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Cinema without frames: How *Darkening* bridges virtual and real to redefine presence and narrative embodiment

Özgür Çalışkan[1]

Abstract

This study examines how virtual reality (VR) cinema transforms spectatorship, embodiment, and narrative engagement through a phenomenological analysis of *Darkening* (Ondřej Moravec, 2022), a VR film exhibited at the Czech National Film Museum (NaFilm). VR cinema places the audience inside the film's world, fostering narrative embodiment through interactive and spatial storytelling. In *Darkening*, viewers engage in actions such as reaching for objects, responding to auditory prompts, and navigating a virtual environment, creating a fluid relationship between observation and participation. The museum setting enhances this experience by introducing a paradox of asynchronous co-presence, where the solitary nature of VR engagement contrasts with the implied presence of other viewers. This study introduces a three-stage framework consisting of experiential chronology, embodied interactivity, and cognitive reflexivity to analyze how VR cinema reshapes meaning-making and viewer agency. This research combines film phenomenology and narrative theory to demonstrate how VR cinema expands the boundaries of storytelling, interactivity, and presence, offering a profoundly affective and participatory cinematic experience in museum contexts.

Keywords

Narrative embodiment, immersive spectatorship, film phenomenology, museum experience, virtual reality, cinema

Introduction and analytical framework

Virtual reality (VR) cinema represents a significant departure from traditional spectatorship by placing the viewer within the cinematic narrative, thereby engendering active, embodied

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participation as opposed to the more passive observation typically associated with conventional cinema. This shift has a profound effect on how audiences experience narrative structures, embodiment, and spatial engagement. In October 2023, I received an invitation from the Czech National Film Museum (NaFilm) to work on my project focusing virtual cinema. Hence, this study employs a critical exploration of these dimensions through a phenomenological analysis of Ondřej Moravec's VR film *Darkening* (2022), exhibited at the NaFilm. The analysis adopts a three-stage analytical framework; *Experiential Chronology*, *Embodied Interactivity*, and *Cognitive Reflexivity* to comprehensively examine how VR cinema reshapes viewer engagement and narrative meaning-making.

First of all*, experiential chronology* emphasizes the temporal, lived experience of VR cinema, capturing the sequential, unrepeatable nature of immersive viewing. Unlike traditional film analysis, VR experiences cannot be paused or rewound easily, foregrounding the phenomenological immediacy and subjective continuity of the cinematic event. This stage documents the chronological unfolding of the viewer's experience, illuminating how temporal immersion shapes emotional and narrative comprehension. Secondly, *embodied interactivity* focuses on the physical and sensory dimensions of viewer interaction within VR. In VR cinema, bodily movements, gestures, and even vocalizations actively contribute to the narrative experience. This stage analyzes the physical interactions facilitated by the installation environment, such as reaching for objects, responding to prompts, or navigating virtual spaces, to understand how embodied participation transforms passive spectators into active narrative agents. Lastly, *cognitive reflexivity* addresses the reflective and interpretative processes that occur post-experience. After exiting the VR environment, viewers often engage in retrospective contemplation, interpreting their interactive experiences and emotional responses. This stage investigates the lingering cognitive and emotional resonances, highlighting the deeper implications of VR cinema for narrative agency, empathy, and ethical engagement.

The overarching objective of this framework is twofold: firstly, to elucidate the impact of VR cinema on individual viewers and, secondly, to expand our theoretical understanding of narrative, embodiment and spectatorship within contemporary media landscapes.

Methodology

This study employs an autoethnographic phenomenological approach, thereby enabling the researcher to document and interpret their personal embodied experiences within the context of VR cinema. Autoethnography is a particularly suitable methodology for analyzing VR experiences, due to its emphasis on the subjective, embodied, and affective dimensions of media engagement. This approach is grounded in a phenomenological tradition shaped by the seminal contributions of Sobchack (1992), whose theory of the embodied film experience reconceptualizes spectatorship as an intersubjective, sensory encounter; Marks (2000), who extends this framework through her notion of 'haptic visuality', emphasizing tactile, affective modes of engagement in intercultural and experimental cinema; and Pink (2009), whose work on sensory ethnography foregrounds the embodied, multisensory nature of knowing and meaning-making within lived experience and mediated environments. This methodological framework positions the researcher's embodied experience as a pivotal factor in unraveling the unique narrative possibilities afforded by VR. In addition, film phenomenology offers an alternative to purely semiotic or structuralist analyses by emphasizing the embodied, sensory, and experiential dimensions of film spectatorship. Rather than treating cinema as a system of signs or representations, this approach foregrounds the lived experience of the viewer, acknowledging how perception, intentionality, and intersubjectivity shape cinematic meaning.

At the core of phenomenology is intentionality, the idea that consciousness is always directed toward something (Casebier, 1991; Husserl, 1982). In film studies, this means that the spectator's engagement with the film is not passive but an active process of meaning-making. Casebier (1991) argues that cinematic perception is structured through the noematic content of the film world, wherein viewers do not merely receive images but perceive, interpret, and engage with them as intentional acts of consciousness. This challenges traditional objectivist approaches to film, emphasizing that the film experience is co-constituted by the viewer's perception and the film's world.

Building on Merleau-Ponty's concept of embodied perception, film phenomenologists argue that cinema engages more than just vision – it is a haptic, kinesthetic, and visceral experience (Barker, 2009; Sobchack, 1992). Barker (2009) describes film as a tactile medium, where the screen operates like a sensory surface that the viewer interacts with through bodily memory and affective response. Beyond individual perception, phenomenology also accounts for the intersubjective dimension of cinema – the ways in which film constructs shared, collective experiences. Chamarette (2012) further argues that cinema creates fluid subjectivities, where the relationship between viewer, film, and space is constantly shifting, producing an evolving interaction between self and cinematic world. In a broad context, film phenomenology can be defined as any intersection between film studies and phenomenology or more narrowly as the study of viewers' lived experiences, focusing on sensory, spatial, and temporal aspects of cinema (Ferencz-Flatz and Hanich, 2016). This relational approach is particularly relevant for museum-based VR experiences, where the physical environment, installation design, and spatial navigation influence the phenomenological reception of film. In addition, Fuery (2024) challenges rigid definitions of phenomenology, advocating for a temporal, embodied, and transformative engagement with cinema. This perspective underscores how film, particularly in immersive and experimental formats, does not just reflect reality but actively reshapes the viewer's perception of time and space. However, this methodology also involves notable limitations, including the impossibility of pausing or rewinding the VR experience, reliance on memory and subjective interpretation, and the challenge of generalizing individual experiences. These constraints are explicitly acknowledged and critically engaged with throughout the study to maintain methodological rigor and reflexivity.

