The Aesthetics and Taxonomy of Film Grammar in Cinematic Virtual Reality

Emad Abouata Amlashi

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Prof. Dr. Ali Hakan Ulusoy
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Doctor of Philosophy in Communication and Media.

Prof. Dr. Metin Ersoy
Chair, Department of Communication

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Doctor of Philosophy in Communication and Media.

Prof. Dr. Fatoş Adiloğlu
Supervisor

Examining Committee

1. Prof. Dr. Fatoş Adiloğlu
2. Prof. Dr. Barbaros Bostan
3. Prof. Dr. Serdar Yılmaz
4. Asst. Prof. Dr. Yetin Arslan
5. Asst. Prof. Dr. Pembe Behçetoğullari

ABSTRACT

Cinematic Virtual Reality (CVR) merges the immersive affordances of virtual reality with the narrative traditions of cinema and the interactivity of games. Unlike traditional film, CVR decentralizes authorship, expands viewer agency, and reshapes the relationship between creator, audience, and system. Despite its rapid growth, CVR has not been sufficiently examined regarding storytelling logic, authorship, and aesthetic grammar. This thesis examines CVR's narrative and aesthetic dimensions and proposes the Collaborative Narrative Model (CNM) as a framework for understanding storytelling in immersive environments. The study adopts a bricolage methodology, integrating philosophical analysis, thematic and comparative content analysis, and close reading of eleven representative CVR works. These include Gondwana (2022), The Book of Distance (2020), Notes on Blindness: Into Darkness (2016), Clouds Over Sidra (2015), The Key (2019), Giant (2016), Marco & Polo Go Round (2021), Dear Angelica (2017), Wolves in the Walls (2018), The Invisible Hours (2017), and Spheres (2018). The findings show that CVR introduces distinctive narrative strategies based on perceptual realism, spatial immersion, temporal fluidity, and participatory authorship. The CNM conceptualizes storytelling as a triangular process involving viewer, designer, and system, where meaning is generated collaboratively rather than imposed by a single author. By situating CVR within the broader history of immersive media and linking it to cinematic and game-based traditions, the thesis argues that CVR constitutes a distinct narrative form in its own right. It contributes theoretically to digital aesthetics and narrative studies and offers practical guidance for scholars and practitioners in designing coherent, adaptive, and emotionally engaging immersive stories.

Keywords: authorship, cinematic virtual reality, collaborative narrative model, digital aesthetics, immersive storytelling, narrative identity, viewer agency

ÖZ

Sinematik Sanal Gerçeklik (CVR), sanal gerçekliğin immersif olanaklarını sinemanın anlatı gelenekleri ve dijital oyunların etkileşimliliği ile birleştirir. Geleneksel filmden farklı olarak, CVR yazarlığı merkezsizleştirir, izleyici etkenliğini genişletir ve yaratıcı, izleyici ile sistem arasındaki ilişkiyi yeniden şekillendirir. Hızlı gelişimine rağmen, CVR hikâye anlatımı mantığı, yazarlık ve estetik dilbilgisi açısından yeterince incelenmemiştir. Bu tez, CVR'nin anlatı ve estetik boyutlarını incelemekte ve immersif ortamlarda hikâye anlatımını anlamak için Ortak Anlatı Modeli'ni (CNM) önermektedir. Çalışma, felsefi analiz, tematik ve karşılaştırmalı içerik analizi ile on bir temsilci CVR eserinin yakın okumalarını bir araya getiren bir bricolage metodolojisi benimsemektedir. Bu eserler arasında Gondwana (2022), The Book of Distance (2020), Notes on Blindness: Into Darkness (2016), Clouds Over Sidra (2015), The Key (2019), Giant (2016), Marco & Polo Go Round (2021), Dear Angelica (2017), Wolves in the Walls (2018), The Invisible Hours (2017) ve Spheres (2018) yer almaktadır. Bulgular, CVR'nin algısal gerçekçilik, mekânsal immersiyon, zamansal akışkanlık ve katılımcı yazarlık temelli özgün anlatı stratejileri geliştirdiğini göstermektedir. CNM, hikâye anlatımını, anlamın tek bir yazar tarafından dayatılmak yerine izleyici, tasarımcı ve sistem arasında işbirliğiyle üretildiği üçlü bir süreç olarak kavramsallaştırmaktadır. CVR'yi immersif medyanın daha geniş tarihi içerisinde konumlandırarak ve onu sinema ile dijital oyun temelli geleneklerle ilişkilendirerek, tez CVR'nin kendi başına özgün bir anlatı biçimi olduğunu ileri sürmektedir. Çalışma, dijital estetik ve anlatı araştırmalarına teorik katkılar sağlamakta ve akademisyenler ile uygulayıcılara tutarlı, uyarlanabilir ve duygusal olarak etkileyici immersif hikâyeler tasarlama konusunda pratik rehberlik sunmaktadır.

Anahtar Kelimeler: Anlatı Kimliği, Dijital Estetik, İzleyici Etkenliği, Ortak Anlatı Modeli, Sinematik Sanal Gerçeklik, Sürükleyici Hikâye Anlatımı, Yazarlık.

... Dedicated to Marjan

My wife, my closest friend, and my colleague — the one who stood beside me in every challenge and joy. Together we built every step of this journey, brick by brick, shaping both life and work into what they are today.

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In the acknowledgments section, you may express your gratitude towards others who helped you in completing your study and contributed to preparing your thesis.

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Chapter 1

INTRODUCTION

My first experience of watching a short Virtual Reality film in 2018, Ashes to Ashes (2017)[1] , left a confusing impression on me, not as it was a new experience with VR technology for me, but primarily because it was an entirely new way to tell and experience a story. It was that strange, powerful feeling of being inside the narrative. I wasn't watching from the outside, it was there, the world of the story, and I could look around, I could feel part of something that unfolded around me. That moment affected me because it was something wholly other. It opened up new questions for me: What is it to be part of a narrative? How do you experience a story instead of just watching it? What kind of new authorship and new audience does a medium like this create? There were not merely technical or aesthetic curiosities; they were philosophical, narrative and cultural curiosities. This experience served as the genesis of my questioning of CVR as an extension of cinema, and instead, the shift in focus toward CVR as a medium that affords new modes of participation, agency, and immersion. This thesis is how I investigate that feeling, that shift. It's not about demonstrating that CVR is the future of cinema. It's about appreciating it on its own terms — as its own, immersive form of storytelling that draws people in and invites them to be part of the experience.

[1] Ashes to Ashes is a surreal tragicomedy in virtual reality. The 11-minute one-shot immerses you in the story about a dysfunctional family burdened with the bizarre final wish of their deceased grandfather. Filmed from the perspective of the urn containing the ashes, viewers encounter the colorful family members, who each seem to live in a reality of their own creation (1 Submarine Channel. (2017, March 16). Ashes to Ashes [Virtual reality short]. Submarine Channel. Retrieved July 28, 2025, from https://submarinechannel.com/virtualreality/ashes-to-ashes/).

Cinematic Virtual Reality (CVR) is the integration of immersive technology and narrative storytelling, transforming the way in which audiences experience, interact with, and interpret narratives. The unique blend of VR's sensory richness with cinema's narrative frame allows viewers to participate in dynamic, interactive story worlds. This evolution upends established narrative conventions and raises urgent questions surrounding authorship, viewer agency, and the aesthetics of this emerging medium.

Among the pioneers whose works laid the foundations of VR was Morton Heilig, who is credited with creating one of the first virtual reality theater systems called The Sensorama (1960), a multi-sensory immersive environment that simultaneously stimulated all five human senses. This invention preceded Ivan Sutherland's Ultimate Display (1965), a vision of a system that could convincingly simulate reality.

Early innovations were largely experimental, emphasizing technological potential over artistic output. But they laid the groundwork for VR's evolution as a simulator and a stage for storytelling. But they laid the groundwork for VR, both as a simulation tool and a storytelling platform. VR had already found its way into the industrial and scientific realms, but was still relatively untapped as a narrative storytelling medium. Traditional forms of narrative, like literature and cinema, remained the most important medium for creating narrative with linear structures and fixed frames to control how the audience experienced it. The integration of VR into storytelling necessitated a paradigm shift: The medium is beyond presenting stories to just interpretive viewers, now it lets audience to directly engage; the users must explore within the space of the story and interact with the narrative on a personal level.

Since CVR continues to evolve it also requires a theoretical framework that acknowledges the unique affordances and transformative effects that CVR has on narrative and aesthetic forms. In order to address these questions, this thesis proposes the Collaborative Narrative Model (CNM), a conceptual model that views storytelling in CVR as a dynamic system composed of creator, viewer, and machine. The CNM is not a fixed prescription but a heuristic that has emerged from theoretical considerations and close readings of eleven CVR Projects. This thesis is divided into five interlinked chapters, each of which contributes to the exploration of Cinematic Virtual Reality (CVR) as a transformative emerging storytelling medium. Chapter 1 lays the foundation for the study, through providing details on the research problem, objectives and significance of the research. It outlines study boundaries and limitations, and introduces the research Focus, questions, theoretical framework, and methodological approach. The second chapter explores the historical and technological background of CVR, establishing the medium's trajectory. Chapter 2 situates CVR within the broader trajectory of virtual and cinematic media as a whole, and highlights the medium's potential and the necessity of further study, distinguishes CVR from conventional cinema and lays the foundations for Chapter 3, which considers the aesthetic dimensions of CVR, including perceptual realism, spatial immersion, and narrative agency. These aesthetic considerations underscore the challenges that designing narrative work connects interactivity with coherence, a critical concern addressed in Chapter 4, which introduced the Collaborative Narrative Model (CNM) in response to challenges identified in the third Chapter. This chapter theorizes the model and exemplifies its practical application through Selected CVR Films to connect CVR introduction and the theoretical with the practical aspects of CVR storytelling. Chapter 5 summarizes the thesis by drawing together the findings, detailing their broader implications, and suggesting future research trajectories.

Ultimately, this thesis argues that CVR compels us to rethink narrative itself — not just what stories we tell, but how stories are made, shared, and experienced when the user steps inside.

1.1 Research Problem

Cinematic Virtual Reality (CVR) has gained popularity over the last decade as a hybrid storytelling medium that lies at the intersection of film, interactive narrative design and immersive technologies. CVR merges the ability of Virtual Reality (VR) to immerse audiences with the cinematic narrative tradition, creating new ways for viewers to discover and interact with story worlds in transformative forms. This change, while introducing many exciting opportunities, also brings major challenges to both creators and scholars to understand how can coherent, emotionally resonant narratives be constructed in a medium where directorial control, fixed framing, and linear temporality are fundamentally disrupted? This study aims to explore how CVR mediates conventional filmic narrative forms through its modes of participation, viewer agency, and spatial immersion. The technological advances of VR may be manifest, but our understanding of VR's narrative and aesthetic implications yet is under-theorized. The current literature primarily investigates the technological and functional aspects of VR in terms of ability to simulate realistic environments, embodiment, sense of presence, and user interaction. While These studies provide valuable insights into the mechanics of immersion and interactivity, they often fail to address the narrative and aesthetic scops that distinguish CVR from other forms of immersive media. For example, CVR's unique ability to integrate spatial storytelling with temporal fluidity and viewer agency remains underexplored, despite these elements being central to its storytelling potential.

In terms of narrative, much of the academic discourse on interactive media is based on frameworks established in video games, and in those cases, agency is commonly limited to branching storylines or pre-scripted choices. Scholars such as Ryan (2001) and Murray (1997) have focused on interactive storytelling models which allows users influencing plot outcomes within these models [1, 2], but to date, these frameworks have not accounted for adaptive character/narrative evolvement in real-time. Likewise, key ideas such as narrative identity, in which and characters' identities develop through their encounters and experiences, are often absent from CVR scholarship. Ricoeur's (1984) framing of narrative identity as dynamic and relational provides a theoretical backbone [3], but narrative structures specific to CVR have yet to be considered in any depth.

Aesthetic considerations bring in the added challenge of complexity. Traditional cinematic aesthetics are based on fixed frames, controlled perspectives, and predetermined emotional cues that lead the audiences to engage. As a form, CVR breaks these conventions, which means a whole new spatial and temporal grammar must be developed. This sense of independent navigation in virtual space disrupts conventional cinematic lexicons of close-ups versus montages versus pacing, calling for new aesthetic principles to compensate for viewer agency while still maintaining narrative coherence. Moreover, although the immersive aspects of CVR provide high levels of perceptual realism and presence, the extant literature has tended to prioritize technical solutions instead of examining the implications for narrative design and emotional engagement.

These gaps in the existing scholarship are not purely theoretical in nature and have implications for creators and cultural industries. CVR is finding its way into a variety

of practices in entertainment, education, journalism, and activism, but the absence of a comprehensive framework for CVR's narrative arc and aesthetic treatment limits its creative potential and mainstream adoption. For example, creators are challenged to design interactivity in ways that balance it with narrative coherence, immersive experiences with guidance of viewer attention, and emotionally resonant experiences in a medium that decentralizes authorship in ways that traditional creators are unaccustomed to navigating.

Addressing these gaps is important for contextualizing CVR as its own mode of storytelling. This study thus aims to deliver theoretical contributions, as well as practical insights, by theorizing the unique affordances of the medium and exploring how spatial storytelling, temporal fluidity, and participatory engagement reconfigure narrative construction. And ultimately it aims to help creators find the tools to create coherent and compelling CVR narratives, while providing a contribution to the larger discourse on immersive media and cinematic aesthetics.

1.2 Purpose Statement, Aims and Objectives

The purpose of this study is to examine the narrative and aesthetic dimensions of Cinematic Virtual Reality (CVR) as a rapidly emerging medium of storytelling. Unlike conventional cinema, where authorship is centralized and spectatorship is largely passive, CVR destabilizes traditional assumptions by placing viewers inside 360-degree environments in which they actively shape the unfolding story. This shift compels a rethinking of how narratives are constructed, experienced, and theorized. Accordingly, this research proposes the Collaborative Narrative Model (CNM), a conceptual framework designed to articulate the intersections between three key collaborators within CVR: the viewer, the narrative designer, and the mediating system.

The central aim of the thesis is to generate a framework that demonstrates how CVR narratives can achieve a balance between interactivity and coherence. This balance is especially significant because the more agency the viewer gains, the greater the risk that narrative coherence will fracture — a dynamic often referred to as the narrative paradox. The CNM responds to this challenge by conceptualizing storytelling as a distributed process, where coherence is sustained through spatial, emotional, or structural anchors, while agency is respected as a generative force of meaning. From this primary concern emerge several interrelated objectives. The study seeks to theorize authorship and agency in CVR by examining how viewers transition from spectators to active participants and how this transformation affects narrative authority. It also explores the aesthetic affordances of CVR — spatial immersion, temporal fluidity, and embodied presence — and investigates how these reshape cinematic grammar and narrative expectations. At the same time, the research aims to identify practical strategies by which designers and writers can create adaptive and emotionally resonant environments that remain coherent in spite of high levels of viewer agency. In doing so, the thesis attempts to bridge philosophical and practical domains, situating CVR not only within the historical trajectory of cinema and game studies but also within broader debates in aesthetics, narratology, and digital culture. Although the scope of the thesis is academic, its ambitions extend into practice. The CNM is intended as a toolkit for creators who grapple with the complexity of writing and designing for immersive environments. By proposing a model that emphasizes collaboration among viewer, designer, and system, the study offers a structured yet flexible guide for constructing open-ended, adaptive, and responsive narratives capable of sustaining both immersion and meaning. This dual orientation ensures that the study not only enriches theoretical understanding but also provides pragmatic guidance for those working at the frontier of immersive media.

In theoretical terms, the research draws upon diverse philosophical resources to illuminate the novelty of CVR. Gilles Deleuze's concept of becoming emphasizes narrative as processual and unfinished; Paul Ricoeur's theory of narrative identity explains how immersive experiences reconfigure selfhood; and Roland Barthes' death of the author underscores the decentralization of authority. These frameworks, although elaborated in detail in the Theoretical Framework section, are introduced here to clarify the orientation of the study: CVR is understood not only as a technological medium but also as a site of philosophical, cultural, and aesthetic transformation.

