of State Józef Piłsudski personally awards each one of us with the Cross of Valour, a military decoration that was introduced in 1920 and given to individuals who demonstrated deeds of valour and courage on the field of battle. In effect, the blending of the virtual self with the user's self transforms the narrative of cultural memory into a personal and embodied memory.

The storytelling elements that are used in *Wiktoria 1920* and may reinforce a sense of embodied self-presence consist of physical interactions with different characters and objects: Jan helping me get to my feet by reaching down and grabbing my hand; being handed a secret report and seeing myself holding it; riding in a plane and jumping out of it; riding a horse and falling off of it; being handed a pistol, holding the pistol, and pointing the pistol at an enemy; seeing my hands tied; and crawling and hiding in tall grass. Physical interaction with other people and objects (using hands) contributed the most to the sense of self-presence in the VR experience, especially when I activated the hand-tracking feature on my Oculus Quest 2. This enabled me to see the outline of my own physical hands and their movement in the visual field alongside the hands of my virtual character (see Figure 1). It is not required to use hand-tracking – or, alternatively, hand-held controllers – to experience the VR story, but hand-tracking amplified the sense of presence in certain scenes.

A notable scene occurred in a Soviet Russian troop camp, where the positioning of the camera aligned particularly well with my body and hands, creating a strong sense of self-presence. In the scene, our group member, Jan, is dressed as a Russian, whereas Pola, Merian, Władysław, and I walk with our hands tied, pretending to be prisoners of war held captive by Jan. This is our strategy to deceive the Soviet Russian troops blocking the roads to Warsaw, allowing us to cross their controlled territory. We all arrive at the Soviet Russian camp at night. Once there, an aggressive Russian soldier approaches our group. He looks me directly at me, assaults Pola (who is standing behind me), and eventually hands me a pistol, ordering me to shoot her. I see the virtual arm of my character extending straight in front of me, holding a pistol aimed at Pola. Simultaneously, the Russian soldier points his pistol directly at my face (see Figure 2). Suddenly, I turn the pistol at him, gripping it with both hands, and pull the trigger (see Figure 3). During these actions, the hand-tracking allows me to move my physical hands in sync with the virtual hands, and observing these gestures enhances the recollection of these scenes. Ultimately, it is revealed that the pistol is not loaded. The soldier takes it from my hands,

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Figure 1. Tracked physical hands in the visual field before jumping out of the plane.

laughs, and then threatens to shoot me. The ability to overlay the tracked physical hands over the arms and hands of my virtual body, performing the same actions as the virtual self, contributed to a heightened sense of immersive illusion, virtual body ownership, and the memorability of the scene.

Social presence/Co-presence

In *Wiktoria 1920*, I am interacting with and constantly surrounded by other characters. Cinematic VR, being based on a 360° video instead of computer-generated worlds and characters, limits the capacity to have a real sense of co-presence and interaction with others, of being 'there' together with 'real' persons. Nevertheless, there are moments in the VR experience where the other characters feel more 'real.' These are the instances when the characters address me directly, handing objects to me or taking them, and make eye contact (mutual gaze). At times, they come very close to my face, occasionally to the extent that it feels uncomfortable or threatening. In these moments, I get the sense that these characters share the space with me, and there is a connection between us. In the

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Figure 2. Pointing the pistol at Pola on the orders of the Russian soldier. The outline of my tracked physical hands is visible on top of the hands of the virtual character.

interactive scenes, I am not a remote spectator or a ghost-like disembodied presence suspended in mid-air, merely observing events unfold. Physical, embodied interaction with other characters, involving hands and close eye contact, enhances the sense of co-presence and reality of others the most. This includes actions like holding and pointing a gun at another person, being threatened at gunpoint, being screamed at to wake up, and passing objects to other characters (eg, a map, a sword, a secret report). The experience foregrounds my position as a direct and involved participant in the story, but it also incorporates storytelling elements where my character serves more as a witness than a participant actively doing things with others. The primary challenge concerning the sense of social presence in the experience lies in my inability to speak with other characters. I can only infer the thoughts and emotions of other characters to a limited extent by observing their actions, emotions, and body language.

The relationality toward other characters is likewise strictly organised into two opposing groups: us/Poles and them/Russians. This preassigned identification with a particular group is loaded with affective meaning and related beliefs regarding self and others,

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Figure 3. Pointing the pistol at the Russian soldier. The outline of my tracked physical hands is visible on top of the hands of the virtual character.

which social presence may enhance. Lee and Shin (2012) note that an increased sense of social presence, when it is linked to a disliked target (or a disliked virtual character in this case), can escalate the negative perception of the target and amplify prior negative associations. This is a likely outcome of storyliving *Wiktoria 1920*.