In the light of these considerations, I designed this study because I thought that my experiences with the VR film *Darkening* (Ondřej Moravec, 2022) exhibited at the Czech National Film Museum could reveal findings and results in the context of cinematic VR and its transfer to the museum environment as a cinematic experience.[1] I watched the film three times in the museum environment and took notes during my interview with Jakub Jiřiště, one of the museum directors. Subsequently, I attempted to interpret the VR film *Darkening* in light of my findings on the changing alternative viewing modes of cinema, especially on narrative, VR, and interactivity. Therefore, the objective of this study was to construct a comprehensive review of the existing literature on the transformation of narrative, VR, and interactivity in the digital context by analyzing the film *Darkening* in conjunction with the literature considering the context of the viewing experience.

Narrative evaluation and digitalization

Digital media has radically transformed the narrative landscape by introducing qualities like interactivity, immersion, and user agency, which VR amplifies in reshaping how audiences experience stories. VR introduces a participatory dimension that requires active engagement. Page and Thomas (2011) described these qualities as essential in digital storytelling, particularly in VR, where they involve the audience in a dynamic, participatory role.

A key theoretical framework for understanding this transformation is cybertext theory, which contrasts traditional storytelling with digital forms that incorporate interaction as an integral narrative component, altering how audiences interpret and engage with stories (Punday, 2011). Unlike passive spectatorship in cinema, digital storytelling allows for narrative agency, where the audience's actions shape the experience. This shift raises fundamental questions about authorship: if narratives are co-constructed with users, to what extent does the creator control the story's meaning? This dynamic directly relates to the concept of *embodied interactivity*, as users' bodily presence and responsive actions within the VR environment influence the unfolding of narrative meaning in real-time.

The immersive quality of VR is intensified using design elements like sound, movement, and visual texture, which collectively form what Bizzocchi and Woodbury (2003: 554–555) call a narrative texture that deepens emotional and cognitive involvement. By layering these elements, VR crafts an environment where the user is not merely a spectator but an inhabitant of the story. This spatial immersion is a defining characteristic of VR, setting it apart from other digital narratives. Such multimodal engagement facilitates *experiential chronology*, wherein the narrative unfolds not through plot-driven exposition but through the user's affective and sensory progression through the virtual world.

The first-person, embodied nature of VR makes it particularly valuable in museum applications, where physical exploration enhances engagement and fosters deeper connections to narratives (Ryan, 2022: 17). Whistance-Smith (2022) observed that VR creates spatial experiences that incorporate oral and textual storytelling, drawing visitors into environments that feel both realistic and artistically engaging. By merging historical artifacts with interactive storytelling, VR enables users to form a more personal and visceral connection to past events. These embodied, spatially anchored experiences illustrate how *cognitive reflexivity* may be prompted by interaction with environments that blur the lines between memory, narrative, and place.

The flexibility of VR as a narrative medium distinguishes it from traditional storytelling by emphasizing emergent narratives and procedural authorship. VR narratives often evolve based on user interaction, making each experience potentially unique. Walsh (2011: 72) describes emergent narratives as structured frameworks that coexist with user input, allowing audiences to shape their experiences within a unified but flexible narrative space. Similarly, Murray's (1997: 152) concept of 'procedural authorship' supports a flexible, participatory experience in VR, where narratives are governed by rules that adjust to user input rather than a fixed script. This flexibility is distinct from simulations, which represent systems globally, whereas VR narratives guide users through discrete, temporally sequenced events that offer a sense of progression (Walsh, 2011: 78). The temporality is essential to *experiential chronology*, which foregrounds how the user's lived duration within the VR environment becomes the organizing principle of narrative flow.

The shift toward interactive and personalized narratives in VR can be understood in relation to historical changes in media production and consumption. Jost (2020: 160) contrasted VR's narrative approach with older cinematic practices by noting the shift from autography, where live elements made each viewing unique, to 'allography', where digital media offers uniformity yet allows personalized user interactions within a shared narrative framework. This distinction underscores the paradox of VR: while it individualizes the experience, it also depends on a fixed digital structure, challenging traditional ideas of narrative consistency.

Within VR's immersive environments, the viewer actively participates in the story. As Hatavara et al. (2016: 1) explained, VR enables an interpretive process where 'a mind in action is a mind emerging in dialogue with a world', which underscores the viewer's active role in shaping narrative meaning through engagement with the digital environment. This interaction is further enhanced by

Ryan's (2022) concept of the deictic shift, where VR users are transported into a narrative's temporal and spatial dimensions, which intensifies the experience of presence within the virtual world (Hatavara et al., 2016: 4). The potential of VR to simulate memory is particularly evident in Marles' (2015) 'memoradic narrative', which combines linear and non-linear storytelling to replicate the associative nature of memory. By mirroring human cognitive processes, VR storytelling becomes not just a narrative device but a model for simulating the complexity of human thought. This technique is especially effective in museum settings, where VR allows users to navigate fragmented story elements before coalescing them into a coherent whole. The engagement with memory, time, and space strongly aligns with *cognitive reflexivity*, inviting users to reflect on both the content and form of the story as they traverse its narrative architecture.

Despite its transformative potential, VR storytelling presents challenges in categorization and academic analysis. Koenitz (2018) addressed this issue by emphasizing the importance of media specificity and user agency in VR, which dictate how narratives can be structured and experienced. However, the absence of a shared vocabulary for terms like narrative and storytelling creates confusion across disciplines, complicating both academic discourse and practical applications (Koenitz, 2018: 3). This lack of terminological clarity not only affects scholarly discussions but also poses challenges for VR's broader acceptance as a legitimate storytelling medium. To fully integrate VR into narrative studies, interdisciplinary collaboration is necessary to develop precise definitions and theoretical frameworks.