Ultimately, the thesis aspires to fill a significant gap in existing scholarship, which has largely privileged technical discussions of immersion and presence while neglecting questions of narrative grammar, authorship, and aesthetics. By advancing an interdisciplinary account of CVR, the study introduces and elaborates the CNM as both a theoretical construct and a practical guide. In doing so, it contributes to the development of immersive narrative design, situates CVR within a historical lineage extending from early cinema to interactive digital media, and underscores its potential as a cultural phenomenon with implications that extend well beyond entertainment. The research thus positions CVR as a transformative medium whose narrative possibilities demand urgent critical attention, while also providing creators and scholars with the conceptual and practical tools to navigate its complexities.

1.3 Significance and Motivation of the Study

Despite growing scholarly and creative interest in immersive media, the narrative and aesthetic dimensions of Cinematic Virtual Reality (CVR) remain under-theorized. Much of the existing research emphasizes technical aspects such as realism, embodiment, and interactivity, while overlooking the complex ways in which CVR

restructures authorship, viewer identity, and storytelling logic. This imbalance presents a significant gap in both academic literature and creative practice.

The significance of this study is the development of the Collaborative Narrative Model, which restructures CVR storytelling as a joint process between the viewer and the narrative designer, as well as the technological systems that mediate between them. By addressing the distinctive challenges of CVR, such as decentralizing authorship and authorizing participatory engagement, the model offers practical solutions for creating adaptive and participatory stories. This research fills a critical fracture in the existing scholarship whose focus in the field has been on the technical capabilities of VR rather than on narrative and aesthetic possibilities.

The main motivation for this research was the high potential of cinematic virtual reality in creating, transmitting, and interpreting a narrative in a new way and understanding this important aspect. CVR transcends traditional storytelling boundaries as a medium by creating deeper levels of immersion, presence, and viewer interaction. The ability to engage with a story in a deeper sense creates new opportunities for storytelling in different industries. In spite of that, lacking an overall framework for designing CVR narratives restricts its creative potential and broader adoption. This study outlines key challenges that will enhance theoretical understanding and provide creators with actionable insights to design and make engaging and coherent CVR experiences. Moreover, this study is abstracted from a need to formulate an investigation into the interdependence of technology and artistry. This study illustrates how CVR has the power to merge emotional resonance with interactivity, augmenting the traditional narrative framework. In addition to these academic concerns, my personal motivation was shaped by the experiential wonder of

encountering CVR for the first time. Although I was not present when audiences first saw the Lumière brothers' early films, film history describes their astonishment at the arrival of the train at La Ciotat station—a moment often cited as the birth of cinematic spectatorship. My own first experience of CVR evoked a comparable sense of awe, disorientation, and immersion: the feeling of being transported into a new medium whose grammar was still unknown. This parallel reinforced my conviction that CVR, like early cinema, marks a transformative moment in media history and thus demands new theoretical frameworks for understanding its narrative and aesthetic potential.

1.4 Focus of the Study

This study examines the narrative and aesthetic principles embedded within this novel storytelling medium of CVR. The study advances the exploration of CVR's potential to extend cinematic narrativity with the proposal of a Collaborative Narrative Model (CNM), which reconceives traditional cinematic storytelling by examining the interaction of viewer agency and presence concerning narrativity. The study's main contribution is to investigate how CVR defies conventional modes of authorship and plot through how it encourages viewers' participation within immersive, interactive story worlds. However, due to the wide range of topics impacted by CVR, the scope of this thesis is strictly limited to the discussion of relevant core research questions and goals, and it intentionally omits specific adjacent topics.

It examines the new narrative and aesthetic potentials of CVR as a transformative medium that fuses cinematic and virtual experiences into an emerging storytelling grammar. By developing the CNM, the study also offers theoretical and practical contributions to ways in which creators can craft CVR narratives to balance interactivity with narrative coherence. Key elements of the study include an analysis of the unique aesthetic affordances of CVR and a close reading of Selected CVR

Films that show engenders of viewer engagement and the narrative structure of CVR. The broader implications of CVR, whether technological, cultural, or commercial, are not the direct subject of the study. The research, for instance, does not explore the engineering or technical development behind VR systems, which would include their hardware and software mechanisms that allow for CVR experiences. Likewise, the thesis is not planning to address related media forms, including traditional cinema grammar, 3D movie technology, Video On Demand (VOD) platforms, or gaming, and does not serve as a comparative analysis among them; in fact, it is intended as such. The focus of this study is on the structure of CVR as a hybrid form that bridges the narrative and storytelling aspect of cinema with an immersive, participatory sensibility of VR.

A further domain explicitly excluded from this study is the commercial potential of CVR or its possible role as a tradable medium in domains such as education, or journalism. While the study recognizes the increasing interest in CVR in these sectors, it does not attempt to assess its economic effect or industry trends. The research strives to enhance theoretical understanding while simultaneously offering practical explanatory resources, responding to an interest in maintaining relevance for aesthetics and narrative approaches. Indeed, the decision to limit this thesis's scope considers the necessity of answering its research questions as accurately and precisely as possible. trying to incorporate other subjects like technical advances, sociological ramifications, or market trends would have diluted the study and detracted from its primary focus, which is the analysis and theorizing of CVR's narrative and aesthetic components. In doing so, an outline for a unified investigation of CVR as a transformative narrative medium will be established, and leaving room for future studies to address the excluded areas. The interdisciplinary character of CVR itself

also justifies the exclusion of associated fields. A medium that combines cinematic narrative with virtual reality technologies, CVR amalgamates different fields like film studies, computer science, psychology, media studies, and more. And while this intersectionality is a strength, it also requires careful attention to avoid overgeneralization.

With a scope clearly defined, this thesis makes impactful findings within its confines. The study's focus on narrative and aesthetic aspects enables a detailed examination of CVR's ability to transform storytelling. This approach also ensures keeping the research cohesive, meticulous, and, most importantly, aligned with its articulated research objectives.

1.5 Limitation of the Study

One of the principal limitations concerns the selection and availability of Selected CVR Films. The existing pool of CVR content also continues to be underwhelming in terms of both narrative complexity and accessibility to researchers. Although the chosen Selected CVR Films suggest thematic, aesthetic, and technological diversity, this only scratches the surface of CVR's potential output. Many promising works cannot be accessed due to platform restrictions or limited release, or prohibitive licensing costs, while some others do not have enough narrative density to sustain a theoretical discourse. Further selection was limited by the practical barriers to accessing each of these experiences, like the need for certain head-mounted displays (HMDs), region-locked content, or closed exhibition formats. Such limitations necessarily defined the parameters of this research. Though an effort will have been made to ensure that the works chosen correspond to the core questions of this study, the selection cannot claim to be exhaustive. This underscores the importance of increased availability of CVR content for academic and critical contemplation.

Another important limitation regarding studying CVR is the technology infrastructure necessary to critically engage with CVR. The immersive nature of the medium requires high-performance equipment like VR headsets with spatial audio, motion tracking, and resolution fidelity that might differ the experience significantly from user to user. Although this study utilized higher-end equipment, different technologies can impact interpretative depth when assessing levels of perceptual realism or embodied interaction. Meantime, these digital dependencies mirror a broader incapacity inherent to the medium as a whole; Although CVR hopes to serve as an accessible, participatory medium, its implementation produces economic and infrastructural obstacles that can't be ignored. This paradox — between the democratic potential of immersive storytelling and the exclusivity of its technical requirements — will need to be recognized as an integral limitation of learning about the medium as it exists today.

The advancement in Cinematic virtual reality is happening at a rapid pace, regarding both its artistic dimension and its technological aspect, and this fact leads the study to a temporal limitation, as the study mirrors CVR at its current state during the research period. Innovations in artificial intelligence, real-time rendering, adaptive storytelling, and sensory feedback are continually reshaping the boundaries of immersive media. Consequently, some conclusions—particularly those related to viewer agency or the aesthetic potential of CVR—may become provisional as the medium matures. This temporal limitation is particularly relevant when proposing a conceptual framework such as the Collaborative Narrative Model (CNM). While the CNM offers a flexible structure for understanding narrative co-creation in CVR, its applicability may shift as new modes of interactivity and content delivery emerge. Thus, this study is best understood as a foundational intervention in a still-developing field, rather than a final

or universal account of CVR storytelling. The interpretive nature of narrative and aesthetic analysis introduces an unavoidable degree of subjectivity, particularly in a medium that thrives on personalization and viewer choice. While traditional film analysis often assumes a shared viewing experience, CVR introduces a spectrum of user pathways that vary across individuals. This variability challenges efforts to generalize findings across user experiences. Although the study draws upon theoretical anchors—such as Barthes' "death of the author", Ricoeur's narrative identity, and Deleuze's becoming—the analysis of emotional resonance, spatial immersion, and viewer agency remains partly shaped by the researcher's embodied engagement with the works. The subjective dimension is not viewed here as a flaw but as an intrinsic feature of both CVR as a medium and the philosophical approach of this research.

All of the above limitations are closely tied to the research scope defined in Chapter 1. As stated, the aim of this study is not to provide an exhaustive mapping of the entire CVR field, but to analyze its narrative and aesthetic affordances through a carefully curated set of representative works. The Collaborative Narrative Model is introduced not as a comprehensive framework for all immersive storytelling but as a theoretically grounded, adaptable model emerging from the current generation of CVR experiences. The limitations of access, technological disparity, and evolving formats reflect the hybrid and transitional nature of CVR itself—a medium still in the process of defining its boundaries. These limitations do not invalidate the research; rather they justified the methodological choice of bricolage, which embraces incompleteness, multiplicity and theoretical agility. The work retains its signature focus on conceptual clarity, analytical depth, and imaginative possibilities of immersive narrative.

Instead, this study discusses its own limitations as conditions of inquiry in a rapidly changing media environment. In Cinematic Virtual Reality, the constraints of access to content, the variability of technology, the fluidity of time, and the subjectivity of analysis all provide reminders of the complexity inherent to the evolution of an emerging field. Acknowledging these limits amidst the empirical aims and methodological justification for the study does, however, help preserve the overall integrity of the research while paving the way for future studies which may repeat, refine or extend its findings. In so doing, it partakes in an evolving critical discourse that recognizes CVR not only as a technological innovation but as a site of narrative experimentation, aesthetic possibility, and theoretical redefinition.

1.6 Research Questions

As immersive storytelling continues to reshape narrative theory and media practice, Cinematic Virtual Reality (CVR) introduces fundamental questions about how stories are constructed, experienced, and interpreted within interactive, multisensory environments. CVR transforms the narrative experience by collapsing the boundaries between viewer and participant, space and story, author and audience. This shift presents new challenges for preserving narrative coherence, while embracing viewer agency, interactivity, and emotional resonance. To investigate these dynamics, this study is guided by the following central research question:

- How do cinematic virtual reality (CVR) narratives balance interactivity, viewer agency, coherence, and emotional resonance as they reconfigure long-established storytelling?

The key overarching question is then expounded into a series of sub-questions that the study explores:

- How do the concepts of becoming (Deleuze), narrative identity (Ricoeur), and

the death of the author (Barthes) collectively inform narrative construction in CVR?

- What practical strategies for designing adaptive and engaging CVR narratives can the Collaborative Narrative Model offer?

1.7 Theoretical Framework

Drawing from a multidisciplinary theoretical framework, this study evaluates the narrative and aesthetic aspects of Cinematic Virtual Reality (CVR) as a transformative medium that disrupts traditional approaches to storytelling, temporality, authorship, and identity. Although the theorists utilized in this research —Gilles Deleuze, Roland Barthes, and Paul Ricoeur —did not directly write on virtual or cinematic virtual reality, their concepts provide a rich ground for new frameworks with which to rethink existing narrative structures or viewer engagement within this hybrid medium. Their frameworks are applied here not as prescriptive models but as tools of interpretation that address CVR's most pressing challenges: fractured temporality, decentralized authorship, immersive identity experience, and participatory meaning-making. These ideas illuminate the Collaborative Narrative Model (CNM) design, proposed in this study as an open-process understanding of storytelling within CVR mediated by the fluid interaction of viewer, system, and designer.

The philosophical vocabulary of Gilles Deleuze gives a generative lens to approaching the fluid, non-linear nature of these narratives of CVR. His notion of 'becoming' [4], an idea in which he does not elevate stable "beings" as something absolute to achieve, is analogous to how CVR resists static paths and promotes dynamic, emergent storytelling (i.e., shaped by the viewer's movements, gaze, actions and interactions). His concept of virtuality—rooted in his readings of Bergson [5] notes a realm of potentials, real but not fully realized. This reflects the suspended

narrative logic of CVR, where experiences unfold differently depending on how users interact with the immersive world. Similarly, Deleuze's time-image [5] offers a conceptual horizon for approaching the fragmented and non-linear temporalities of CVR, where meaning emerges not through causality but through spatialized, embodied encounters across states of indeterminacy Where Deleuze emphasizes structure and multiplicity of experience, Roland Barthes (1977) brings attention back to the concepts of authorship and interpretation [6]. His idea of the death of the author is especially applicable to CVR's decentralization of narrative authority. Unlike classical cinema, wherein a director controls framing and rhythm and point-of-view, CVR offers users agency over perception and duration. Viewers become co-authors of the experience, not passive receivers of a directorial message, determining meaning through embodied exploration. This participatory dynamic is not just a technical detail — it signifies a philosophical rearrangement in the architecture of stories and in who holds the narrative voice. This perspective is complimentary to the essence of the Collaborative Narrative Model (CNM), whereby narrative meaning in CVR arises from the interplay of the system, the designer framework, and the agency of the viewer. To work through the experiential and emotional stakes of such narrative realignment, this research employs Paul Ricoeur's theory of narrative identity [7]. His distinction between idem (sameness) and ipse (selfhood) provides a method for looking at how narrative processes create and recast identity. In CVR, the viewer is frequently inside and outside the story at the same time, taking up ambiguous or even shifting subject positions: at times taking a character's point of view, at other times watching from within diegetical space. Ricoeur's framework enables us to read these immersive identity experiences not as fragmentation, but as a narrative act through which the self is negotiated across time, space, and emotion. Moreover, his approach to temporality [3] underpins an analysis of how CVR allows for nonlinear, durational

and subjective experiences of time that challenge conventional cinema's temporal continuum.

The integration of these three frameworks supports the Collaborative Narrative Model's central proposition: that storytelling in CVR is a distributed, co-creative process that blends spatial design, narrative scaffolding, and real-time user interaction. Deleuze helps us understand CVR's ontological indeterminacy and multiplicity; Barthes validates the transfer of narrative authority from creator to participant; and Ricoeur provides insight into how immersive narrative reconfigures identity, emotion, and engagement.

Although these theorists offer powerful insights, it is important to acknowledge that other theoretical perspectives—such as phenomenology [8], post-cinematic theory [9], and ludology [10] —also contribute to the discourse on immersive and interactive media. These frameworks focus on embodiment, digital materiality, or game-based interactivity, respectively. While relevant, they were not adopted in this study because they either foreground interactivity over narrative, or technological apparatus over aesthetic and conceptual concerns. The selected framework prioritizes the philosophical, narrative, and emotional implications of CVR as a storytelling form rather than as a gaming or purely experiential medium.

This theoretical foundation does not seek to impose classical narrative structures onto a new medium, but rather to interpret the aesthetic, experiential, and ontological shifts CVR brings to narrative art. It offers a coherent, interdisciplinary lens through which the Collaborative Narrative Model can be grounded, allowing for both critical reflection and practical application in the evolving language of cinematic virtual

reality storytelling.