After delivering the secret report to Warsaw's Citadel – a document containing the key to the Soviet Russian cipher code that permits the Polish radio intelligence to decipher the enemy's messages and jam the Soviet radio communications – one of the senior radio intelligence officers makes the following affectively charged speech:

> Ladies and gentlemen, did you understand the order? Any break in broadcasting will be used by the Russians and they will turn back their troops. You know what will happen when the Bolsheviks enter Warsaw. Do you know what the news from the front are? Men will be hanged, women raped and churches and villages burned. We are the radio intelligence. Nobody has heard of our actions, maybe in a hundred years, but please think how many times in history there was an opportunity for professors, students, radio men to win the war. So? Shall we try? [Translation – Author]

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Wiktoria 1920 underscores the important role of the Polish cryptologists, radio intelligence officers, and radio telegraphers in achieving victory in the war. The VR story allows me, as the user, to feel like I am contributing to their effort, facing various challenges to deliver the key to the cipher. The Russians, on the other hand, are presented exclusively as cold-blooded villains who kill, rape, and destroy. This portrayal is reinforced in other scenes, in which Russian men attempt to rape Pola and torture a Polish captive. My character is specifically positioned in a way to witness this last act. I hear the screaming of the man and, in the manner of shadow theatre, observe how the Russian soldier forces the hand of the Polish *uhlan* into a boiling pot and then peels the skin off. It is a deeply uncomfortable experience to go through, even if I do not see the torture directly, only through the shadow screen. As director Tomasz Dobosz notes, he intentionally included these elements in the VR narrative, based on historical evidence he had found: 'I got acquainted with all eighty-five, I think, types of torture, which I found in the literature, and this was the gentlest of them all' (Rzeczpospolita 2020).

The two positions of my virtual self in the VR narrative – that of a participant and, to a lesser extent, that of a witness – both offer possibilities for the viewers to enter a state of social presence. However, the position of the participant not only encourages a more active and involved engagement with the other characters in the story but also favours projective relationality over dialogical attention as the mode of relation. When I am positioned as an active participant within the story, the emphasis shifts more towards 'what it is/would have been like *for me* to be there' (projection) rather than 'what it was/could have been like *for them* to be there and how I could relate to it' (dialogical attention) (Kazlauskaitė 2022b). The mode of relation may be influenced by the personal contexts and traits of individual users, but being positioned as a participant in exciting and emotionally charged events allows less space for sustained reflection and focus on another's experience and context. Some degree of relational distance is necessary for becoming aware of and reflecting on another's experience. There is a possibility that such reflection might occur outside and after immersion in the VR narrative, particularly if the VR experience sparks one's interest to learn more about the topic.

Spatial presence

The sense of spatial presence relies on bodily movement and performing actions in a given space from a first-person, embodied point of view. Gesture and bodily movements also contribute to the memorability of the VR scenes. My experience of *Wiktoria 1920* corroborates the findings of empirical research (Sanczez-Vives and Slater 2005; Slater *et al.* 1998, Slater and Steed 2000) that demonstrate how the sense of 'being there' depends on 'doing there.' Therefore, the most memorable and immersive parts of the VR narrative were those that required physical interaction from my virtual character and where I could observe my virtual hands doing things and making gestures. Using the hand-tracking feature and being able to observe my physical hands making the same gestures as the virtual character heightened the sense of presence. However, even when I kept my physical hands still during the experience, the simple act of observing the movements of the hands of my virtual self in the story simultaneously drew me into the narrative and the virtual space.

However, not all parts of the VR narrative were equally effective in terms of spatial presence. The scene where I was riding a horse during an attack on the Russian forces on the battlefield made me nauseous, prompting me to close my eyes to escape the discomfort. Despite the immersive illusion being disrupted, the scene remained memorable. Other instances with a similar, though less pronounced, mismatch between the actions of my physical body and the body of my virtual self included scenes where I was sitting down while the virtual self was standing or walking, or vice versa.

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Conclusion

While spatial presence, social/co-presence, and self-presence are distinct dimensions, the analysis highlights the central importance of bodily movement, gestures, and interactions – both physical and through mutual gaze – from a first-person perspective in all three types of presence under examination. The primary contribution of VR as a technology of memory lies in the kinaesthetic embodiment in the first-person experience of a virtual storyworld and the sense of presence it provides. This phenomenon underscores VR's potential to influence users' perspectives, emotions, and their ways of relating to the past and the present. The prosthetic effect in VR hinges on the sense of presence. Presence is also what integrates the user's self with the virtual self and its characteristics.