Virtual reality: Transforming narrative, empathy, and sensory engagement

VR has fundamentally reshaped narrative by enhancing immersion, interactivity, and user agency by bridging physical and digital realms in ways traditional media has not. VR's ability to create primary spaces that immerse users directly, alongside 'orienting' spaces that guide them through interface tools, distinguishes it from previous media and allows users to become active participants in their digital environments (Ryan, 2022: 4). This structure, Ryan (2022: 17) argued, enables VR to deliver a 'first-person truly embodied experience', particularly in museum settings where physical exploration enhances connection to the narrative. Such embodied and situated interactions can be understood as foundational to what I describe as *embodied interactivity*, where the user's spatial, sensory, and motor engagement become integral to narrative comprehension and emotional resonance.

The immersive potential of VR is deeply rooted in its technological capabilities. Marie-Laure Ryan (2022) described how VR simulates three-dimensionality using holographic display and stereoscopic effects, which allows for a level of spatial realism that is challenging to replicate in other media. Whistance-Smith (2022) expanded this idea by explaining how VR's spatial storytelling – via oral and textual elements – allows museum-goers to experience realistic and artistically layered narratives while immersed in the narrative space. This immersive quality contributes to the construction of an *experiential chronology*, where the narrative unfolds as a sequence of embodied events experienced in time by the user, not simply observed.

The sensory richness of VR allows it to foster multisensory, emotionally resonant experiences. Murray (1997: 15) described VR as enabling the dynamic exploration of reality by turning the computer into an expressive medium that engages multiple senses and enriches the viewer's connection to the virtual environment. This engagement balances world-like immersion and game-like interactivity, where users experience a sense of agency while maintaining emotional depth (Ryan, 2001: 175). Koenitz's (2018) further refines this framework, mapping VR's media specificity

and user agency to guide the design of immersive narratives that respond dynamically to user input. These multisensory and participatory experiences not only contribute to *embodied interactivity* but also foster a reflective space for the viewer to interpret their affective and cognitive responses – what I refer to as *cognitive reflexivity*.

VR's ability to create a sense of presence is critical in fostering empathy. Gruenewald and Witteborn (2022) explained that VR narratives often emphasize an emotional style of empathy that positions viewers within stories of suffering and hope while building intimate connections to the depicted individuals. Nash (2018), extended this by referencing Gregory's (2016) concept of immersive witnessing, wherein users feel physically present alongside individuals they observe, reinforcing emotional engagement while also raising ethical concerns about manipulation and emotional exploitation. Similarly, Gillespie (2020: 152) characterized VR as the empathy tool, which allows viewers to 'step into other people's shoes' and experience humanitarian issues with a unique depth. However, while VR's emotional impact can be profound, its immersive realism also raises questions about the ethical responsibilities of creators in shaping user experiences. VR design must prioritize human-centered experiences, balancing emotional depth, narrative coherence, and user well-being. Jerald (2015) emphasized intuitive engagement and cognitive satisfaction while addressing ethical concerns like motion sickness and sensory overload. Ensuring accessibility and comfort is key to creating meaningful and sustainable VR experiences. Further, in research and therapeutic contexts, Cuperus et al. (2017) noted that VR can be used to simulate trauma-related experiences in a safe and controlled manner that allows participants to confront trauma analogs without real-life risks, which could benefit therapeutic applications and trauma research. These emotional experiences are critical to understanding how VR fosters *cognitive reflexivity* – an introspective state where viewers reassess their emotions and beliefs in light of digitally embodied scenarios.

VR's sensory and emotional engagement is technically complex, so it requires thoughtful design to maintain immersion. For instance, the screen door effect (SDE) – gaps between pixels that can disrupt the visual field – poses challenges in museum applications, where a seamless viewing experience is essential. To counter this, Sitter et al. (2017) experimented with diffractive films that scattered light across the display to minimize the visible spaces between pixels and enhance clarity. Another critical concern is sensory overload, where intense engagement with VR's multisensory environment can overwhelm users. Dooley (2017) stressed the importance of an exploration phase that helps users orient themselves within the virtual environment while preparing them for deeper engagement without sensory overload.

Cinematic VR (CVR) expands VR's immersive potential by employing techniques that reinforce a sense of presence. Ding et al. (2018) found that CVR's first-person viewpoint and 360° perspective intensify emotional responses and physiological arousal as users feel directly involved in the narrative. However, Mateer (2017: 20–21) suggested that CVR demands alternative editing techniques (e.g., organic transitions) to maintain narrative flow without the abrupt cuts typical of traditional film, while subtle audio cues guide users' gaze to maintain immersion. The CVR format contributes to an *experiential chronology* by enabling continuous, embodied flow that unfolds temporally and spatially, allowing users to feel immersed within the logic and rhythm of the story world.

VR's open, non-linear structure challenges conventional storytelling methods. Elsaesser (2014: 300) argued that VR's format contrasts with linear narratives, as VR often relies on 'spatial exploration' rather than sequential events to create coherence. This shift represents what Elsaesser (2014: 302) called a coherence theory of reality, where meaning emerges through user interaction rather than a pre-defined plot. Additionally, VR's structure allows for a future perfect tense, enabling

users to experience events as if they have already happened, making it an effective medium for historical and speculative storytelling. This emphasis on interaction over causality underscores the relevance of *cognitive reflexivity* in VR experiences, as users must assemble meaning through spatial and temporal cues rather than being led through a fixed narrative structure.

Interactivity in digital narratives: Engaging users through choice, agency, and immersion

The rise of interactivity in digital media has redefined the relationship between creators, narratives, and audiences. Unlike traditional, linear storytelling, interactive narratives offer viewers choices by making them co-creators within the story world. As Cover (2006) noted, how this shift transforms the audience's role from passive recipients to active participants, challenging conventional storytelling boundaries and redistributing narrative power from the creator to the consumer. This transition underscores the importance of *embodied interactivity*, where viewers are not just intellectual processors of narrative content but physically and sensorially engaged actors whose decisions shape their temporal and spatial navigation within the VR experience.

The transition from passive to active media consumption marks a significant evolution in narrative engagement, particularly in VR, where interactivity enables users to explore content dynamically (Cover, 2006). As Brookey (2010) highlighted, interactivity, absent in traditional media forms like film, fosters a unique sense of agency, where users' choices influence story progression. This agency enhances engagement, but it also blurs the line between authored narrative structures and user-driven storytelling, requiring a careful balance between direction and freedom.