1.8 Methodological Strategy

This study adopts a bricolage methodological strategy to explore the narrative and aesthetic dimensions of Cinematic Virtual Reality (CVR). Bricolage offers a flexible, interdisciplinary, and responsive approach that aligns with the hybrid nature of CVR itself—a medium situated at the convergence of cinematic storytelling, virtual reality technologies, and interactive narrative design. Originally the Bricolage Concept introduced by Claude Lévi-Strauss (1962), as a metaphor for structural anthropology,[2] and later expanded and pursued via qualitative approaches by scholars such as Kincheloe (2001), Gordon (1999), and Phillips (2000), the process of bricolage refers to the process of building knowledge by a creative weaving together and unearthed variation of analysis, tools, theories and methods [11–13]. And in this sense, it replicates the logic of CVR, where creators synthesize visual language, spatial interactivity, and technological mediation to create emotionally complex, participatory experiences. Curating contemporary cinema, CVR is destabilizing for the established paradigms in cinema and media studies, decentralizing authorship, destabilizing linear narrative structures, and immersing viewers in co-creative relationships. Such disruptions call for a methodological orientation that is flexible rather than a single epistemology. This research draws upon the adaptive and iterative nature of bricolage to allow for unfolding philosophical analysis, Selected CVR Films critique, and narrative/aesthetic analysis as findings evolve. According to Derrida (2002), knowledge must remain open to "what is yet-to-come," resisting closure or

[2] In The Savage Mind (1962), Lévi-Strauss uses bricolage to highlight how mythological thinking—central to structural anthropology—works by assembling existing cultural materials together differently. Unlike their scientific colleagues, who are seeking after universal laws, the bricoleur recognizes no absolutely unchangeable knowledge within the limits of his culture; yet his creations reveal how human societies translate their existent world into a symbolic universe. This metaphor is extended into a more general structuralism claim by Levi-Strauss that the myths of any culture serve, like its tools, to reflect the unconscious structures which underlie and give shape to its civilization.

overdetermined interpretive frameworks [14]. In reading a medium that's still in flux, such openness is a philosophical necessity and methodological boon. Moreover, bricolage enables the researcher to utilize a variety of disciplines—film theory, VR studies, narrative theory, media philosophy—without subsuming them all to a lowest common denominator. This is vital to deciphering the complex affordances of CVR—spatial immersion, emotional presence, and temporal multiplicity—for analysis. The Collaborative Narrative Model (CNM) proposed in this thesis is also an expression of this pluralism: a theoretical framework built on synthesis rather than reduction, addressing the central challenges and potentials of CVR. Bricolage, both methodologically and conceptually, is a position to embrace hybridity, uncertainty, and emergence as inherent to research and immersive media alike.

A core selection of CVR Films is a primary source of evidence for the study to track the narrative and visual features of Cinematic Virtual Reality (CVR). The authors chose the following pieces of work — Gondwana (2022), The Book of Distance (2020), Notes on Blindness: Into Darkness (2016), Clouds Over Sidra (2015), The Key (2019), Giant (2016), Marco & Polo Go Round (2021), Dear Angelica (2017), Wolves in the Walls (2018), The Invisible Hours (2017) and Spheres (2018) [15–25]. They are the mixture of selected CVR experiences, which still illustrate the diversity, complexity, and the new vocabulary of the medium. These works were picked not only for the reasons of their compatibility with the research aims but also for the practical issues related to access, licensing, and technology that were still available to them. In combination, they give a variety thematic and formal experimentation and interactive environmental frameworks. This selection is justified based on the Selected CVR Films' ability to elucidate the study's central research questions: the ways in which CVR is redefining storytelling based on viewer agency, spatial

immersion, and participatory engagement, and how these elements coexist with the demand for narrative coherence. Each work exemplifies a distinctive affordance of CVR—whether through the decentralization of authorship, the aesthetic mediation of memory, or the dynamic orchestration of spatial and temporal storytelling. This diversity allows the study to engage with CVR not as a fixed category, but as a field in constant negotiation between cinematic inheritance and immersive innovation. For instance, Gondwana uses environmental data and real-time generative design to explore ecological narrative through immersion and decay, while The Book of Distance constructs memory through symbolic interactivity, inviting the viewer into a participatory reconstruction of historical trauma. Notes on Blindness employs sensory deprivation and abstraction to foster empathy and identity transformation, revealing how VR can restructure embodiment as a narrative mechanism. These examples showcase CVR's capacity to function both as a representational medium and as an experiential interface for meaning-making.

The aesthetic variety among the selected works further strengthens their relevance. Dear Angelica's painterly, hand-drawn aesthetic and dreamlike temporal structure is a far cry from the high-fidelity photorealism of Clouds Over Sidra, which uses 360-degree video to plop the viewer into the quotidian life of a refugee. The Invisible Hours is a spatially distributed mystery narrative, where the viewer creates the story herself, walking through overlapping timelines and vantage points. The aesthetic and formal variety of these works is in fact made to showcase the continuum of strategies that CVR uses to generate emotional, cognitive, and narrative engagement. The extent to which a work allows viewers agency was another key consideration in the selection process. Wolves in the Walls, for instance, uses AI-driven interactivity to not only make the viewer actively part of the narrative world, but to make them complicit in the

unfolding story. Clouds Over Sidra, by contrast, is a far more observational experience, prioritizing emotional resonance over interactivity. This range of agency in the chosen works allows for an examination of how interactivity can both support and undermine narrative coherence, and of how varied levels of agency create the viewer's experience of presence, authorship, and interpretation. However, despite these limitations, the chosen Selected CVR Films stay closely aligned with the research aims. The ideas they represent coalesce into the major themes of this thesis: agency and storytelling, the spatial and temporal design of emotional and embodied environments, and the ethics and effect of participatory narratives.

Selected CVR Films analysis in this study follows a two-fold approach: comparative content analysis and thematic analysis. In addition, this analysis incorporates close reading as a complementary technique within the bricolage framework. While traditionally used in literary and film studies, close reading has also been applied to interactive media, where it emphasizes sustained engagement and the interpretive layers that emerge through repetition and reflection [26]. In this thesis, close reading refers to repeated immersive encounters with the selected CVR works, documented through experiential journals, attention maps, and analytic memos. This process allowed the identification of subtle design strategies—such as gaze direction, spatial sound, and interaction design—that extend beyond surface narrative and single exposure, and thus connects theoretical reflection with embodied practice. Thematic analysis in this study followed a primarily hybrid approach, combining both inductive and deductive strategies, in line with the bricolage framework. Deductive codes were initially informed by the theoretical concepts underpinning the study—such as identity (Ricoeur), authorship (Barthes), and becoming (Deleuze)—as well as by known affordances of CVR, including spatial immersion, viewer agency, and

perceptual realism. However, in keeping with the emergent and experiential nature of CVR, inductive coding played a crucial role in allowing new thematic patterns to arise from close reading and immersive engagement with the Selected CVR Films. These included motifs such as intergenerational memory, sensory disorientation, environmental decay, and co-authored presence, which were not fully anticipated at the outset. Each film was reviewed multiple times in immersive VR conditions, and experiential journals were used to track affective, narrative, and spatial impressions. These reflections, in combination with analytic memos and coding matrices, allowed the researcher to iteratively refine and expand the thematic framework over time. Thus, the coding process was not linear but recursive, allowing themes to be revisited, revised, and layered according to new insights—a hallmark of the bricolage ethos. The former allows for the examination of recurring design patterns and affordances across multiple works—such as how interactivity is structured or how spatial immersion is balanced with emotional engagement. The latter focuses on underlying themes and aesthetic strategies, identifying the conceptual motifs (e.g., memory, displacement, empathy, identity) that recur in these works and linking them to broader theoretical concerns. In addition to philosophical and case-based inquiry, the study incorporates narrative and aesthetic analysis, enriched by close reading, to examine the formal qualities and sensory logics of CVR. This requires attending to how CVR produces meaning via perceptuation realism, spatial narration, and temporal fluidity. In effect, perceptual realism enhances the illusion of being shoulders deep in an immersive environment by simulating presence in the real world with appropriate levels of visual fidelity, 3D sound, and embodied perspective that fosters emotional and sensory resonance. The best works in spaces such as Gondwana and Spheres expose real-time changes in the environment and spatialized sound to build affective relations with ecological or cosmic systems. Spatial narration, as seen in pieces like

Wolves in the Walls and The Invisible Hours, involves directing the viewer through 360-degree environments in ways that permit narrative advancement without depending on sequence in the linear sense. Temporal fluidity is another priority, with works like Dear Angelica and The Book of Distance exploiting fragmented timelines or memory loops as a means to evoke interiority, grief, and recollection.

Through the analysis of these formal elements within individual Selected CVR Films, this study investigates the conditions under which CVR produces coherent, emotionally resonant narratives, in spite of—and perhaps as a result of—its disruption of conventional cinematic norms. Self-consciously, the narrative and aesthetic analysis is not simply an additional layer of interpretation but something that is bound up with the philosophical and case-based analysis, enabling a consistent methodological integration across levels of abstraction. This study employs an integrated methodological strategy grounded in bricolage, combining philosophical interpretation, comparative content analysis, and narrative-aesthetic inquiry. Rather than applying these tools uniformly, each was mobilized in response to the specific demands of the Selected CVR Films, allowing insights to emerge inductively from the material.

Philosophical Frameworks in Practice: To achieve this aim this study uses a comprehensive methodological strategy based on bricolage, analyzing philosophically, comparing for content and investigating quantitatively the narratives aesthetically. Instead of using these tools in a blanket manner, we mobilized them in relation to the unique requirements of the Selected CVR Films, so that insights would inductively arise from the material. Philosophical analysis played a key role in reading how identity, authorship and temporality are articulated in digitally-mediated

immersive narrative spaces. The imposition of such frameworks was not always consistent but was used when specific conceptual problems arose in relation to individual works.

Paul Ricoeur's concept of narrative identity led my interpretation of The Book of Distance (2020), in which the user co-narrates a story of migration and memory. In such cases, the embodied participation of usersion in symbolic actions (placing objects on an altar and so on) brings about Ricoeur's relation of selfhood (ipse) and sameness (idem).

Gilles Deleuze's concept of becoming and virtuality were central in exploring Notes on Blindness (2016) and The Key (2019). In both works narrative development is non-linear, driven by affect, and dependent on the user's engagement; it is determined more by the user's experience than by cause and effect—also reminiscent of Deleuzian movement through multiple states of affect and transformation. Roland Barthes' "death of the author" of post-authorial storytelling helped in a project such as Wolves in the Walls (2018), where the interactivity allows the viewer to inflect the sentiment, affecting the arc of the story. The authority of one author has been replaced by the conversation between viewer, character and narrative.

These philosophical underpinnings enabled each film to be interpreted as a field of ontological struggle — between control and abandon, embodiment and abstraction. Comparative Content Analysis Across the Case Set: Comparative content analysis enabled a cross-case mapping of spatial design, interaction types, and emotional affordances. Eleven films were analyzed through multiple viewings, using VR headsets Oculus Rift S with detailed viewing notes, attention maps, and experiential

diaries.

In Gondwana (2022), environmental decay is dynamically generated through real-time data, offering no fixed narrative path. Analysis focused on how ecological systems replace plot and how passive immersion still fosters moral urgency.

Spheres (2018) and Clouds Over Sidra (2015) emphasized observational immersion. These were compared for how 360-degree environments convey empathy—through visual fidelity, ambient sound, and narrative framing.

The Invisible Hours (2017) served as a benchmark for distributed storytelling: viewers construct meaning by navigating intersecting character timelines. This was compared with Wolves in the Walls (2018) and Gondwana for how they differently orchestrate spatial and temporal freedom.

This method revealed recurring narrative tensions in CVR—particularly the balance between viewer freedom and authorial coherence.

Thematic Analysis of Narrative Motifs: A second interpretive layer identified recurring conceptual motifs—memory, trauma, identity, surveillance, and collaboration—through a thematic analysis of five CVR works.

Dear Angelica (2017) and The Book of Distance (2020) both used memory loops and fragmented sequences to evoke grief and retrospection. Thematic coding captured how visual abstraction (hand-drawn imagery) and temporal discontinuity serve affective storytelling.

Notes on Blindness (2016) and Giant (2016) shared themes of sensory deprivation and psychological fear, thematically linked through immersive disorientation. Coding examined how these experiences externalize inner trauma.

Marco & Polo Go Round (2021) introduced relational absurdity and cognitive dissonance as narrative themes—examined for how humor, physics-defying logic, and shifting perspectives challenge linear meaning-making.

This analysis illuminated how immersion in CVR is not only spatial but also symbolic, allowing viewers to participate in layered emotional and philosophical themes.

Narrative and Aesthetic Analysis of Form: CVR films were also evaluated aesthetically — the spatial orientation, sensory realism, narrative rhythm, and temporal orientation. Perceptual Realism: Spheres and Clouds Over Sidra, offered verisreal environments with spatialized audio and fluid camera movements. These were examined for the possibility of leading to presence without interactivity directly into the experience. Spatial Storytelling: The Invisible Hours and Wolves in the Walls allowed the audience to direct their viewing. In The Invisible Hours, the agents or viewers, piece together a murder mystery by tracking multiple characters — a kind of narrative cartography[3] .

Temporal Fluidity: Both Dear Angelica and The Book of Distance employed fractured timelines to communicate emotional interiority. Aesthetic analysis followed

[3] Narrative cartography is the mechanism of building a narrative not from pre-arranged sequences or a linear editing structure, but from the spatial movement and navigation of the viewer. In the case of CVR, the user is asked to explore an environment in which story elements are strewn throughout place—so that meaning accrues not through montage, but via embodied discovery. Inspired by Henry Jenkins' theory of spatial storytelling it is particularly fitting in works like The Invisible Hours where the viewer "maps" the narrative by deciding where to go and who to follow, constructing meaning through position, perspective, and presence.

how cinematic grammars such as fading, dissolving and looping depart from the logic of Chrono-photographed time in cinema.

This level of analysis also demonstrated how CVR storytelling does not depend on classical montage but, rather, on viewing mobility and (disembodied) participation as narrative drivers.

Analysis of Viewer Agency: Viewer agency was examined in terms of affordance, consequence, and interpretive labor. A spectrum was developed:

Passive Observation: In Clouds Over Sidra and Giant, the user has no influence over events. However, immersion amplifies emotional alignment—especially with social justice narratives.

Exploratory Agency: The Invisible Hours and Gondwana allow the viewer to assemble their own sequence. These pieces required analysis of how spatial movement substitutes for montage.

Interactive/Relational Agency: Wolves in the Walls and The Key allow dialogue, response, and interaction with characters. In these cases, agency becomes narrative construction—not just navigation.

Kinetic Disorientation: Marco & Polo Go Round offers interactivity through physics-driven instability. Viewer movement becomes both aesthetic and narrative—a challenge to continuity and logic. This typology of agency illuminated how viewer participation is never neutral—it shapes affect, authorship, and coherence in unique

ways. Each methodological tool—philosophical analysis, content comparison, thematic coding, aesthetic evaluation, and agency mapping—contributed to a multi-dimensional understanding of CVR's narrative logic. These tools were not used in a linear or isolated fashion, but iteratively, with insights from one method often informing the deployment of another. For instance, philosophical reflections on authorship (Barthes) directly shaped how agency was evaluated in Wolves in the Walls, while aesthetic analysis of temporal fragmentation led to deeper Ricoeurian readings in *The Book of Distance*.

The Collaborative Narrative Model (CNM) emerged directly from this process—grounded not in abstraction but in empirical patterns, experiential complexity, and interpretive depth observed across the full range of works.

Bricolage is chosen as an approach as CVR is quite inherently bricoleur. Conceived as a hybrid medium, CVR doesn't lend itself easily to neat boxes inside cinema, gaming, VR technology, or media art. It builds upon and extends each of these traditions, adding elements of visual storytelling, embodied interactivity, and algorithmic structure to create an emergent aesthetic form. It requires a methodological approach able to traverse boundaries, managing disparate theories and tools without imposing a pre-existing mold. Challenging the Cartesian-upper condition of a single meta-narrative, as Lyotard (1984) mentions, interdisciplinary research requires the sensitivity for a diversity of concepts [27]. Bricolage presents this sensitivity by allowing the researcher to grasp several interpretive threads simultaneously. It allows multi-dimensional access to CVR — at once philosophical, aesthetic, technological, and experiential.