In Wiktoria 1920, the VR storyworld provides a prosthetic perspective, prosthetic emotions, and prosthetic experiences that become integrated into the users' autobiographical memory. The more convincingly the perceptual illusion of immediacy is established, the less room there is for a reflective engagement with the past and its representation. By placing the user in the role of the main character, actively participating in the story, and as a member of a clearly defined in-group, the VR experience assigns a virtual self to the user. This virtual self enables the user to embody the character of a virtuous and courageous hero under attack, fighting against villains. The simplified framing of all protagonists as entirely virtuous, battling against entirely malevolent antagonists (a clear 'us vs. them' narrative), serves as a cognitive and emotional template through which national history is not only interpreted but also experienced and remembered in a vivid and emotionally charged manner. As memories can impact our self-perception, personal beliefs, and social interactions, such storyliving in VR narratives can be exploited to manipulate memory and mould the user's self according to the preferences of the VR narrative creators. The fact that VR experiences will be mainstreamed in school history education in Poland, with the help of Meta, is a cause for concern.

Being positioned as an active participant, not merely witnessing a story unfold but living it personally, prioritises a projective relationality to the past and the experiences of past individuals (Kazlauskaitė 2022a). It directs attention towards ourselves and our experiences in VR rather than those of the people in the past or the intentions of the people who created the VR experience. Self-presence in *Wiktoria 1920* promotes projection, contributing to the memory politics of the PiS government by inhibiting critical engagement, distancing, and multiperspectivity. Social presence and spatial presence, entwined with self-presence, further reinforce this self-centred approach to the past by diverting users from a more critical processing of their experience. This is not to suggest that VR cannot be employed in ways that support a dialogical, reflexive engagement with the past (Kazlauskaitė 2022b), but the new trend of Polish historical VR films tends to adhere to a narrowly defined narrative template that embeds complex pasts into stories of good against evil, heroism, suffering, victimhood, and injustice. This template is at the core of the grievance-driven memory politics agenda of the PiS government. VR serves this agenda by offering storytelling, reconceived as storyliving that imparts desired prosthetic emotions and interpretations, redirects, or restrains collective memories, and stifles users' ability to sustain critical reflection on difficult pasts.

While reading or watching a traditional film can also be immersive, these activities tend to allow for more space for detachment and critical reflection. In contrast, in *Wiktoria 1920*, an embodied experience as well as individual traits of a virtual self are imposed onto the user, erasing the distance. The ramifications of such perspective- and emotion-training in VR extend well beyond engagement with the past. Users may adopt the same patterns of perceiving self/others in their engagement with contemporary events. Zooming in on the experience of self – what it would have been like *for me* to

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be there – as opposed to the experience of others, combined with an exclusively positive, even self-glorifying image of the deeds and role of the in-group, may come to predominate in an interpretation of both the national past and the socio-political events of the present day.

The extent to which users succumb to the immersive illusion and feel the presence in VR likely varies greatly, and it requires further research. For example, individual psychological traits, such as the propensity to become immersed in VR or attitudes toward social interactions (eg, the degree of extraversion and enjoyment of social interactions), play a role in an individual's ability to experience social presence (Jin 2010; Kim *et al.* 2013; Oh *et al.* 2018). The characteristics of the assigned virtual self, the setting in which the content is experienced, and the previous exposure to the medium may also affect the sense of presence.

As the accessibility and availability of immersive historical VR content grow for the wider public in Poland and beyond, it is paramount that critical digital literacy skills, adapted to include new immersive digital media, be developed. Consumers of immersive historical VR content should learn to interrogate the necessity of photorealism in representations of the past, as well as question the metaphor of 'time-traveling.' Both aspects obscure the fact that engaging in storyliving in VR still involves interacting with an authored construction, designed by concrete individuals or organisations. Users should interrogate the aims, values, and ideas embedded by these entities in VR representations. Additionally, users should examine the characteristics, roles, and perspectives assigned to them in VR and consider the purposes they serve. Users should be attuned to how the VR content organises their emotions and the specific feelings it elicits.

Furthermore, users should be aware of the dynamics of surveillance capitalism (Zuboff 2019) in the context of immersive digital media. VR platforms offer greater efficiency for data harvesting by enabling the tracking of interactions, emotions, gestures, postures, movements, glances, and voices. This awareness is particularly urgent amid growing concerns about data privacy with the integration of innovative wearable sensors and the increasing popularity of non-invasive brain interfaces built into VR/AR hardware (Farahany 2023). Fostering these critical digital literacy skills can enhance users' understanding of the curated narratives in immersive historical VR content but also empower them to navigate the ethical implications and question their roles within these virtual environments.

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