Murray (1997: 126) defined agency as the power to take meaningful action and witness the consequences, a sensation heightened in VR-based experiences where decisions affect the unfolding narrative. However, Jost (2020: 168) criticized this apparent agency, arguing that the freedom of choice in interactive media often remains an illusion, as user paths are often subtly directed toward predetermined outcomes to maintain coherence. This paradox highlights the challenge of designing interactive narratives that feel open-ended while preserving a structured, meaningful experience. Furthermore, interactivity enhances engagement but also introduces cognitive challenges, as complex branching storylines may overwhelm users rather than enhance immersion (Ben-Shaul, 2008; Sangalang et al., 2013). Such cognitive engagement points toward *cognitive reflexivity*, where users become aware of the limitations of their choices, reflecting on how interactivity itself influences narrative perception and emotional resonance.

Balancing user control with narrative cohesion remains a central challenge for interactive storytelling. Ryan (2009: 44) referred to this tension as the interactive paradox, where the tension between user freedom and narrative cohesion risks fragmenting storytelling if not managed effectively. Addressing this, Ryan (2001) advocated for selective interactivity, which preserves a compelling narrative arc while still allowing user agency. Similarly, Plowman (1996: 100) suggested that coherence in interactive media relies on balancing mythic storytelling elements with rhetorical structure, ensuring that user choices feel both impactful and narratively justified. This emphasizes the role of *experiential chronology* in shaping the rhythm of events, even when user decisions intervene, by maintaining an underlying structure that guides temporal progression. Interactive digital narratives (IDNs) push the boundaries of storytelling by dissolving the traditional divide between creator and audience. Koenitz et al. (2015: 2) described IDNs as a dynamic system that enables viewers to engage directly with the story world by moving from passive spectators to interactors who make meaningful decisions. Jost (2020: 159) explored this concept through works like Black Mirror: *Bandersnatch* (David Slade, 2018), where audiences become 'operators' or

'performers' whose decisions actively shape the narrative. This evolution marks a departure from traditional storytelling models, requiring creators to design systems that support meaningful interaction while preserving thematic and narrative integrity. Within this model, *embodied interactivity* extends beyond mere choice – it includes the user's physical orientation, movement, and sensorimotor engagement that influence how the narrative unfolds.

However, interactivity also introduces risks to deep engagement. Ben-Shaul (2008) noted that interactive experiences with multiple screens or simultaneous actions can lead to user disorientation, reducing emotional and narrative absorption. Ben-Shaul (2004) suggested that decision points must be designed with clear narrative consequences, encouraging users to invest in choices with moral, emotional, or survival stakes. Such investment fosters *cognitive reflexivity*, inviting users to consider the ethical and emotional dimensions of their actions within the narrative space, heightening personal introspection. IDNs heighten personalization, allowing users to tailor their narrative experience. Lee et al. (2010) found that participants reported higher enjoyment with interactive narratives than linear ones, as the ability to make choices enhanced the viewing experience. However, co-viewing interactive narratives can reduce individual engagement, as viewers may feel less invested in choices made within a group setting (Lee et al., 2010). This suggests that interactive storytelling thrives in solitary experiences, where personal decision-making fosters deeper narrative transportation, yet it struggles to replicate this effect in co-viewing scenarios.

Spatial representation in IDNs plays a crucial role in user immersion, particularly in VR environments. Chris Hales (2015: 36) emphasized that digital spaces allow for immersive and participatory environments that make audiences feel as though they are part of the narrative, a sensation particularly effective in VR environments. Ryan (2009: 55) elaborated on this notion by identifying spatial immersion as one of the most achievable forms of immersion in interactive media, especially in VR, where users navigate virtual spaces and uncover story elements at their own pace. This immersion was augmented by Thompson's (2004: 94) concept of a 'responsive interface', which activates the viewer's body and allows for a more intuitive, visceral experience in VR museum exhibits.

As interactive media has evolved, IDN design has become more complex. Koenitz (2023: 4) described the creators of IDNs as 'system builders' who establish frameworks that allow viewers to become co-creators by making narrative decisions. This shift places storytelling responsibility in the hands of creators and 'interactors' to foster a shared narrative experience. El-Nasr (2007: 210) continued by categorizing engagement into 'voyeuristic, vicarious, and visceral' pleasures, which underscores the multifaceted appeal of interactive narratives drawing on film and theater theory. Ultimately, IDNs offer a highly immersive experience, enhancing engagement through user control and interactivity while challenging traditional storytelling conventions (Lee et al., 2010; Oh et al., 2020). This immersion contributes to experiential chronology by offering multiple but temporally anchored narrative arcs, and to *cognitive reflexivity* by prompting viewers to reflect on the consequences of their actions across different narrative outcomes.

Darkening

Director Ondřej Moravec's *Darkening* takes viewers into the artist's mind as he grapples with depression, utilizing VR's immersive capabilities to create a deeply personal experience. *Darkening* removes viewers from their external surroundings and places them directly into Moravec's memories, transforming them from passive spectators into active participants. Recognized for its innovation, the film won Best Immersive Film at the Thessaloniki Documentary Film Festival and Cinequest San Jose Film Festival and was nominated in major international festivals, including

Venice. Showcased at the Czech National Film Museum, *Darkening* exemplifies the convergence of cinematic narrative and digital technology in VR storytelling.

Personalized cinema and empathy in virtual reality: A study of *Darkening*

When entering the *Darkening* exhibition of the NaFilm museum, the viewer is confronted with a dimly lit room accentuated by three 360° rotating chairs and VR glasses. The room and chairs are surrounded by black-colored, medium-thick, soft-textured ropes suspended from the ceiling to the floor. I was alone during my three viewing experiences, so all the other chairs were empty. This situation created an isolated experience unaffected by the presence of others.

After sitting on the chair, the museum attendant helped me put on VR glasses and showed me how to adjust the visual settings. Next, she asked which language I wanted to watch the film. I learned that the film had German, English, and Czech options. I wondered whether experiencing the film in my native language would make a difference, but I postponed this thought and chose English. It also made sense that there was no subtitled version of the film because it would have been difficult for a VR film to focus on the visual narrative while the viewer followed the subtitles. The attendant closed the door when leaving the room, and the film started in complete darkness.

I considered the literature and pondered classifying my experience under the headings of narrative, VR, and interactive. However, my study was phenomenological, so a chronological design was better for sharing my thoughts about the experience. This decision aligns with the notion of *experiential chronology*, where the user's perception of time and story unfolds in the lived sequence of events within the VR world rather than a pre-structured narrative layout. Since note-taking was impossible during viewing, I focused on full immersion in the first screening and documented my reflections afterward.