CVR demands such flexibility. For example:

- Any purely technological accountwould overlook the emotional and symbolic aspects of narrative immersion.
- A film-based view would almost ignore both the user agency and the spatial aspects of storytelling.
- Centering only the narrative theory would leave out the affective and multisensory nature of CVR.

With this model, the researcher can merge and navigate between these modes of inquiry, allowing an exploration of the narrative and aesthetic dimensions of CVR in its entirety. Crucially, here lies that approach as well with regard to the epistemological underpinnings of this study: that meaning in CVR does not derive from the unmarried direction but from the activation of designer and viewer to a system; the principle tenet of the CNM. In a similar vein to Différance of Derrida, bricolage resonates philosophically because meaning is never static but is rather iterative through relations. It also reflects Foucault's (1972) claim that disciplines produce their own objects of knowledge [28]. CVR is a new object of study and requires a method that can be built up in relation to the forms it takes, rather than the media from which it is retroactively applied.

As a bricoleur, the researcher becomes an active actor negotiating methodological moves, adapting tools as necessary. As described by Lévi-Strauss (1962), the bricoleur is interested in constructing solutions from whatever is available—not randomly so but rather through intentional reconstructions. For research, this entails extracting from diverse sources, theories and methods, leading to a coherent and complex inquiry that befits the complexities of the topic.

In CVR context, this function is especially critical, as linear planning may fail to deliver. The researcher must therefore be ready to meet the emergent properties of the medium. When for example discussing The Book of Distance, new thematic elements of memory, abstraction, and transgenerational trauma emerged, calling for deeper philosophical consideration. Just as Wolves in the Walls added surprising new layers of AI-powered interactivity, redefining authorship and the control of the viewer, The bricoleur then needs to remain mindful in an ethical sense of the potential risks of fragmentation and reductionism, achieving methodological coherence through always re-anchoring analysis in the research aims that drive investigation of how CVR explains a decentralized narrative authority, identity formation and the generation of emotional and aesthetic immersion.

Using a combination of the philosophical, the Selected CVR Films and the narrative/aesthetic analytic, coordinated with a bricolage methodology, this study examines the narrative and aesthetic dimensions of Cinematic Virtual Reality (CVR). These methods were selected not only because of their individual strengths, but for their complementarity. In concert, they offer an elastic and dynamic take that mirrors the interdisciplinary and emergent nature of CVR itself. These methods have been integrated to inform the development and articulation of the study's principal contribution, the Collaborative Narrative Model (CNM).

Its philosophical analysis makes use of terms from Gilles Deleuze, Roland Barthes, and Paul Ricoeur. These thinkers provide valuable theoretical tools to tackle the challenges that CVR provides to traditional narrative structures and authenticity. Applying Deleuzian concepts of becoming and virtuality to texts such as Notes on Blindness and The Key, I show how non-linear, immersive storytelling environments

facilitate identity transformation and affective engagement. In Wolves in the Walls, Barthes' notion of death of the author is particularly relevant, as player choices necessarily shape the episode's story progression and tone, displacing static authorship so as to create a terrain of participatory meaning making. The Book of Distance uses fragmented memory, intergenerational trauma, and symbolic interactivity to construct the personal/collective identity as per Ricoeur's narrative identity. These philosophical frameworks are not presented dogmatically, but rather are re-contextualized in light of the specificities of CVR, serving to interrogate how the meanings of meaning, selfhood and authorship change in immersive spaces.

In order to relate these philosophical understandings to real-world approaches, the research utilizes case-study analysis. Selected CVR Films were picked with an aim to cover the thematic diversity, aesthetic innovation, and technological complexity, which are the main factors that work to open up the first two research questions: in what way CVR changes the concept of the authorship, storytelling, and the viewer participation? How it can accept the agency and interactivity, and however, remain a coherent and logical story?

Guided by a bricolage, these three methods combined make for an agile inquiry. It respects the epistemological complexity of CVR as an emergent form but also stays grounded in the central aims of the study, which are to discern how immersive narratives operate and to articulate a flexible, plug-and-play model, called the Collaborative Narrative Model (CNM), that captures the participatory, multi-perspectival and co-creative features of CVR storytelling. This methodology, in its interdisciplinarity and openness, mirrors the very qualities that define CVR, and thus provides a structurally and conceptually aligned foundation for the study's

contributions.

This thesis began with a feeling—a disorienting, immersive encounter with a story that didn't unfold in front of me but all around me. That moment marked a shift, not just in how I watched, but in how I thought about narrative itself. This study carries forward that moment of curiosity, asking how CVR changes the grammar of storytelling and what new relationships it opens between creators, systems, and viewers. By bringing together diverse theoretical perspectives and carefully chosen immersive works, I aim to trace those changes not from a distance, but from within the experience itself. What follows is both an inquiry and a response: a way to make sense of this evolving medium and to propose, through the Collaborative Narrative Model, a new language for co-creative, immersive storytelling.

Chapter 2

CINEMATIC VIRTUAL REALITY: EVOLUTION AND FUNDAMENTAL ELEMENTS

2.1 Introduction

Cinematic Virtual Reality is a new medium that combines the immersive and participatory nature of Virtual Reality (VR) with the storytelling and emotional experience of cinema. CVR, as a hybrid art form, gives audiences work-storytelling can be experienced in new ways — through spatial immersion, interactivity, and participatory engagement, blurring the boundaries of more traditional media. Using technology and storytelling in unison, CVR pushes against the trappings of the medium and creates new avenues for creative output and emotional resonance. It is in this manner that this chapter is structured in order to support a holistic foundation for understanding CVR as a medium for a story world. It starts by outlining the historical development of CVR, placing its appearance in the trajectory of immersive media and VR technologies. Advancements in immersive technology — from early experimentation with stereoscopic images to devices like the Sensorama and head-mounted displays — established the foundation of CVR. Then the discussion moves on to the key technological developments of the late 20th and early 21st centuries that increased sensory realism, interaction and presence and gave rise to CVR as a unique medium.

The second half of the chapter discusses some of the underlying principles of CVR,

discussing the intertwined issues of immersion, presence and viewer agency. These aspects are key to how CVR sets itself apart from traditional film fare. Immersion describes the user's feeling of being surrounded by a virtual world, and presence conveys the psychological sensation of "being there" in that space. Conversely, viewer agency emphasizes the audience's role in manipulating how they enter the story. This section explores how CVR is able to capitalize on its technological affordances to design deeply engaging and participatory experiences by probing into these principles.The coherence of the framework built in this chapter, relates the historical origins of CVR with its core principles, paving the way for future dialogue. This provides a clearer understanding of CVR as both a technological innovation, and a narration medium. Placing its emergence in a historical, technological, and theoretical framework, the chapter both demonstrate why CVR's emergence is so significant and lays the groundwork for deeper analyses in subsequent chapters.

2.2 Historical Perspectives of Cinematic Virtual Reality

CVR is the fusion of two formerly separate worlds: VR and cinematic storytelling. Although the roots of VR can be traced back to technological innovation intended to produce immersive environments, cinema has been concerned with honing the visual and narrative techniques designed to engage an audience. The combination of these traditions has created hybrid medium that somehow is shifting meaning of storytelling. how embodiment techniques and narrative perspectives in CVR have evolved, and in what way technological advancements have altered viewer experiences and narrative delivery.

The roots of immersive media can be traced back to 1838, when Sir Charles Wheatstone invented the stereoscope. This "stereoscope", using stereoscopic imagery, created the effect of depth, it was the first introduction to three-dimensional

viewing [29] (Tricart, 2017, PP. 3-15). More than 100 years later, Morton Heilig built on these concepts when he invented the Sensorama in 1962. As an example, one multi-sensory simulator used three-dimensional images, sound, vibration and even smell to produce a full sensory experience that exemplified how the use of multiple senses in the structure of a multisensory space can be combined to create a convincing reality illusion [30]. His work with the multi-sensory inputs led to this new and immersive environment and further exemplified the use of engaging multiple senses by creating a stronger illusion of reality, a principle that exists in the sphere of VR to this very day [31, 32]. However, while the Sensorama and Heilig's patented Telesphere Mask were tremendous innovations, they did not have the commercial lure to gain mass development [33].

Another important name in VR history is Ivan Sutherland, who introduced the "Ultimate Display", a head-mounted display system that is also referred to as the Sword of Damocles [34], this system pioneered the idea of head tracking and prepared the way for future VR technologies [35]. Also, His concept of a virtual environment in which users can interact with objects in real-time helped to pave the way for the creation of modern virtual reality (VR) technology [36]. Sutherland's work showed that immersive, interactive environments were possible and paved the way for future VR hardware and software innovations. The earliest systems provided a look at what VR could one day do, while being constrained by the technology of the time. The focus was on evocative visual and auditory stimulus rather than the immersive full-body experience and haptic feedback.

With the development of VR technology, scientists and creators tried to enrich the feeling of presence and immersion. The 1990s was a major turning point for virtual

reality with the advancements in hardware and software. Technological improvements in input devices and tracking systems during this time enabled more natural and intuitive interactions in virtual environments [37]. This was the foundation for VR systems that pushed realism and interactivity [38] But there were enormous upgrades to hardware and software and finally, this was the decade that saw substantial VR presence and immersion. The new tools offered by these technological breakthroughs allowed for more immersive and enjoyable virtual experiences. The 1990s saw advancements in better headsets and input devices that put a foundation for the VR experience.

Another major innovation during this time was the Data Glove, developed by a company called VPL Research, which used hand gestures to interact with virtual objects, making interaction more intuitive and natural for the user [37]. Through the Data Glove, the user's hand movements were converted into digital signals that allowed for the accurate and responsive interaction with virtual objects. It led to more sophisticated input devices, improving user interaction in virtual environments. The most important innovation was Sega's 1994 arcade gaming headset. Sega aimed to produce a dedicated home HMD (head mounted display) as well, but it was scrapped after testers developed problems with motion sickness and headaches. As a result, home VR was deemed impractical [39]. One of the most important advancements was the CAVE (Cave Automatic Virtual Environment) system, developed by University of Illinois in 1992. They created a warehouse-sized system with several large screens arranged in a cube to simulate an immersive environment known as CAVE [40]. The users inside the CAVE could have 3D projections around walls, floor, and ceiling, creating a sense of presence and immersion. This approach was a major advance in immersive display technology and proved that large-scale VR environments had great

promise in both scientific visualization and architectural design applications. But the hardware improvements in the 1990s were not limited to that alone, as VR also received substantial software advancements that added to the realism and interactivity of those environments. The development of real-time 3D graphics and more responsive motion tracking systems enabled more detailed and life-like virtual worlds. Efforts made in the gaming field (research and development) led to improvements in computer graphics which in turn gave rise to the development of advanced rendering techniques to combine graphics and visual elements for improved VR experiences [38]. Another key development market in the 1990s was the advancement of haptic feedback and motion-tracking technologies, enabling users to interact with virtual environments more naturally and intuitively. Haptic feedback systems such as the Cyber Grasp glove were implemented which provide tactile sensations to enhance perceived tactile sensation and virtual manipulation [41, 42]. These elements were critical in creating a more immersive user experience, enabling people to "feel" the virtual camera setting or object they were working with and engendering a stronger sense of embodiment. Other motion-tracking systems grew popular, like the VPL Data-Suit which gained acceptance that allowed full motion capture of the body, thereby improving phoney-bodiness in the VR. These systems tracked the movements of the user's body and mapped them on the virtual reality to create a greater sense of immersion and involvement [43]. The omnidirectional stereo images of the user's own body provided further presence feedbacks, since the user perceived a representation of his body in front of him and he manipulated it in real time rather than a robot or an avatar. While in this time research also explored the materiality and embodiment of presence and immersion in VR on a physical and a social level. The researchers were interested in what the factors were that had produced a strong sense of presence, and in how it might be emphasized through

technology and design. Study by Slater et al. (1997) explored the sense of presence, feeling "inside" the VE. They studied different technological and design factors, which could influence this illusion [44]. In their paper, the authors highlight the significance of factors such as immersive displays, responsive tracking and realistic interactions in eliciting a sense of presence.

The consumer VR arrived in 2000s, and the graphics, processor power and the cost are also fuelled. This development broadened the possess for VR, stimulated commercialization, and generated new stock-manipulating methods, all helping to increase the sense of presence and immersion. It was a momentous occasion for VR that would transform the medium from being a niche technology into a commercial entertainment and experience platform. The Oculus Rift was one of the most defining products of this era, debuting in 2012. Born of the minds of Palmer Luckey and Brendan Iribe, the Oculus Rift was a revolutionary piece of VR hardware, with high-quality displays and a much more immersive environment, that changed gaming and the entire industry. Riding on the heels of that success was such a massive amount of interest and money this time round that consumers now have a number of VR options to their name. The Oculus Rift was a game-changer for VR headsets, offering high-resolution displays, low latency and solid head tracking. This approach over time resulted in also new ways of embodiment and these one dramatically affected the level of realism and immersion experienced in VR environment. Body tracking technologies, as the Microsoft kinect, contributed also to implementing user's state and motion into the virtual reality [45] (Shotton et al., 2011, PP.1297-1304). And gave physically personalized tracking user's application tracking solution much better than the above described devices and user representation inside it. This improvement allowed you to see and interact with your whole body in the

virtual room, which in turn greatly intensified the sense of presence. Shadow-World was a user-focused research experiment that provided a comprehensive understanding of factors that influenced the state of immersion by moving the participants through the stages of their experience: centring around VR haptic challenge, where the natural motion of the body was tracked so as to allow users to interact with the VR objects within the virtual space. The DTS Spatial Audio integration was also a game changer, perceptual sound that takes place in the space all around you. Advanced sound effects allowed sounds to come from specific directions, resulting in a more natural and immersive soundscape [46]. For instance, spatial audio also led to a more accurate positioning of the user in the virtual space and added to the sense of presence by existing in the simulated sound behavior of the physical world [47]. It was during that time that the concept of Cinematic Virtual Reality (CVR) was emerging as a new category of virtual reality and that authors enjoyed immersion, interactiveness video with a spherical dimension.

The release of consumer-grade headset displays (HMDs) like the Oculus Rift and HTC Vive in the mid-2010s gave rise to a flurry of innovative play in CVR. The early days of 3DoF (three degrees of freedom) content produced in this period a lot of short-form experiences, often prioritizing spectacle over narrative. These works included immersive rollercoaster rides, space explorations, and simulations like VR Dinos (2015) and Shark Dive VR (2016), which showcased the medium's immersive potential [48]. Ross and Munt describe such early CVR as "spectacular iterations of experience," with a focus on delivering visceral, sensory engagement rather than sustained storytelling. The novelty and attraction-driven nature of early CVR mirrors the historical evolution of cinema itself. Tom Gunning's (1986) concept of a "cinema of attractions" aptly describes these initial experiments, which, like the early films of

the 1890s and 1900s, prioritized spectacle and viewer engagement over cohesive narrative structures. For example, many of these early films, experienced individually through devices like the Kinetoscope, invited direct interaction with the audience, often featuring participants looking into the camera to establish a sense of intimacy and immediacy [49].

This focus on spectacle was soon supplemented by more narratively ambitious works as established filmmakers and practitioners sought to explore the medium's potential for storytelling. For example, Alejandro González Iñárritu's Carne y Arena (Flesh and Sand) (2017), which premiered at Cannes Film Festival, combined CVR's immersive affordances with powerful social commentary on the migrant experience. Carne y Arena received recognition with a special Oscar, proving how CVR had the potential to go beyond spectacle and capture the emotional and thematic concerns of audiences. In a similar vein, Kathryn Bigelow's *The Protectors: Walk in the Ranger's Shoes* (2017) used CVR to promote wildlife conservation via an emotionally resonant documentary experience.