Furthermore, although I attempted to notate my experiences as a viewer and researcher, it was impossible to rewind the film, watch the same scenes repeatedly, or pause and analyze scenes like a traditional film analysis. Therefore, my findings and interpretation based on my notes could include deviations or slightly different approaches to the film. The epistemological limit demonstrates the cognitive constraints of *cognitive reflexivity*, where one's memory, affect, and perception are interlaced with the VR experience in a non-reproducible way. The following sections of this article offer my comments on the chronological plot, my thoughts after all three experiences, and my notes from my interview with the museum director, Jacob Jiřiště.

Entering the director's world

I knew nothing about the film, so my perception of reality was initially distorted when I saw it was an animation. Thus, the film's animation created a unique world. If images had been taken from the real world, perhaps it would have been easier for me to make a spatial or visual determination. The animation created a distinct reality, altering my spatial perception within VR. The altered perception exemplifies *embodied interactivity*, as my body responded and adapted to the animated visual textures rather than realistic imagery, anchoring me in the virtual world through sensory alignment.

I floated downward over a town-like place while the narrator told me to catch the red ribbon that encircled me. I had my first physical experience at this moment because when I reached out to touch the ribbon, I actually touched the black ropes in the museum. Unexpected overlap between virtual input and real-world feedback is a key example of *embodied interactivity*, where the body's response to physical stimuli becomes integrated into the virtual environment's design. While the ribbon encircled me, the 360° chair allowed me to fully experience my surroundings while descending from

the sky. Since ropes also surrounded my physical presence in the museum, this experience continued for a while.

The 33-year-old director began his story by talking about the psychological state of depression he had faced for 13 years, his suicidal thoughts, and how he eliminated them with moments from his past. Although I did not know it during my first viewing experience, I later learned that the narrator who spoke English was the director, which added a more realistic narrative to the experience, as seen in the field of essay film.

Ruined houses surrounded the town-like square with a water feature in the middle. The narrator directed me to one of these houses with his voice. I discovered which house I needed to enter by turning around. I entered a dark door when I headed toward the right side of the house. When recalling this scene, I realized the importance of the gliding effect. If I had walked through the forest from a first-person viewpoint in this scene with a walking effect, perhaps I would not have seen the forest through the character's eyes since my museum experience was in a fixed chair. However, since the gliding effect was highly compatible with the physical environment in the chair, my body adapted to this situation without alienating me. For this situation, *embodied interactivity* is crucial: the user's bodily stillness is paradoxically animated through perceptual immersion, facilitating emotional resonance with the narrative flow. This adaptation reflects *experiential chronology* shaped by embodied design; my physical passivity within the chair coexisted with narrative momentum through the gliding movement, allowing the plot to unfold experientially and affectively.

At the end of the path in the forest, I encountered a mirror with the reflection of a little boy. While the narrator was talking, I realized the child mirrored my movements. This synchronization of movement – mirroring my gestures – is an intentional use of *embodied interactivity* that increases user empathy by creating a feedback loop between viewer and narrative subject. This scene was important at the film's beginning because the mirrored movements established a bond with the director, which allowed identifying with him and empathizing with his experiences later on. While the director described his feelings, the mirror broke. The director asked me to pick up one of the shards on the floor and place it on the mirror as if it were repaired. When I reached for the shard, I saw a reflection of my hand animated in the style of the film. Thus, I became more present in that world. As a result, the moment encapsulates *cognitive reflexivity*, where my sense of self-awareness within the narrative heightened, fostering reflection on identity, trauma, and emotional bonding with the character's inner world.

Next, I sat in front of a desk in a child's room surrounded by crumbling and ruined walls. The sounds of arguing emanated from the right rear. The significance of this room was apparent during my second and third viewings when I recalled that the notes on the desk said, 'We are defined by the choices we make, not by our thoughts'. Hence, I understood the director to emphasize that the thought of suicide did not automatically become an action to be chosen. This scene, in retrospect, also highlights an instance of *cognitive reflexivity*, as it provokes self-reflection on the gap between ideation and action.

Looking around the room, I noticed worn posters on the wall. Seeing the posters of *A Jihad For Love* (Parvez Sharma, 2007) and *Brokeback Mountain* (Ang Lee, 2005), two of my favorite films, with *Harry Potter* informed me about the director and drew me further into the story. The notes and posters on the table were not presented to me ready-made like in a traditional film frame. Instead, I made these discoveries by moving around the room and paying attention, which involved me in the story. Such discovery-based engagement reinforces *embodied interactivity*, as my physical orientation in space dictated the pace and content of my narrative experience.

When the narrator directed me to the sounds of discussion coming from the right rear, I could see an ajar door opening to the house's corridor. The narrator asked me to shout with him to silence this

argument. As a result, white rings appeared in the center of the screen while white lights scattered on the screen. Shouting alongside the narrator visually transformed the room, reinforcing the film's therapeutic theme. This scene, along with the previous mirror scene in the forest, made it feel that the director was attempting to repair his childhood troubles. This identification gradually increased. My voice became a performative tool of change within the narrative, demonstrating a blend of *embodied interactivity* and emotional agency.

Subsequently, I returned to the garden where I was first found to witness the renovation of the dilapidated house around me, which I previously entered. The narrator guided me into another ruined house inside a library while the narrator talked about university life. Books started raining down, so I looked up to watch the books fall before me. Meanwhile, as the narrator talked about 'coming out' with his sexual orientation, the previous film posters made more sense.

Following the narrator's instructions, I shuffled through books and tried to put words together. This experience was an effort to understand the narrator rather than a game. This embodied search through objects to construct meaning is a key manifestation of interactivity. With knowledge of the 33-year-old director's psychological condition that he had experienced for 13 years since his 20s during his university period, I found myself in a dark and eerie forest.

The uncanny nature of the forest scene and the sound editing constantly directed me in different directions, so I constantly looked up and down, right and left, while trying to make sense of this eerie forest. The narrator explained the thoughts in his inner world while mentioning that he did not deserve to live. Suddenly, I was confronted with a monster, which I realized represented his negative thoughts. This black, spider-like monster grew bigger until I entered a state of war with the monster. The sequence externalized internal conflict into spatial, visual form, intensifying *experiential chronology* by aligning bodily tension with the unfolding of memory and trauma. This scene was important for visualizing the abstract thoughts and mood, which helped me better understand why the film was animated. This scene reflected the director's conflicting thoughts, strengthened by the unlimited visual creation possibilities of animation combined with VR.