Other filmmakers treated CVR as an extension of their traditional cinematic projects. Directors such as Doug Liman (Invisible, 2015) and Ridley Scott (Alien: Covenant VR Experience, 2017) turned to the medium to create short-form promotional content or self-standing experimental works. Lionsgate and Fox Studios created VR teaser experiences for franchises including Power Rangers (2017) and Sleepy Hollow (2014) integrating CVR into Hollywood's blockbuster marketing strategies [48].

However, around this time, big institutions such as The New York Times and The Guardian also contribute to the growth of CVR massively. New York Times' Daily

360 project (2016–2017) published a daily short CVR video, ranging from global conflict and cultural events, while their Op-Docs series showcased substantive VR documentaries like Traveling While Black. In the same vein, The Guardian's Virtual Reality Studio (2016–2018) offered public engagement with new CVR works exploring complex social and political topics. Although both initiatives have since concluded, they played a pivotal role in fostering the medium's grammar and demonstrating its potential for journalistic storytelling. Despite the creative innovation of this period, the long-term viability of CVR as a storytelling medium has been hindered by the lack of a sustainable commercial model. Prominent CVR producer Jaunt VR, for instance, shifted its focus to augmented reality (AR) in 2018, citing insufficient consumer adoption [50]. However, interest in VR remains strong, with platforms like Steam reporting a significant rise in connected headsets year-on-year [51]. Drawing parallels to the evolution of early cinema, CVR appears poised at a crossroads. Like cinema's shift from attractions to narrative-driven works under pioneers like D.W. Griffith, CVR may similarly evolve toward complex, narrative structures, influenced by its proximity to gaming and interactive media [48]. However, its future hinges on developing revenue models and technologies that can sustain its creative momentum.

The VR storytelling literature emphasizes the importance of presence and immersion, which is what makes VR so different from traditional flat-screen media [2, 37, 52–54]. Example early CVR projects include "Clouds Over Sidra" (Arora and Milk, dir. 2015) and "The Displaced," (The New York Times, 2015) narrative and immersion were combined, showing the unique emotional impact of CVR storytelling. For example, these early efforts highlight how CVR might facilitate emotional engagement and empathy, opening avenues for exploration and innovation in the

medium [55]. However, much of the available research is still concentrated on aspects related to their functional properties such as the impact of the viewer's perceived height [56] and addressing 'sim-sickness' [57]. In contrast, modern CVR practices have advanced to utilize high-tech features like realistic avatars, facial tracking, and artificial intelligence (AI) to engender immersive and kinetic virtual spaces while fostering a sense of presence and social connection amongst viewers [58–61]. More widely, AI is being used to drive CVR with more dynamic and adaptive virtual worlds. By enabling non-player characters (NPCs) encoded intelligence, AI algorithms can steer their decisions to guide them to interact with users by responding to user actions [62]. Adding a layer of interactivity and unpredictability is what makes VR experiences more engaging, interactive, and lifelike. AI can also augment the elements of real-time rendering, environment details and adaptive storytelling, creating an experience unlike any other based on the user's every move. Significant contemporary CVR films showcase the advantage of such advanced embodiment techniques in bolstering storytelling. For example, "Wolves in the Walls" (Olson, dir. 2018), developed by Fable Studio, employs realistic avatars and facial tracking to craft lifelike characters that increase emotional involvement and absorption in their fictional world. As users explore the narrative they will interact with the protagonist, Lucy, and make decisions that will affect the story. Similarly, "The Great C" (Baobab Studios, 2018), which draws from a short story by Philip K. Dick, uses advanced VR methods to immerse viewers in a post-apocalyptic world. With high-fidelity graphics, lifelike avatars, and AI-driven interactions, the film better shapes viewers as an active participant, rather than observing passively.

Technological breakthroughs have empowered embodiment techniques in CVR. Recent improvements in VR headsets, peripheral devices dedicated to the VR

experience, and special software tools have all helped provide a better quality and more realistic CVR experience. And ongoing changes with VR headsets like higher resolution and wider angles of view and more comfort have improved the immersive quality of CVR. High-definition displays, lower latency, and better ergonomics are among the features that have emerged in devices such as the Oculus Rift S, HTC Vive Pro, and Valve Index, making them more comfortable and visually interesting [63]. This includes the development of advanced controllers and haptic devices, such as the Oculus Touch controllers and haptic feedback gloves by HaptX, that allow for precise control and tactile sensations that enable natural interaction with virtual objects [64].

Creative embodiment has diversified CVR story telling prospects. New narrative techniques and improvements in audience interaction opened new possibilities to engage viewers. Interactive components and branching stories enable users to impact the narrative through their actions and choices [1], resulting in a more individualized and immersive experience. Tools that allow users to engage with the story and individuals on a deeper level have become more advanced. In "Wolves in the Walls," for example, users can literally move objects, converse with the characters, explore the environment, and are made to feel like active participants in a story. Their evolvement also provides an example of how these high-tech embodiment methods with innovative creative CVR all come together to create entertainment that furthers the narrative, an unprecedented means to connect with the audience.

The history of Cinematic Virtual Reality (CVR) is a chronological account of the evolution of this medium marked by innovations in technology and artistic evolution, conspiring together, ultimately leading to the establishment of CVR as a new, interactive medium. The history of CVR has been an uninterrupted one, dating back

to two-dimensional images like the stereoscope of the 19th century to Sensorama in the 1960s, the Ultimate Display in the 1980s and the birth of consumer-based devices in the 2000s. This development has been shaped by innovations in sensory fidelity, interactivity and narrative engagement, as well as the importance of user embodiment and participation. Revolutionary features like haptic feedback, spatial audio, motion tracking, and AI-powered adaptive narratives have opened new doors for immersive experiences, making CVR a medium uniquely positioned to merge cinematic richness with virtual interactivity. This section concludes by synthesizing CVR's development milestones and technology advances (Tab. 1), demonstrating how each of these phases has, in turn, paved the way forward for the next, now culminating in the role that CVR currently serves as a platform for empathetic, interactive, and emotionally impactful storytelling. Although it has a lot of promise, the future of CVR will rely upon overcoming barriers associated with accessibility, sustainable revenue models and keeping a balance between interactivity and narrative coherence, keeping it evolving in a progressively immersive media frontier.

Table 2.1: Key milestones and technological advancements in the evolution of CVR

Time Period	**Key Milestones**	**Technological Advancements**	**Impact on CVR**
1830s–1960s	Invention of the stereoscope (1838)	Development of stereoscopic imagery for 3D depth.	Laid the foundation for 3D viewing and immersive visual experiences.
	Creation of the Sensorama (1962)	Multi-sensory simulation (3D visuals, sound, vibration, and smell).	Highlighted the potential of multi-sensory immersion for storytelling.

Time Period	Key Milestones	Technological Advancements	Impact on CVR
	Telesphere Mask by Morton Heilig	Early prototype of a head-mounted display (HMD).	Introduced wearable immersive technology, paving the way for future HMDs.
1960s–1980s	Ultimate Display by Ivan Sutherland (1968)	Head tracking introduced in VR; basic interactive virtual environments.	Established the concept of real-time interaction with virtual worlds.
	Rise of arcade and experimental VR systems	Experiments with graphical interfaces, motion tracking, and visual fidelity.	Proved feasibility of immersive environments, albeit with limited accessibility and high costs.
1990s	Development of the Data Glove	Precise tracking of hand gestures for interaction.	Enhanced interactivity and realism in VR environments.
	Introduction of the CAVE system (1992)	Large-scale multi-screen projection systems for immersive 3D spaces.	Enabled group-based VR experiences and advanced applications in science and architecture.
	Sega's arcade VR headsets	Early headsets for gaming; suffered from motion sickness issues.	Demonstrated VR's potential in entertainment, though limited by technical shortcomings.

Time Period	Key Milestones	Technological Advancements	Impact on CVR
	Advances in real-time 3D graphics	Motion tracking, haptic feedback (e.g., CyberGrasp gloves).	Improved visual quality, interaction, and embodiment in virtual environments.
2000s	Launch of Oculus Rift prototype (2012)	High-resolution displays, low-latency head tracking, and accessible price points.	Revolutionized VR by making it more consumer-friendly and commercially viable.
	Development of spatial audio	Advanced audio systems replicating real-world soundscapes.	Enhanced immersion by grounding users in virtual spaces through realistic soundscapes.
	Introduction of full-body tracking	Systems like Microsoft Kinect enabled representation of user movements.	Allowed users to see and control their entire body in VR, creating stronger embodiment and presence.
2010s–2020s	Emergence of Cinematic VR	High-fidelity visuals, AI-driven interactions, and realistic avatars.	Blended storytelling with interactive environments, creating empathetic and engaging narratives.
	Groundbreaking CVR works: *Carne y Arena* (2017), *Wolves in the Walls* (2018)	AI-enabled dynamic storytelling and adaptive narratives.	Transformed CVR into a powerful medium for emotional engagement and social commentary.

Time Period	Key Milestones	Technological Advancements	Impact on CVR
	Increasing integration of haptics and adaptive AI	Devices like HaptX gloves and advanced NPC behavior algorithms.	Personalized user experiences; made VR narratives more responsive and lifelike.

2.3 Fundamentals of Cinematic Virtual Reality: Immersion, Presence and Beyond

This potential has given birth to the term Cinematic Virtual Reality (CVR), which describes an approach to media that utilizes immersive technologies to create experiences that facilitate unprecedented presence and interaction with narratives in avast variety of environments. The foundation of the transformative power of CVR is the dual concept of immersion and presence that has figured heavily in both academic and technological discourse. Such phenomena get CVR apart from traditional cinematic modalities, offering audiences an experience dimension in which they sense they are not just their mentally but "there," physically and emotionally, in the narrative space itself [65–67]. Immersion is how muchusers feel surrounded by a virtual environment, made possible by multisensory stimulation with visuals, soundscapes, and haptic effects. This technology-based concept emphasizes that a suitably designed seamless hardware integration would help to minimize distraction and facilitate more engaging behaviours [68]. In contrast, presence – commonly referred to as the 'feeling of being there' – represents a psychological state, which is affected both by the design of the virtual environment, as well as also the user's perceptual and cognitive responses [69]. Whereas immersion is a general property of the medium, presence is a measure of the user's subjective experience, thus a key metric for assessing the effectiveness of CVR experiences in general [70]. Recent scholarship has examined the relationship between immersion and presence in CVR and storytelling more

broadly. Immersion, which is typically made possible through more sophisticated technologies such as spatial audio, realistic lifelike avatars and haptic interfaces, tends to further enhance the illusion of presence by eliminating perceptual boundaries between the user and the host virtual environment [44, 71]. On the other hand, emotional and narrative engagement can increase presence by establishing a feedback loop, whereby users' emotional states make them more connected to the story world of interactivity [67,72]. This section describes the basic principles of immersion and presence in CVR in terms of their technological, psychological, and narrative dimensions. It also investigates how these concepts align with viewer agency, focusing on the participatory role of audiences in executing and responding to narratives. Exploring these fundamentals reveals a way into understanding how CVR exploits its affordances to drive richly immersive and transformative storytelling.

2.3.1 Immersion: Creating Engaging Environments

Immersion is one of the key features of virtual reality experiences and a fundamental element of Cinematic Virtual Reality (CVR). It is the degree of immersion that users experience, where they can disconnect from the real environment and immerse themselves in a digitally generated experience [44]. In contrast to normal cinema, which has a traditional non-interactive experience, here in CVR, users are given the choice to become part of the story and perceive themselves as a part of the moving narrative. Combining advanced tech with sensory input and cognitive absorption, the illusion of presence, or "being there" is born, facilitating this transformative paradigm shift. Immersion has many definitions and approaches but its success relies on how well it engages the user in several sensory modalities. Use of high-quality visuals, spatialized audio, and haptic feedback mechanisms create a seamless experience from which can interrupt less, enhancing the illusion of reality [68]. In addition, the use of CVR is much more powerful as it really draws in emotional and psychological resonance since it allows not only viewing but also experiencing the narrative. The blending of technological creativity and human experience makes immersion a defining

aspect of CVR, implying us to closely investigate its foundations and consequences[4] .

The core concept behind the immersion is to combine different types of advanced technology to model real environments. Wearables like the Oculus Rift, the HTC Vive, and most recently, the Oculus Quest 3, are at the forefront of providing high-resolution images with large fields of view via head-mounted displays (HMD). With the aid of motion-tracking systems, these displays guarantee that the virtual environment adapts in real time to the user's movement, enhancing the experience of spatial coherence and presence [63]. Moreover, high frame rates and latency are ideal to reduce visual artifacts and other phenomena that could threaten the illusion of reality [73].

But it's not all visual, spatial audio is an important part of immersion. Spatial audio uses similar techniques to model how sound interacts in real-world spaces, allowing users to hear the direction and distance from sound sources to replicate an immersive 3D audio experience. Although auditory realism enhances a feeling of physical presence, it can also lead the user's attention around the narrative landscape, tracing their interaction with the virtual environment [58], Haptic feedback also contributes to this, by adding the dimension of touch to the virtual experience. Devices such as haptic gloves, suits, and controllers provide tactile sensations that mimic interactions with virtual objects, making the environment feel tangible [41].

Immersion is not limited to sensory engagement; it also involves cognitive and emotional absorption. Cognitive immersion occurs when users focus their attention entirely on the virtual environment, often entering a state of "flow" where they lose track of time and external

[4] While high-fidelity visuals and audio are commonly associated with immersion, some scholars argue that narrative coherence and emotional engagement can sustain immersion even with limited graphic quality—especially in minimalist or stylized VR experiences.

distractions [74]. This state is facilitated by seamless technological integration that minimizes disruptions, such as visual lags or interface glitches, which could otherwise break the user's engagement [68]. In CVR, cognitive immersion is closely tied to narrative design. Compelling storylines, relatable characters, and interactive elements draw users deeper into the narrative, encouraging them to explore and engage with the virtual world. This narrative interactivity not only sustains cognitive focus but also fosters a sense of agency, as users feel their actions have meaningful consequences within the story world [1].

Emotional immersion binds the user to the narrative by inducing feelings of empathy, excitement, or wonder. This is realized through a mix of realistic avatars, emotive facial animations, and emotionally charged narrative within CVR. Studies have documented the reciprocal relationship between emotional involvement and presence, whereby emotionally involving content increases the sense of being there, and heightened presence, in turn, amplifies emotional response [69]. That interaction highlights the need to weave in emotionally resonant aspects within CVR design, which are important for enhancing overall engagement as well as for artistic experience. Even though it has transformative potential, several challenges make pursuing and maintaining immersion in CVR non-trivial. Technological constraints like low resolution, limited field of view, or high latency can shatter the immersive feeling of presence in a virtual world and cause motion sickness, known as "sim-sickness" in virtual environments [73]. Immersion can be broken by poorly designed interfaces or narratives which do not engage the user [70], thereby decreasing the effect of the experience. The level of immersion a user experiences can be highly individual as well. Such differences underscore the necessity of user-centered design strategies to target a range of audiences and address the technical and narrative challenges of CVR in order to drive for deeper andmore seamless immersion.

2.3.2 Presence: The Illusion of Being There

Presence is generally defined as the mental state of "being there" in a virtual environment. It gives the user a feeling of subjectively being within a digital environment that has been constructed around them, existing in physical space and time, without consideration for the technology mediating it. Immersion is a quantifiable characteristic of the medium, but presence is the user's experience of it, marked by a feeling of being a part of and being real in the virtual world [65, 66]. This is a phenomenon of Cinematic Virtual Reality where people do not only want to be immersed they want to feel like a part of the narrative itself.

Building presence in CVR is thus by the harmonious blending of sensory fidelity and narrative design, and emotional engagement. The term sensory fidelity describes the degree to which VR technology can replicate a realistic environment, high-res visuals, spatial audio, and responsive motion tracking [75]. All these factors collaborate to persuade the perceptual systems of the user that the virtual setting is real, establishing a sensation of presence. One example is spatial audio, which allows users to hear sound sources within the environment, providing spatial awareness that is consistent with what they are seeing. Motion tracking works in the same way, making sure that every head turn or movement of the body directly corresponds with changes in the scene, maintaining that physical simulation. But presence goes beyond the realism of the senses to the cognitive and emotional aspects of the user's experience. Cognitive presence arises as users become mentally engaged with the virtual environment, seeing it as an intelligible and meaningful place in which their actions can have meaning. Such engagement is often accompanied by narrative signifiers that invite exploration, choice of action, or interactions with virtual agents and objects [1]. Emotional presence, in contrast, stems from the user's relation to the story and its characters, able to provoke empathy, fear, joy or wonder. In addition, the user's ability to suspend disbelief and immerse themselves in the narrative might increase their sense of presence. This is a reminder

that presence is a highly subjective phenomenon that can differ dramatically from person to person and from context to context.

Maybe the most powerful element of presence in CVR has to do with empathy, the capacity to feel what someone else feels by experiencing a point of view that you would never have in real life. VR documentaries like Clouds Over Sidra(2015) — where users walk in the shoes of a Syrian refugee — and The Displaced (2015), which takes a look at children displaced by conflict, illustrate this well. And by immersing users in these narratives, CVR has the potential to create a deep sense of connection and understanding, making it a potentially powerful medium for social and emotional narratives [76]. Although it has transformative potential, maintaining a stable and powerfulsense of presence in CVR is challenging. High hardware costs, challengesin accessibility, and the potential for experiencing motion sickness may limit the adoption growth of CVR and its ability to produce seamless experiences [71, 77]. Additionally, the "illusion of non-mediation," in which users lose awareness of the mediating technology, is challenging to sustain, as even subtle discontinuities can shatter the sense of presence and degrade the immersive experience [66].

This merging of presence with narrative design is especially complicated in CVR storytelling. Unlike conventional films, where the director dictates the viewer's perspective, CVR gives users the ability to determine the direction they'd like to look in a 360-degree space. This agency presents new challenges for storytellers, who need to reconcile narrative linearity with user autonomy. It also means finding new ways of performing spatial storytelling and interaction design [78] to avoid bombarding the user with information yet at the same time providing the necessary direction to ensure that important elements of the story are recognized. The reciprocal relationship between directive narrative elements and user exploration of narrative content highlights the needto understand presence as a multifactorial

construct that operates on sensory, cognitive, and emotional levels. As the medium continues to grow, presence will stillbe a key focus for creators and scholars looking to uncover the full potential of immersive storytelling.

2.3.3 Viewer Agency and Narrative Implications

One of the most exciting opportunities within CVR is the viewer agency, which allows audiences to take charge of the narrative experience and significantly changes the role of the audience as the center of narrative creation. In contrast with most conventıonal cinematic approaches, where the audience is a passive consumer of a pre-defined narrative visual experience, CVR allows the user to experience the narrative world and actively influence theirexperience through exploration and interaction [1, 78, 79]. This agency shifts the levels of creative power, forcing us to reconsider what we think of authorship and alerting us to the need for innovation in narrative design. The immersion and interaction affordances in CVR virtual environments fundamentally empower viewer agency. This 360-degree spatial design lets users look anywhere they want, determining what to focus on in the narratıve world. This engagement dynamic turns the audience member from a passive observer into an active participant who can select what to see and, sometimes, how the narrative unfolds [53]. The balance between viewer agency and narrative coherence poses one of the major challenges to CVR creators.

Just as conventional filmmakers use tools like framing, shot-sizes, editing, and camera movement to guide a viewer's attention, CVR creators must adapt those tools for a medium where the viewer controls the perspective. This makes techniques for spatial storytelling like environmental cues and diegetic sound invaluable for guiding attention without breaking immersion [80]. For example, directional soundscapes and lighting can gentlysteer the viewer's gaze so they notice significant story elements without being manipulated.

In CVR, interactive storytelling represents a level of involvement that allows users to not only observe but shape how events unfold. Branching narratives — in which a user's choices guide the narrative's trajectory — are a signature of this medium. This degree of interaction creates a more emotional bond between the user and the narrative, increasing immersion and presence [81, 82]. But the introduction of viewer agency also poses both conceptual and practical challenges. The "narrative paradox"[5] outlines the conflict between granting users freedom and preserving an integrated story [83]. Having too much agency can break the narrative and leave users struggling to understand the plot. At the opposite side,exclusionary options can also shatter the empowerment experience, lessening CVR's inherent interest as an interactive medium. But this balancing act requires creators to craft stories that are flexible enough that users can explore them in their own ways while keeping the artistic vision. The shift toward viewer agency also raises questions of authorship and control within CVR storytelling. In this context, Roland Barthes (1967) death of the author" argument is particularly relevant (as will be discussed in chapter 4[6]), as CVR inverts the divide between creator and audience. Meaning in CVR is co-constructed by the interplay between narrative elements and user interactions, blurring the distinctions between the storyteller's intentions and the viewer's interpretations [53]. This model of narrative collaboration questions traditional hierarchies of media production and places the audience member as active collaborator rather than as passive recipient.

Technological developments in AI and real-time rendering have opened new doors for

[5] The concept of enquotenarrative paradox is recurrent in game studies, referring to the inbuilt challenge of game design that requires to reconcile, but also keep in tension, interactivity and authorial control. Riedl and Bulitko (2013) present it as a computational problem where user agency is the cause of narrative incoherency. In cinematic VR, the situation is more vexed

[6] fragmented narrative can disorient the not just the cognitive, but the affective and spatial sense of the user [84]. I reference Barthes' idea of the "death of the author" here because it aligns with how I understand cinematic VR: not as a space for fixed authorial control, but as one where meaning emerges from the viewer's interaction. In this sense, the viewer becomes a collaborator in shaping the narrative rather than a passive consumer of it

interactive storytelling in CVR. However, an AI-driven non-playable character (NPC) can provide a responsive experience to user actions, thereby creating a sense of agency that feels organic and not scripted [62]. These innovations open up new generative possibilities for CVR creators, allowing them to craft narratives that dynamically adapt to user decisions, resulting in personalized experiences that foster greater engagement, and increase replay value. Although progress has been made, implementing viewer agency effectively in CVR is still a work in progress. The seamless use of interactive elements is limited by subjective constraints too limited processing power, hardware availability, etc. Moreover, some users seem to be overwhelmed by the cognitive demands of navigating through a 360-degree environment and tracking real-time events, which could turn out to diminish the overall experience [67, 73]. Ideation about agency and authorship will continue to be a hallmark of the CVR development, unlocking new frontiers of immersive and interactive storytelling.

2.4 Differences Between Cinema and CVR

Cinematic Virtual Reality (CVR) is a form of narrative that challenges and ultimately transcends the grammar of traditional cinema. Since cinema is an audio-visual storytelling medium through framing, editing, and fixed audience positioning, CVR expands the modality of understanding story content using immersive technologies to create embodied and interactive spatial story worlds. But this ongoing convergence of cinematic language with virtual immersion unsettles deeply entrenched assumptions regarding spectatorship, authorship, and temporality—demanding aesthetic adaptation and a philosophical and fundamental paradigm shift in approaches to the narrative experience.

While CVR grows out of the rooted history of the cinematic experience, it subverts the linear, director-drive model by allotting narrative agency between the creator, the system, and the viewer. As Nash et al. (2019) argue, it transforms the spectator into an embodied participant, CVR disrupts the fixed frame of reference, and grants the act of storytelling reciprocal spatial

autonomy between viewer and story [85]. This displacement of the viewer, transitioning from an external observer to an internal presence, indicates a shift from a representational medium to an experiential one.

While this thesis often contrasts CVR with the conventions of classical cinema—such as continuity editing, fixed perspective, and passive spectatorship [86], it is essential to recognize that many cinematic traditions have long resisted these norms. European modernist filmmakers like Alain Resnais (Last Year at Marienbad, 1961), Andrei Tarkovsky (Mirror, 1975), and Chris Marker (La Jetée, 1962) broke with linear causality and instead emphasized memory, subjectivity, and temporal fragmentation [87, 88]. Similarly, postmodern cinema further destabilized narrative coherence and authorship, as seen in the recursive structures of Charlie Kaufman's Synecdoche, New York (2008), or the dreamlike ambiguity of David Lynch's Mulholland Drive (2001) [89–92]. These experimental films invited interpretive labor from viewers and questioned the authority of the director—anticipating many of the narrative disruptions CVR now materializes through spatial immersion and interactivity.

Well before CVR, filmmakers in different times and places confronted the centralization of narrative and authorship. By breaking classic Hollywood cinema into pieces and images and the screen simply rejecting the practices as well as coming up with a narrative discontinuity, self-reflexivity, etc., French New Wave—especially the likes of Jean-Luc Godard, Agnès Varda, Jacques Rivette were against the classical Hollywood cinema. Their films broke up both unity of time and space, typically employing jump cuts, direct address, and elliptical narration to lay bare the artificiality of film form and bring to the forefront the viewer's agency [93, 94]. Italian Neorealism moved away from studio-made production and an action-story style. Roberto Rossellini Vittorio De Sical films stressed the everyday, real settings, and nonprofessional actors, decentering the author and moving towards a more

observational, lived realism [95]. These movements paved the way for alternative filmic grammars capable of transforming the spectator into a co-creator of meaning, rather than a passive viewer[7] . Politically active movements —such as Third Cinema, which began in the Global South during the a70s — have continued in this tradition. Cineastes like Fernando Solanas, or Glauber Rocha, for instance, eschewed both Hollywood spectacle and European auteurism for a decolonial cinema that was collective, participatory, and ideologically resistant [96, 97]. Meanwhile, essayistic and structuralist filmmakers—Chris Marker, Harun Farocki, and Chantal Akerman, for example—were subverting narrative authority with montage, repetition, and reflexivity in open-ended movie experiences emphasizing perception and subjectivity rather than cause and effect [98, 99]. In this broader lineage, CVR emerges not as a rupture, but rather as a technological and experiential extension of these experimental impulses. Its reliance on spatial architectures and navigable narratives realizes the unrealized capacities of these earlier technological forms — swapping out editorial flap and fold for embodied peregrinations as a means to disperse both authorship and narrative consistency.

The key difference, however, is that while film simulates ambiguity through montage, non-linear editing, and voiceover, CVR reconfigures ambiguity through embodied presence, spatial traversal, and viewer agency. In this way, CVR may be viewed not as a rejection of cinema, but as a continuation and radical extension of its most experimental tendencies—one that replaces metaphorical interiority with navigable narrative space [1, 2]. The most noticeable difference is the vanishing of the cinematic frame. In cinema, the frame acts as a container of meaning, a guiding force for the viewer's gaze, structuring time and space, and maintaining narrative points into a stream of coherence. Within CVR, a 360-degree environmental space surrounds the viewer, who no longer receives centrally directed

[7] This mode of realism echoes André Bazin's call for a cinema of presence, long takes, and deep focus — privileging indexicality and ambiguity over authorial manipulation.

perception but rather self-selected experiences. For this transformation, new techniques of spatial storytelling are required, where mise-en-scène, diegetic sound, and environmental prompts are used to guide attention and build coherence without direct visual framing. Also, the temporal and spatial manipulations found in film—enabled by editing techniques such as montage, cross-cutting, or ellipsis—give way to real-time spatial navigation in CVR. As viewers navigate narrative environments at their own speed, exploring rather than following a temporal sequence to build story logic. The Invisible Hours (2017) is an example of this structure, letting viewers follow various characters over overlapping timelines and thus create a multi-perspective view of events. This open architecture reframes temporality as an experiential, non-linear process, one that eludes the closure of cinematic editing. CVR also reinvents viewer embodiment. Whereas cinema produces emotional resonance through identification with characters inside motion pictures, CVR places the viewer's body in the fictive narrative, generating effect through presence and interactivity. In Notes on Blindness (2016), we are not merely shown a subjective version of reality; we inhabit it. Incorporated into the perceptual limitations of the protagonist, the viewer endures a disorientation that exceeds the terms of empathy and instead becomes a kind of narrative embodiment. This ontological shift — from a practice of looking at a body to one of being one — is a radical inflection of the cinematic apparatus.

These differences are not simple to emerge. This can lead to narrative disorientation or fragmented engagement if spatial design does not guide viewer attention in implicit ways, resulting in the disintegration of the directorial frame. In addition, the technology required for CVR—including head-mounted displays, spatial audio systems, and real-time rendering—requires a level of interactivity and system performance that can impose limitations in terms of accessibility and experience consistency. Still, these limitations seem inherent to the medium's openness and its transformation of authorship as collaborative rather

than centralized.

CVR does not replace cinema but extends its possibilities. While cinema offers a rich visual language shaped over a century of practice, CVR builds upon its conventions and opens them to new modes of immersion. The use of mise-en-scène, diegetic sound, and narrative pacing remains vital—but in CVR, these elements operate within an embodied, explorable space rather than a controlled frame. The aesthetic logics of both media coexist, and in many CVR works—such as Dear Angelica or The Key—the cinematic and the interactive intertwine in compelling ways. In this sense, CVR and cinema can be understood not as opposites but as part of an evolving spectrum of visual storytelling. Each medium brings different affordances and limitations, but together they contribute to a broader transformation in how stories are constructed, perceived, and lived. CVR's dissolution of the frame, expansion of narrative temporality, and reconfiguration of viewer embodiment collectively mark a paradigm shift—one that demands not only new storytelling tools, but also a reframing of narrative theory itself. Beyond cinema, CVR also inherits from the game industry's models of interactivity. While cinema historically relies on fixed frames and controlled spectatorship, games emphasize player agency, systemic responsiveness, and participatory authorship. Juul identifies games as "half-real worlds," structured both by rules and by fictional immersion, a tension that resonates strongly with CVR, where user actions influence the unfolding of the narrative [100]. Murray similarly frames digital environments as spaces of agency, where users do not simply receive stories but enact them through choices and interactions [2]. Ryan's concept of narrative multiplicity extends this point by showing how interactive systems enable branching or parallel pathways that disrupt linear narrative closure [1]. Taken together, these frameworks demonstrate that CVR should not be theorized exclusively through cinema or through games, but as a hybrid medium. By blending cinema's aesthetic traditions with gaming's interactive logics, CVR creates narrative environments in which meaning

emerges collaboratively between designer, system, and viewer.

Chapter 3

AESTHETIC DIMENSIONS IN CINEMATIC VR: VIRTUALITY, IDENTITY, AND BECOMING

Cinematic Virtual Reality (CVR) converges narrative, technology and sensory experience to arteform an immersive medium that defies the dogma of the cinematic grammar. Compared to traditional cinema, which exists in the confines of the frame and linear storytelling, CVR transports users into vast, interactive spaces where narratives can unfold in both space and time. Utilizing the triad of perceptual realism, interactivity, and temporal fluidity, CVR reimagines both the aesthetic and experiential elements of storytelling, in that CVR enables the audience to transition from passive viewers to take the role as an active participant.

This chapter unfolds through three intertwined subsections that explore the aesthetic registers of CVR, addressing essential theoretical and experiential aspects that are crucial to understanding the medium itself. The first subsection, Perceptual Realism in Cinematic VR, provides some discussion on how CVR makes use of sensory fidelity to deliver believable and immersive affairs. Showcasing Gondwana (2022) and The Book of Distance (2020) illuminate the technological and narration techniques that bridge the boundary of the virtual and real.

The second subsection, the Becoming, Assemblage and Immanence, explores CVR as potential transformative through the Deleuze and Guattari's philosophy. Through examples such as Notes on Blindness (2016) and Clouds Over Sidra (2015), it investigates the potential of CVR to engender forms of empathic relating, identities taking (and shifting) through non-linear, participatory modes of storytelling.

The third subsection, Temporality and the Virtual Image in Cinematic VR, examines how CVR destabilizes conventional linear narratives by presenting viewers with fragmented, multilayered temporalities. As an extension of Deleuze's idea of the "time-image," this section analyzes the respective CVR pieces Marco & Polo Go Round (2021) and Dear Angelica (2017) to reveal how CVR incorporates time not as a static metric but rather as an immersive narrative force that adds emotional and philosophic insight.