After the struggle with the monster, another house was being improved. The narrator explained how he defeated this monster. At this point, I heard the sound of a horse's footsteps in complete darkness. The ambiguity of the sound encouraged me to determine where the horse was by constantly turning around in the darkness. When I found the right direction, the horse walked toward me, and I was asked to pet it. While touching the horse, I was reminded of the ropes around me, which created a wholeness combined with the horse's reactions.

The narrator announced that he attended horse races to eliminate his negative thoughts. Thus, I found myself in the spectator tribune of a hippodrome. While watching the horse race, the narrator asked me to cheer for the horse. As I cheered, white rings spread into the hippodrome, which caused the horse to accelerate. Hence, I experienced the feeling of living this moment together with the other audiences around me in the hippodrome and also with the narrator. These moments not only elevated sensory realism but also reinforced *experiential chronology*, layering past and present events in a unified affective rhythm.

Although I cannot remember exactly when it occurred, the narrator asked me to hum a favorite song. Once again, the white circles scattered on the screen and created lights and light filters. The importance of this scene was about me making a decision as the viewer. Perhaps outside of this experience, being asked to hum a favorite melody would give me time to select a tune. However, during the VR experience, I felt pushed to decide quickly and perhaps discover something about myself. I was also reminded why I liked the melody, my memories of it, and the feelings associated with it. The moment revealed a layered act of *cognitive reflexivity*, where my spontaneous choices became meaningful sites of personal introspection.

In the film's last scene, I returned to the town-like square to see that all the houses had been renovated and strengthened. The narrator explained that he moved away from his negative feelings and thoughts with the support of those around him. He also mentioned a dog he had adopted. Suddenly, a black dog, reminiscent of the blackness of the beast in the forest, began walking around me. While the narrator metaphorically expressed that he imprisoned his negative thoughts in this new friend, he asked me to pet the dog. As I touched the dog, I reencountered the ropes in the museum. The black dog transformed into a dog with a brown-sand color, walked around me, and entered its kennel. I knew the film had ended as the credits rolled.

Feeling the virtual, living the narrative

After my first experience with *Darkening*, a light sweat caused by the VR glasses mingled with the tears on my face. Leaving *Darkening*, I felt a mix of sadness and happiness, wishing the experience had lasted longer. I found the door through the ropes and stepped into the real world with thoughts that I was glad to have experienced the film.

I use 'experiencing' instead of 'watching' because my feelings were more than mere observation. Apart from the sense of voyeurism at the roots of cinema, the feeling that I existed in that voyeuristic world and could intervene was markedly different from a traditional cinema-watching experience. In fact, many thoughts ran through my mind: 'I wish I had done this. I wish I had hummed another melody. I wish I had looked at the people next to me at the racetrack. I wish I had shuffled books or words more quickly in the library. Could I have fought the monster better? I wonder what else was in the town-like square? I wish I'd helped that boy. I wonder if I should get a dog'. These retrospective projections illustrate *cognitive reflexivity*, whereby the viewer reassesses both the narrative and their own agency within it.

The emotions I experienced were related to VR and the interactivity of the experience. Certainly, the storyline, animated world, plot structure, and sound were impactful. However, I felt like I was partly this story's cameraman, cinematographer, and sound designer. My head movements, body movements, and voice added many layers to the world of the film. Therefore, it would not be wrong for me to start thinking of myself as a layer of the film's narrative. The self-positioning underlines the idea of *embodied interactivity*, where the spectator becomes an active compositional agent in the film's diegetic world.

When I told my students about this experience, some commented that it was like a game. This analogy was not wrong since VR technology is primarily associated with games. However, my experience with *Darkening* was related to a gaming experience at a certain level. In a gaming narrative, the player embarks on an adventure and usually wins at the end. The player can control the protagonist to pass certain levels and change the direction of the narrative by making choices.

In contrast, *Darkening*'s narrative options were not unlimited. The narrative process created by the director was limited and could not be changed. *Darkening* put the viewer in a more active position in the context of extended cinema with the chance to contribute to and participate in the narrative rather than determining it. In particular, experiencing the film while sitting and deciding on the images by looking everywhere in a 360° rotating chair took the cinematic experience a step further. My contribution as a viewer was as a partner in this narrative at certain moments while directing the visual narrative with body movements or voice. However, I had no chance to change the order of the narrative at the beginning or the end. Therefore, *Darkening* offered me an experience of living the narrative more closely by establishing a narrative closer to the cinema narrative.

A distinguishing feature of *Darkening* is that it is experienced in a museum environment instead of at home or with VR glasses. In a traditional context, one enters the museum in a way similar to the

cinema to experience the film in the museum's environment in a layout especially created for the film. This description leads to the concept of shared experience mentioned before.

Maybe if other people had experienced the film in other chairs, I would have heard their favorite melodies being hummed, or I could have made my body movements more hesitantly. However, watching the film alone was more comfortable. The ropes surrounding me during the viewing experience were one of the most important aspects.

I asked Jacob Jiřiště, one of the museum's founders, whose idea the installation of the ropes was. He responded that it was the museum's idea. This situation elevated the reality of experiencing the film further with the sense of touch outside the film. If there were no ropes, I would have experienced an empty air when I stretched out my hand. Instead, experiencing a sense of touch with the consciousness of the ropes around me made me more convinced of the story's reality and my actions in the context of VR and interactivity.

The museum's environment further strengthened the sense of isolation of VR technology and the empathy it caused. The fact that I forgot where I was geographically and spatially when the film ended reinforced this idea. Thanks to the isolation, experiencing the film's story without distractions around me strengthened my sense of empathy and gave the film another dimension. In addition to the film's 360° dimension and my bodily dimension as a viewer, the ropes and dim room were additional dimensions. However, two intermediaries, VR glasses and a headset, divided the internal dimension of VR and the external dimension of the environment created by the museum.