These subsections contribute together to a rich theoretical framework for understanding CVR not simply as an aesthetic medium that disturbs conventional forms of cinema, but as a practice or practice dedicated to the exploration of cinema in its plurality. The chapter presents how CVR offers audiences alternative experiences of stories and virtual spaces through woven sensations of perceptual realism, philosophical transformation, and temporal innovation. Together, these three sections build on one another to offer a synergy of CVR's potential to shift narrative and aesthetic possibilities, thereby foreshadowing the collaborative and participatory relations discussed in Chapter 4.

3.1 Perceptual Realism in Cinematic Virtual Reality (CVR)

Cinematic Virtual Reality CVR is an emerging medium that merges the immersive quality of a virtual environment with the storytelling elements of cinema. Perceptual realism—the bridge between the innovative potential of the technology and its aesthetic application—sits at the core of this experience. Perceptual realism is the extent to which a virtual environment convincingly reproduces elements of the real world in relation to the senses and space, allowing audiences to become immersed in a constructed reality. While immersion in traditional cinema is psychological and symbolic, CVR mediates its sensory fidelity, spatial coherence, and emotional/ontological engagement into a form of experiential immersion for aesthetic purpose.

Perceptual realism is critical to CVR as it allows a virtual world to provide a perception of being real, even if the environment itself does not replicate physical reality perfectly. Through the assembly of virtual spaces that feel intuitively natural and coherent, CVR furthers this act of blurring the boundary between reality and fiction by exploiting the viewer's perceptual systems. The experience uses a combination of sophisticated visual design, spatial sound engineering, and interactive elements to pull off the illusion that you are in an alternate world. Steuer (1992) explains this as the "perceptual illusion of non-mediation," in which the viewer no longer considers the technology that facilitates the experience but rather views the virtual as the real [77]. Visual fidelity is the key to perceptual realism; indicating resolution (such as sampling rate per visual degree), depth perception, texture, and lighting. Recent CVR systems like the Oculus Quest or HTC Vive support high-resolution displays and advanced rendering techniques that improve the realism of simulated surroundings. Lighting is especially important here, as it sets depth, mood and spatial relationships in the scene. Such as dynamic shadows, ambient occlusion, and high-dynamic-range (HDR) imaging, all of which attempt to create a convincing visual aesthetic that corresponds with the viewer's internal model of real world physics [63]. These visual elements must be calibrated correctly to maintain the illusion of reality and avoid distractions that draw viewers out of immersion. Supporting visual realism is spatial audio, which emulates how sound acts in real-world situations. Spatial audio techniques use tracking to modify the direction, intensity, and tonal quality of sounds based on the viewer's orientation in virtual space. This auditory layer deepens the immersion by anchoring the audience in the space and directing their focus towards important narrative elements. For instance, soft footsteps approaching from behind can create suspense and direct the viewer's attention toward a key moment in the narrative. According to Bucher (2017), sound design is not simply an adjunct to CVR but a crucial element shaping the immersive experience, with potential effects on both emotional engagement and narrative understanding [80]. Interactivity also adds another layer to perceptual realism, making

formerly passive spectators active participants. CVR allows users to interact with virtual objects and characters in more natural and intuitive ways — through techniques such as gaze-based navigation, gesture recognition, and haptic feedback. Picking up an object, e.g. examining its details, or manipulating its position within the environment adds a tactile dimension to the doing experience, reinforcing the feeling of agency and embodiment [101]. However, high levels of interactivity come at a cost of design effort, as ineffective interactions can break immersion and destroy the illusion of realism. According to Bolte and Lappe (2015), smooth and stable motion (the motion experienced when using object interaction) is needed during interactions so that unhealthy (sensory) overload, or motion sickness, does not occur, something that happens often in VR environments [102]. With the rise of new methods of perceptual realism, a contrast with functional narrative representations can be seen, laying challenge on the battlefield of fidelity verse usability and the narrative continuum. Overly broad interaction opportunities are also a form of viewer overload, where excessive sensory input or complicated interactions become the focus rather than a balanced interaction between the protagonist and viewer. Plus, the large and free form nature of CVR environments poses new problems for storytelling. Conventional cinematic techniques, like framing and editing, which are employed to direct viewers' attention, become less useful in 360 degrees—a space where viewers can decide for themselves where to look. As a solution, creators make use of subtle visual cues, sound design, and interactive prompts to guide attention while maintaining immersion. A light source, for example, or a moving object could be placed strategically to encourage the viewer's gaze toward a vital plot point's location, while auditory signals could strengthen narrative focus.

The reality of an immersive VR experience, CVR, is rooted not only in mimicking the real world, but also in other realities that are coherent, and believable. This is especially important in abstract or otherworldly stories where the purpose is not to mirror real world but create the

idea of world that feels genuine within its measures. For example, by manipulating the scale, angle, or color palettes, you can achieve different emotional effects and thematic heights. According to Ryan (2001), immersive storytelling in CVR draws on this relationship between sensory fidelity and imaginative engagement, allowing audiences to explore worlds that are both fantastical and convincingly real [1]. To grasp perceptual realism in CVR, a holistic approach is necessary, one that accounts for its technological, sensory, and narrative components. Through the combination of high visual fidelity, spatial audio and meaningful interactivity, CVR creates a level of immersion above and beyond traditional media, providing audiences a deeply engaging and transformational experience[8] . But the validity of perceptual realism lies not within the texture of the image itself, but rather in its interaction with the storytelling components simply, enabling the emotion and aesthetic of the narrative to take foreground instead of becoming an afterthought, reduced to the sophistication of the lens.

As stated above, the notions of perceptual realism are the bases of immersive experiences in CVR. That said, how these principles are applied may differ based on narrative considerations, technical limits and creative choices of the creators involved. Studying individual CVR works allows us to reflect on how visual fidelity, spatial audio, and interactivity jointly construct engaging narrative spaces and what challenges and opportunities such techniques may present.

The principles of perceptual realism presented above provide a key framework for understanding how CVR engenders experiences that are both highly engaging and toxically engrossing. Although these principles provide a theoretical framework, their actualization can diverge widely based on narrative intent, technical design, and aesthetic vision of a project. In order to provide context as to how perceptual realism works within the realm of CVR film,

[8] It is worthwhile noting, the notion of transformative experience in immersive media has been raised in the literature on empathy, narrative transportation, and presence [2,44]. In the context of CVR, this kind of experience can change not just perception but values, emotions, even one's sense of self — especially if embodiment is the mode, not observation.

specific films that have successfully incorporated sensory fidelity, spatial coherence and interactivity into story telling must be identified. This analysis examines two esteemed CVR movies: Gondwana (2022) by Ben Joseph Andrews & Emma Roberts and The Book of Distance (2020) by Randall Okita. These works showcase inventive approaches to perceptual realism designed to draw audiences into deep themes:

3.1.1 Gondwana (2022) – Where the Forest Breathes in Centuries

Gondwana is an immersive VR experience that transports people to the delicate and verdant habitat of the Daintree Rainforest in Australia. In this CVR work directed by Ben Joseph Andrews and Emma Roberts, perceptual realism is manipulated in order to facilitate deep affective engagement with surroundings: the result is ecology that is simultaneously meditative and urgent.

Visual fidelity is achieved through Gondwana's intricate, dynamic rainforest rendering. The visual design reflects the interplay between light and shadow, with sunlight filtering through dense canopies, evoking a sense of spatial distance. The shapes and appearances of the leaves, bark, and ground surface are fine-tuned to be consistent with the viewer's expectations of natural environments in the real world. Dynamic lighting and particle effects — techniques that simulate natural phenomena, such as fireflies illuminating the darkness or mist rising in the morning — give the rainforest its lifelike presence. What's unique about Gondwana is that it plays with real-time environmental shifts. The human presence triggers the ecosystem in conjunction with the effects of climate change. As time passes in the simulation, for instance, viewers might increasingly see the wilting of plants, hear the diminishing sounds of wildlife or hear the sounds of human-built features like logging tracks intruding into wilderness. This dynamic realism both grounds the film and supports the ecological narrative. Spatial audio is central to anchoring viewers in Gondwana's world. There are sounds from exotic birds echoing in the distance, leaves rustling, all replicating the natural sounds of the rainforest. The

audio dynamically adapts as the viewer traverses the field, making for an exceptionally immersive auditory experience that contributes to the sense of spatial cohesion. When users step nearer to its source, for example, the sound of a babbling creek increases in volume to draw them deeper into the ecosystem and entice exploration. The incorporation of sound as a narrative and spatial guide illustrates how auditory fidelity plays a role in both perceptual realism and narrative immersiveness.

Gondwana does not follow a classic linear narrative for spectators, opting instead for an open-world format where users can experience the landscapes at their own pace. While freedom is granted, the experience still holds narrative cohesion through ambient environmental storytelling. The slow-change of the rainforest is an intuitive story, calling the viewer to consider the cost of ecological destruction. This approach is critically important because this raises questions about the role of viewer agency in CVR storytelling. When no explicit narrative direction exists, such lack of structure may allow users more freedom, but it also runs the risk of lessening the immediacy of the ecological message. Still, the movie counterbalances the absence of certain dimensions with visual and auditory indicators — like dying plants or the silence of lost creatures — to keep thematic continuity.

3.1.2 The Book of Distance (2020) – Silence and Goodbye

The Book of Distance, directed by Randall Okita, is an intimate, personal journey through the director's family history, centered on Japanese internment experience in Canada during World War II. With a mix of photorealistic and symbolic touches, it creates an affective space that mediates between historical memory and personal storytelling. The piece uses episodic, fragmented tableaux—paper-theatre-style characters, shifting environments, and interactive objects—to reflect the fractured, uncertain nature of inherited memory. This structure parallels Alain Resnais' Hiroshima mon amour (1959), which intercuts documentary images with fictional memories, blending personal and collective trauma through voiceover and

visual montage. In both works, narration operates as a reflective anchor, grounding the audience as they traverse disjointed emotional terrain. However, The Book of Distance departs from cinematic form by involving the viewer as an active agent—selecting items, walking through history, and triggering transitions. Rather than simulating memory, it creates a participatory archive, where the viewer reconstructs identity and history through embodied engagement with narrative fragments. The film rebuilds historical spaces like train stations and internment camps with high levels of detail, then cuts between reenactments and more stylized, symbolic imagery such as fragmented family photographs and origami cranes that animate and react to the viewer. For example, a scene places the viewer in an internal encampment, where weathered pine barracks and barbed wire fences suggest how families lived. This realism is contrasted with surreal sequences, most notably a family dinner table that falls apart into ash, symbolic of loss and displacement.

Spatial audio deepens the emotional pull of the narrative. The film employs visual sound-scapes that mix ambient noise with personal audio recordings, like letters and diary entries read aloud from off screen by the narrator. Including these auditory features provides a multi-layered experience to the audience where they are able to feel as if they are not only physically present within the historic portrayals but also align their emotional connections with the characters portrayed. In one of the scenes, for instance, set in a bustling train station, the ambient noise of conversations and train whistles is woven with the narrator's introspective voice, drawing the viewers into both the physical and emotional fabric of the moment.

The Book of Distance weaves interactivity into its narrative, prompting viewers to take symbolic actions that echo the characters' experiences. For example, it might ask viewers to fold an origami crane, plant seeds in barren soil, or piece together fragments of a broken photograph. These various tactile interactions build a sense of agency and emotional

connection within viewers, ultimately engaged participants in the story. But this interactivity is closely gauged so that the story is cohesive. These actions are symbolic not open-ended and stick to the various threads of memory and identity. The dissection of Gondwana, via The Book of Distance, proves perceptual realism in CVR to be more than the replication of a physical world, but rather the construction of an emotionally and thematically cogent experience. These films embody CVR's promise to merge visual fidelity, spatial audio, and interactivity within narrative structures that captivate audiences emotionally, intellectually, and sensorially. In doing so, they shed light on the medium's potential to elicit profound bonds with viewers — whether by immersing them in ecological crises or welcoming them into deeply personal and historical narratives.

But this analysis also reveals some of the challenges and complexities involved in CVR storytelling. Gondwana boasts an open-world format that celebrates viewer agency and exploration, but such freedom threatens to undermine the ecological message that appears to be the focus of the narrative, echoing the concept of friction between user freedom and thematic focus. In contrast, The Book of Distance utilizes controlled interactivity to navigate viewers through a cohesive story, though also possibly limiting the open-ended interaction that characterizes a lot of CVR's appeal.

Overall these insights engage with the broader conversation concerning CVR's evolving narrative grammar, as well as how the medium negotiates the tension between sensory fidelity, audience agency, and narrative coherence. These results highlight that perceptual realism in CVR should not be seen as a goal in and of itself but as a means to enrich narrative immersion, emotional engagement, and thematic significance. These elements will be further integrated at the core of transformative storytelling as CVR continues evolving as a medium.

3.2 Becoming, Assemblage, and Immanence: Rethinking CVR Aesthetics

Cinematic Virtual Reality (CVR) re-contextualizes traditional understandings of narrative and aesthetic engagement by situating participants in active, co-creative spaces. Deleuze's philosophical concepts — becoming, assemblage, and immanence — provide a powerful framework to understand the transformative potential of CVR. Here, this section interrogates the theoretical frameworks of becoming and virtuality as they apply to CVR, illustrating how identity, space, and narrative are remapped under CVR systems.

By applying ideas from the philosophy of Gilles Deleuze, these ideas radically recast how we think of the nature of Virtual Reality (VR) in comparison with earlier understandings where VR is viewed as just mirroring reality in forms of replication or simulation. Located within his reading of Henri Bergson's Matter and Memory (1911), the virtual for Deleuze is a real domain of potentiality [103]. Unlike an unreal or imaginary realm, the virtual exists alongside the actual and is continually realized in new actualities in particular contexts. Such differentiation between the virtual and the actual provides a powerful lens for understanding why VR functions as other than simply a technical illusion, but as a milieu through which potentials are actualized and shaped by participants who play in the environment [103, 104]. In Difference and Repetition (1968), Deleuze makes a decisive distinction between the virtual and the actual, rejecting traditional metaphysical categories that hold the real apart from the possible [104]. Yet for Deleuze, the virtual is not a lower-level mode of reality, it is a real order of potentiality that exists alongside the actual. While the actual refers to things that exist in concrete form, the virtual is characterized by the differential relations and forces that have not yet been actualized but have the potential to become real in particular contexts [104]. This virtual contains real conditions and possibilities that, when triggered, manifest as actual experiences. As scholars like Brian Massumi (2002) and Manuel DeLanda (2006) have

argued, Deleuze's notion of the virtual is central to understanding not only how reality unfolds, but also how new possibilities for experience and thought emerge from the virtual [105, 106]. Massumi, in particular, emphasizes the affective dimension of the virtual, suggesting that it is felt before it is thought. This notion is particularly well suited to VR, where the immersion encourages participants to engage with the virtual viscerally, that is, spatially, affectively, bodily, and only later to cognitively reflect on it. With reference to Deleuze, DeLanda (2006) Advocates that the virtual is a space of emergence, where multiple potentialities become an actualized object or experience [106]. This emergent quality of the virtual harmonizes with how VR arranges spaces that allow for behavioral agency and decisions on the part of participants to pull new narrative potentials into actualization — demonstrating the fluid relationship between virtual potential and real counterpart.