Considering the film's narrative features, the story of a narrator struggling with suicidal thoughts is positioned between gothic, fantasy, and essay genres. For instance, the gothic atmosphere of the forest scenes, the fantastic elements of the town-like square, and the narration of the narrator's thoughts as the director enabled the film to move between these genres. The fact that all these elements were animated also contributed to the faster adoption of unreality and consistency within the film's world. Notably, seeing my hands animated on the screen while hearing reflections of my sounds made it easier for me to become a part of a world with such unrealistic narrative elements.

Finally, in my interview with Jacob Jiřiště, I asked him about his thoughts concerning the film's delicate subject matter. Jiřiště explained that consultations with psychologists informed the film's approach to suicidal ideation. As a result, the film offers a sub-textual message to people struggling with suicidal thoughts to find the necessary support. The film also has an age restriction of 12 years and above in line with the recommendations and opinions of the counselors.

Related to the film's educational role, Jiřiště described the museum's new VR project in development. I had the opportunity to experience the prototype, which is all about using VR technology, especially in geographical education. This topic became even more important when Jiřiště commented that VR technology provides an educational and memorable experience through empathy. When I shared my thoughts and feelings about my experience, Jiřiště noted that many people who experienced the film *Darkening* had similar feelings and thoughts.

Jiřiště was involved in film studies and said that the artistic vision for the *Darkening* exhibition was formed using different artists' ideas. Apart from the director's contribution and creativity being the most important aspects, Jiřiště explained that the film experience in an exhibition was a collective process. I concurred with him on this point, especially after my experience of the film in the museum environment. Jiřiště said that director Ondřej Moravec took a very long time with the production process of the film *Darkening*. I asked him about the developments of the director's new projects. He stated they were working with Victoria Lopukhina on a project called *The Fragile Home*, an immersive film that premiered at the Venice Film Festival in 2024.

Comparative and ethical contextualization: Positioning *Darkening* within immersive VR storytelling

Darkening's innovative qualities become most apparent when examined through the dual lenses of comparative VR storytelling and the ethical dimensions of emotionally immersive experiences. Recent immersive works such as *Clouds Over Sidra* (Arora and Pousman, 2015), *Notes on Blindness* (Middleton and Spinney, 2016), *Traveling While Black* (Williams et al., 2019), and *Gondwana* (Andrews, 2022) exemplify the medium's potential to merge embodiment, spatial narrative, and affective engagement. These projects collectively demonstrate how VR can act as a conduit for 'immersive witnessing' (Nash, 2018) and 'empathetic amplification' (Gillespie, 2020), often within documentary or humanitarian paradigms.

Each work contributes uniquely to the grammar of VR storytelling. *Notes on Blindness* immerses users in a sonically guided simulation of visual impairment, echoing Ryan's (2009) concept of immersive spatiality. *Clouds Over Sidra* constructs a 360° documentary realism within a refugee camp, foregrounding empathy through spatial presence. *Gondwana* leverages real-time environmental data to generate an emergent ecological narrative aligned with Walsh's (2011) ideas on nonlinear storytelling. Meanwhile, *Traveling While Black* merges testimonial narrative with symbolic spatial design, embedding collective memory within embodied experience.

Darkening enters this discourse with a distinct emphasis on autobiographical mental health narratives. It departs from the externally oriented humanitarian or archival approaches by turning inward; focusing on the lived experience of depression and suicidal ideation. This inward focus is reinforced by its hybrid aesthetics such as animated visualizations, first-person narration, and interactive elements – embedded within a tactile museum installation. The physical environment, featuring ropes, spatial isolation, and dim lighting, extends the virtual immersion into real-world sensory experience, exemplifying what might be termed *augmented embodied interactivity.*

Unlike the often-observational stance assumed by viewers in other VR works, *Darkening* invites the user to become an active participant in the protagonist's internal journey. Actions such as shouting to silence an argument, catching a ribbon, or petting a dog serve not merely as triggers but as affective gestures, aligning viewer agency with narrative emotional labor. This participatory mode resonates with the concept of therapeutic enactment, wherein viewers not only observe but also rehearse coping mechanisms and relational responses, thereby deepening their empathetic investment.

This intimacy, however, foregrounds critical ethical considerations. As immersive narratives increasingly engage with psychologically charged themes, such as trauma, depression, and suicidal ideation, creators must carefully navigate the balance between affective intensity and viewer well-being. As mentioned before, Nash (2018) warn that VR's capacity to foster 'immersive witnessing' may blur the boundary between empathetic engagement and emotional overreach, leaving viewers psychologically vulnerable, particularly in the absence of contextual framing or narrative distance. Similarly, Rose (2018) critiques the 'empathetic imperative' that often underpins VR design, suggesting that the technological drive to induce strong emotional reactions can obscure ethical issues surrounding consent, agency, and representational authenticity. De la Peña et al. (2010), a pioneer of immersive journalism, further complicates this picture by emphasizing the visceral power of VR to reenact trauma in ways that may unwittingly retraumatize participants or compromise the integrity of documentary storytelling.

Within this critical landscape, *Darkening* exemplifies an ethically reflexive approach to immersive media. Its inclusion of age restrictions (12+), stylized animation, and abstract visual metaphors functions not only as aesthetic strategies but also as safeguards that moderate affective

exposure. These design choices temper the visceral immediacy of the experience, replacing graphic realism with symbolic representation to create emotional resonance without overwhelming viewers. Furthermore, the film's collaboration with psychologists during development – confirmed through interviews with NaFilm museum staff – demonstrates a commitment to trauma-informed storytelling. This aligns with Gruenewald and Witteborn's (2022) concept of 'designing with care', which advocates for narrative environments that are emotionally impactful yet ethically sound.

Darkening responds thoughtfully to the growing call for ethical accountability in immersive media. By integrating therapeutic insight into its narrative and formal architecture, it positions itself as a model for responsible VR practice – one that privileges both narrative empathy and viewer protection. As such, the film does not simply depict trauma; it choreographs an environment in which trauma can be engaged with meaningfully and safely, illustrating the evolving intersection between affective design, ethical responsibility, and immersive spectatorship. The museum context itself functions as an ethical and curatorial frame. Unlike private at-home VR experiences, museum-based installations offer spatial, institutional, and social scaffolding. The presence of trained staff, dedicated viewing spaces, and environmental design (e.g., the use of ropes as physical boundaries) provides a form of what Vivian Sobchack has described as a *somatic frame* – a tangible threshold that regulates the intensity of embodied virtual engagement. This structured environment enables viewers to enter and exit the virtual world with greater narrative and emotional coherence.

Moreover, *Darkening* activates *cognitive reflexivity* in profound ways. Viewers leave with lingering thoughts – 'Did I make the right choices? What would I do differently?' – mirroring Gillespie's (2020) framing of VR as a site of extended empathetic resonance. Unlike externally focused empathy in *Clouds Over Sidra*, *Darkening* produces autobiographical empathy: a reflexive awareness that invites viewers to contemplate their own emotional states and ethical agency. This post-viewing reflection not only deepens narrative impact but also signals VR's potential in therapeutic and educational contexts.

As a result, *Darkening* exemplifies a new paradigm in VR storytelling, where intimate narrative content is matched with ethical foresight and spatial sophistication. It stands out among immersive peers for its nuanced portrayal of internal struggle, multimodal interactivity, and its installation-based design that blurs boundaries between cinema, therapy, and exhibition. As such, it demands a theoretical model that synthesizes comparative media analysis with ethical accountability – charting new ground in our understanding of embodied spectatorship in immersive environments.

Conclusion

Integrating theoretical perspectives with the phenomenological analysis of *Darkening* reveals how VR redefines cinematic narrative, interactivity, and viewer engagement. Theories by Ryan (2009), Punday (2011), and Murray (1997) emphasize VR's potential to shift audiences from passive spectators to active participants. *Darkening* exemplifies this through its immersive design, allowing viewers to emotionally and physically engage with the protagonist's journey.

VR reshapes storytelling through non-linear, interactive, and sensory-rich experiences (Page and Thomas, 2011). In *Darkening*, users engage in interactive tasks – such as catching a ribbon or shouting to stop an argument – mirroring Nash's (2018) and Gregory's (2016) concept of immersive witnessing. Gillespie's (2020) notion of VR as an empathy tool is reinforced by *Darkening*'s blend of animation, interactivity, and installation, heightening the viewer's emotional connection to themes of depression and self-discovery.

The film's spatial storytelling aligns with Ryan's concept of immersive and orienting spaces, balancing user navigation with narrative cohesion. The eerie forest and crumbling library illustrate

Elsaesser's (2014) argument that VR relies on spatial exploration rather than sequential events. Walsh's (2011) emergent narratives further highlight how audience agency complements the director's vision. At the NaFilm Museum, *Darkening* bridges the virtual and real, reinforcing Whistance-Smith's (2022) idea that VR fosters spatially immersive storytelling. The film's collaboration with psychologists sensitively portrays suicidal ideation, reinforcing VR's therapeutic and empathetic potential as Gruenewald and Witteborn (2022) mentioned.

The analysis of *Darkening* highlights how VR cinema redefines spectatorship, embodiment, and narrative engagement. This study explores *narrative embodiment in virtual cinema*, proposing that VR transforms cinema into a participatory experience where movement, touch, and spatial awareness shape meaning. In *Darkening*, this is evident in the viewer's animated hand appearing when picking up a mirror shard or interacting with surrounding ropes. These moments position the viewer as a sensory agent, reinforcing an embodied presence within the film. The interaction with the dog at the end further blurs the boundary between digital narrative and physical reality.

VR museum experiences create a paradox of *asynchronous co-presence* – isolating viewers in solitary engagements while fostering a phantom sense of collectivity. In *Darkening*, the exhibition room with empty chairs suggests a shared yet disconnected experience. Had other viewers been present, their gestures might have influenced the perception, but in their absence, the installation maintains a structured yet individualized cinematic moment. The museum setting plays a crucial role, balancing physical separation with conceptual connection, distinguishing VR cinema from traditional and home-based viewing.

This study proposes a three-stage framework for analyzing VR cinema in museum settings: *Experiential Chronology*, *Embodied Interactivity*, and *Cognitive Reflexivity. Experiential Chronology* prioritizes first-person, time-based reflection, as *Darkening* cannot be rewound or paused, making multiple viewings essential. *Embodied Interactivity* emphasizes the role of physical actions – turning in a 360° chair, catching a red ribbon, or reaching for books – demonstrating how bodily movement shapes narrative perception. *Cognitive Reflexivity* focuses on post-experience reflection, where lingering 'what-if' thoughts emerge, reinforcing how VR extends impact beyond the moment of viewing.

The museum setting enhances *Darkening*'s immersive quality, merging tactile elements like ropes and dim lighting to bridge the virtual and real, fostering both individual agency and collective engagement. More than entertainment, *Darkening* illustrates VR's potential for education, reflection, and healing, integrating narrative innovation with emotional depth.

This study has also shown that phenomenological experience in VR cinema is not only about immersion or embodiment, but about a prolonged emotional resonance that continues to haunt the viewer afterward. The desire to make different decisions, the regret or wonder about missed actions, and the introspective questions sparked by interactive moments in *Darkening* reveal how VR cinema uniquely facilitates a kind of temporal loop in spectatorship – where experience feeds memory and memory reshapes meaning. This recursive reflection underscores the potential of VR cinema to evoke a deeply personal and emotionally affective mode of engagement that conventional cinema rarely achieves. *Darkening* exemplifies VR cinema's transformative potential, blending artistic innovation with sensory and cognitive immersion. Its mix of animation, interactivity, and museum installation fosters immersive witnessing, where the viewer's actions carry emotional and narrative weight. This intersection of phenomenology, narrative theory, and exhibition studies underscores the need for new theoretical models that account for the viewer's embodied and cognitive integration into the cinematic world. As VR cinema evolves, these findings highlight its unique capacity to reshape audience participation, redefine cinematic storytelling, and expand the boundaries of immersive media.

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1. I would like to mention here all credits of the film *Darkening* and also the exhibition in NaFilm Museum. For the film: Director: Ondřej Moravec, Art Director: Bára Anna Stejskalová, Producer: Hana Blaha Šilarová (Frame Films), Screenplay: Ondřej Moravec, Alice Krajčířová, Artist and Animator: Long Phi Trieu, Music: Billy Mello, Lenka Dusilová, Sound: Tomáš Oramus, Co-Production: Robin Pultera (Brainz Immersive), Gayatri Parameswaran, FelixGaedtke (NowHere Media). Exhibition Installation: Magdalena Nováková, Michal Kreidl, Martin Černý, Jakub Jiřiště, Adéla Mrázová and the entire NaFilM team.

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