Framing it in this way shifts the conversation around VR from one of mimicry or replication towards a deeper philosophical understanding of VR's potential to realize possibilities. VR narratives engage participants with virtual spaces and transition them from passive audience into active contributors of their experiences. Such an emphasis echoes Deleuze and Guattari's notion of ontological multiplicity, in which the virtual is always in excess of any given fixed representational formation [4] (Deleuze & Guattari, 1987). The two worlds are not place alike; but in VR the virtual not only duplicates but incarnates the real of the possibilities [79, 107] (Ryan, 2015; Hansen, 2006, pp. 215-240). Virtual Reality (VR) can be understood as a medium that actualizes the virtual in the Deleuzean sense. The virtual, as a realm of forces and potentials, becomes a dynamic environment in VR, where users actively shape their experience. As Deleuze describes in Bergsonism, the virtual contains multiple potentialities that are actualized depending on the specific circumstances of interaction [5]. In VR, these potentialities are not realized through passive observation but through interaction, with participants influencing the unfolding of the virtual world they inhabit. This echoes the

broader philosophical exploration of virtuality as a process of ongoing actualization, where potentialities emerge through user engagement [105]. The interactive, non-linear narratives characteristic of VR allows the virtual to exceed fixed representation, transforming the participant into an active co-creator of the experience [108, 109]. As a result, VR is not simply a passive visual medium but a space of continuous ontological emergence, shaped by user decisions and actions [110]. Clare Colebrook (2002), in her readings of Deleuze, notes that the virtual is not just the source of possibilities, it is also a plane that makes creativity and produces new actualizations of realities over and over again [111]. This fits squarely with VR's ability to create spaces where participants do not witness a prescribed narrative, but rather co-create that narrative through their choices and interactions. For example, in open-world VR narratives, players' movement and decisions create new storylines that are realized dynamically, demonstrating that for Deleuze the virtual always escapes any one actualization and is always open to further development. In this context, the narrative structures of VR are fluid, contingent and emergent, resonating with Deleuze's antipathy to fixed, hierarchical structures in favor of multiplicity and variation. In A Thousand Plateaus (1987), we see this most clearly, where Deleuze and Guattari introduce the idea of the rhizome, a kind of non-hierarchical, decentralized capacity for knowledge and experience. Rhizomatic formations split open at both beginnings and endings, mirroring the infinite and interconnected quality of reality [4]. So too with VR narratives, which are rhizomatic: attendees can chart multiple routes and make their own associations within the virtual world. As noted by Anna Munster (2013) in her studies of digital aesthetics and affect, virtual reality epitomizes the rhizomic character of digital experience, in which no one, overarching narrative prevails, but rather successive lineages of multiple potential connections and paths always remain open [112]. As a result, VR provides participants with the actualization of the virtual through a dynamic constellation of actions, each of which performs a particular realization of a facet of virtual potential within the narrative environment.

Deleuze becoming — as discussed in A Thousand Plateaus (1987) and Difference and Repetition (1968) — helps to unravel how users engage in virtual reality (VR) spaces. Deleuze's notion of becoming is not a linear movement from A to B but rather a continuous transformation, a process that violates rigid identities and more classical definitions [4, 104]. Unlike linear narratives, where participants already have a defined role, VR delineates a becoming-other as they negotiate and create parameters through exchanging experience in the virtual. This is a process that is dynamic and immanent, as users adapt and are being adapted to an ever-contingent digital environment in real time. Rosi Braidotti (1994) points out that becoming suggests that identities are in process at all times, affirming how VR enables participants to experience different ways of being [113]. Following Colebrook (2002), similarly, this process of becoming is ongoing and defies the inertia of identity [111]. Indeed, John Rajchman (2000) elaborates on instructive implications this Deleuzian philosophy of becoming has for contemporary digital environments, where VR becomes a domain of active engagement [114]. Becoming is a manifestation of the very essence of life and its drive towards continual change and transformation — a principle that is echoed in some VR narratives, whereby users engage in alterations of their perspective and sense of identity. Along similar lines, Adrian Parr (2010) underscores that becoming is an ethical endeavor, one that requires a relinquishment of stable identities and an invitation to the constant emergence of new, transformative encounters [115]. This process of becoming in VR happens as participants are in the thick of the story and feel changes in their sense of identity or perspective based on the type of virtual world they enter. This section employs Gilles Deleuze's concepts of becoming, assemblage, and immanence as a lens for analyzing VR films, delving deeper into the dimension of CVR explored above. Such works—Notes on Blindness, Clouds Over Sidra, The Key, and Giant—are narrative assemblages, which upon their integration of visual, auditory, and interactive compositions create transcendent experiences. These assemblages embody the essential characteristics of CVR as participatory,

transactional, nonlinear events where identity and meaning are contingent and dynamically produced through engagement with the virtual surroundings.

Applying Deleuzean philosophy to these films highlights how CVR enables "becoming-other," breaking down traditional barriers between the viewer and the story world. Through their non-linear pathways of narrative within an immersive environment, these works manifest Deleuze's notion of rhizomatic structures in which meaning is constructed through the user's interaction with the narrative environment.

3.2.1 Notes on Blindness: Into Darkness (2016) – Surrender to Sound

Notes on Blindness: Into Darkness is a 2016 VR documentary by Peter Middleton and James Spinney. The project was produced by Arches Films in partnership with Ex Nihilo, Audio Gaming and Arte France then supported by the British Film Institute (BFI) and the BBC. Notes on Blindness: Into Darkness (2016) is an exploration of sensory identity and transformation of perception. Based on the audio diaries of John Hull, who describes his experience of becoming blind, the VR documentary envelops participants in a sonorous, multisensory world that exposes common misconceptions associated with vision and perception. Through Deleuze's concept of becoming, this VR experience reforms the sensory engagement of the participant, muddling the means in which identity is constructed as the individual finds themselves in new methods of how to see the world. This ontological distinction leads to Deleuze's idea of becoming, a deviation from stable structures of identification towards an ongoing process which renounces static categories of being: instead, our identity is never finished, it is only continually perpetuated, redefined, formed, reformed and transformed. Participants in Notes on Blindness enter into a becoming-blind in which sight is deterritorialized and the participant is placed in a (mostly) auditory universe. The new mode of interaction, sound, creates this new perceptual assemblage, unmade and remade, destabilizing the hegemony of vision. The viewer isn't simply watching Hull's experience, but

is now complicit in it, in a perceptual reorganization that echoes Hull's own adjustment to blindness. This continuum works to disrupt and reorganize established systems (or hierarchies) of perception (for example, sensory register of reliance on vision) in what Deleuze and Guattari coin as deterritorialization [116]. The film's auditory landscape — an array of textured soundscapes, disembodied voices and abstract aural cues — is the primary medium through which participants find their way through the VR universe. It is a mosaic of sound and broken vision, a whirligig of forces whooshing past that undermines the primacy of sight — anything you see here is only an adjunct to what you hear — and opens alternative paths for both sensory and storied travel. Reorganizing sensory dominions, Notes on Blindness thus underlines the malleability of identity and perception, inviting participants to embody an altered sensory reality.

Deleuze's idea of immanence—as that which occurs fully and capacitively-ecosystemically within the conditions of its encounter—is at the heart of the film's aesthetic. Rather than provide a representational or didactic overview, this VR experience enacts blindness, allowing participants to collaboratively generate meaning through their embedding within an environment. These are broken visual components, more abstract than the real, the events suggested, not directly visual, a felt presence that is never quite captured in spatial obstruction. This, in tandem with the immersive sound design, engages the partaker in a non-linear narrative assemblage, an activated navigation of interactions in a sensory field, from which meaning emerges. It is particularly useful for relating in which the process of becoming-blind involves not losing information about the world outside the self, but instead becoming-limited: emergent-identity is relation-aligned in Notes on Blindness. As visitors move into Hull's perceptual paradigm, they hold an identity that is neither static nor immutable, but rather a shifting one distilled by the operation of sensory forces. This resonates with Deleuze's repudiation of static representational matrices in favor of ontological multiplicity, identity is

always becoming-other. Here, the participant's own sensory awareness is shifted, producing a relational identity seemingly co-constructed via the interactivity with the virtual environment.

Notes on Blindness subverts its traditional narrative form by inviting audiences into its story through VR, highlighting its immersive potential to create spaces and perceptions that challenge what constitutes identity. The participant's interaction with the virtual environment chain symbolizes Deleuze's argument that the process of becoming is not a change from one form to another but a continuous evolution. In Notes on Blindness, such a process is so not enacted via exterioring representation, but along impending, sensory encounter that redefines the sense of perceiving (and) inhabiting the world.

3.2.2 Clouds Over Sidra (2015) – A childhood Wrapped in Waiting

A collaboration between the United Nations and the VR production company VRSE (which has since rebranded as Within), Clouds Over Sidra was directed byGabo Arora and Chris Milk and was released in 2015. The film was made in aneffort to bring awareness to the Syrian refugee crisis, putting a spotlight on Sidra, a 12-year-old girl living in Jordan's Zaatari refugee camp. The camp, whose population exceeds 80,000 refugees, provides thesetting for Sidra's story of displacement and survival. Through Sidra's perspective, viewers see her school life, playtime and interactions in her own community, as close-ups of the challenges and dreams of a refugee teenagegirl unfold. Although the movie emphasizes Sidra's resilience in theface of displacement, its critical importance emerges in the manners through which it facilitates participants' inhabitation of an emergent, relational self in an immersive form of engagement. Applying Deleuzeanphilosophies of becoming and assemblage, Clouds Over Sidra reshapes the participant's relationship to place, memory, and identity, providing a complex representation of the multiplicitivity of virtual reality narratives. Deleuze's notion of becoming offers a framework to grasp the participant's transformative relationswith the film. While in Clouds Over Sidra, participants enter a process of becoming-child, invited to

experience the worldthrough Sidra's perspective. This is not an identificatory claim in the literalsense, but such relational transformation in which the positionality of the participant as adult observer is deterritorialized. In doing so, it developsan assemblage from across multiple voices and ages, unmooring child from adult and witness from victim, and facilitating an encounter with an expansive ontology that resonates with Deleuze's insistence on the ongoing becoming of the self. The refugee camp, rendered in 360-degree images, is not just a setting; itis also a world of memory, place and affect. The term assemblage, as proposed by Deleuze and Guattari, refers toconstellations of disparate components that are assembled together to create dynamic relations that enable the creation of new possibilities of meaning and experience. Here, the camp itself — it's cramped spaces, vivid colors and evocative soundscapes — coalesces into anarrative environment that's in constant flux. Positioning themselves through Sidra's world, theparticipant navigates the tension between displacement and resilience, demonstrating the ways in which identity and place are co-constitutive within the assemblage. The sensory andnarrative elements interplayed also strengthening this assemblage. Sidra's voice, shepherding participants through her life inside the camp, intermingles with the sounds of the environment, which include both bustling activity and contemplative quiet, creating alayered sensory experience. The multitudes of Deleuzean thought are reflected in thisdynamic interaction between narrative and environment. The camp is not a fixed, representational space but a virtual field of potentiality, in which place and identity are never not in the process of beingre-negotiated. This environment, which participants work their way through, highlights the contingent and relational character of identity, as it is shaped by the engagement within the virtualassemblage they find themselves navigating. The becoming-child of Clouds Over Sidra also echoes Deleuze's antipathy toward stable, hierarchicalconfigurations in favor of rhizomatic multiplicity. Byusing a rhizomatic structure for the narrative, participants can approach Sidra's world less linearly and more in terms of connections across elements. Her recollections of Syria, her present circumstances in

the camp and her aspirations for tomorrow interweave to create a non-chronological story thatrefuses resolution. This open-ended form mirrors the rhizomatic model of Deleuze and Guattari, where meaning is generated by the connections made in the assemblage rather than through predeterminedroutes. The viewer's experiencing of Sidra's perspective turns viewing intoa collaborative act of creation. In VR, the participant is not a passive observer, but an agent inthe narrative space. This co-creative engagement reflects Deleuze's insistent finding ofthe meaning of the immanent unfolding of experience, in which meaning is generated from the encounter, itself. In entering theworld of Sidra, participants become part of a dynamic interplay that reconfigures how they understand displacement, resilience, and identity. Clouds OverSidra is a perfect example of how VR narratives bring the virtual into being as a space of relational potentiality. By immersively approaching the narrative assemblage, participants are encouraged to understand identity as an ephemeral product of mixed sensory,spatial, and affective forces. The central theme of becoming-child foregrounded in the filmemphasizes the transformative potential of VR to fashion spaces in which participants inhabit alternative perspectives and come to terms with the multiplicity that exists between our bodies and our places.

3.2.3 The Key (2019) – Locked Doors, Hidden Memories

The Key is an interactive virtual reality experience that premiered in 2019, produced by Lucid Dreams Productions, who received support fromOculus VR and the Venice Biennale College Cinema. Its interactive narrative structure provides an evocative exploration of memory, trauma, andpersonal transformation. Led by an enigmatic key, playerstraverse surreal, dream-like landscapes that test their senses and inspire profound contemplation. The Key) is an embodiment ofthe Deleuzean concepts of becoming and assemblage, occupying, like so much of hyper-reality, a space that shapes identity as a dynamic unfolding process that invites, and perhaps requires, participant interaction [117]. The Deleuzean idea of becoming-other —the permanent transformation of identity in the absence of a fixed identity or endpoint — is

at the center of The Key. As agents venture through the protagonist's story, they're invited into a relational space wheretheir decisions impact not only the story's trajectory, but their place within it. The protagonist's disruptedmemories, interpreted symbolically as surreal places and unstable environments play into Deleuze's concept that the subject is not a solid entity, but rather a gathering, a whole bunch of elements in play. Instead, immersion in these environments triggers the processes ofbecoming, where mappings between memory, symbol, and self-begin to dissolve. Thisprocess is key to understanding how you are supposed to produce meaning with this film: Deleuze and Guattari's concept of assemblage. The story is writtenwith misfits, puzzles, paths, decisions— the composite of a rhizome. This assemblage resists linearity, instead allowing participants multiple routes to accessthe protagonist's memories. No one decision or autonomy is allowed to overwhelm the multitude of context, image, sound, and result in the form of the narrative, reinforcing the multiplicity of human developmentthat is both nature and nurture. The dream-likequality of the environments in The Key heightens the sense of immanence in the participant's engagement. The VR experience offers no invariable representation oftrauma or recovery; instead, it plays out in real time, meaning arising directly from the participant's engagement with the symbolic landscapes. These locales areactive parts of the narrative assemblage, not simply visual backdrops, and are responsive to the choices of participants. The natureof the medium as a participatory experience enhances the feeling of co-creation, as players' actions inform the way the narrative develops and what parts of the protagonist's journey are revealed. The question of becoming in The Key is deeply entwined with the key itself, arecurring motif that organizes the disparate threads of the narrative. A Deleuzean operator unlocks narrativepotentialities in the sense that the key not only unlocks the physical pathways which open up the narrative but also unlocks the potentialities within the narrative assemblage. Through interaction with the key participants are not only engaged in the onboarding of the story, but are engaging in an ongoing process of actualizing a virtual potential, in which new layers ofthe story and

protagonist are revealed. Such a discovery process of permanence through impermanence is consistent with Deleuze's argument thatthe virtual is a genuinely real domain of potentiality that is never finished, but constantly developing through the interactive process. Additionally, the experiential nature of The Key tenuously dividesparticipant from protagonist, expressing Deleuze's idea of identity being relational. These are not just actions on the part of the participant, these become partof the unfolding story, creating a relational dynamic where identity is formed in collaboration with the game text that has been created. The crossing ofparticipant agency with narrative fluidity is suggestive of the Deleuzean ideal that identity is always-becoming-other, always determined by the dynamic forces at play within the assemblage. Refusing fixed pathways of narrative,The Key is a rhizome as endorsed by Deleuze and Guattari. Eachpropels a different lens on the protagonist's trauma and recovery, emphasizing multiplicity of experience over singular, authoritative narrative. This ambiguity encourages participants to buildtheir own links between pieces of the story, underlining the fluid and emergent nature of meaning in VR. The Key serves to show how VR narratives press againstconventional narrative forms by opening immersive spaces where identity, memory, and meaning are dynamically co-constructed. Realized through its symbolic landscapes, rhizomatic narrative structure, and focuson participant engagement, the film realizes Deleuze's philosophical constructs of becoming and assemblage. This transforms the participant from passive observer into active participant during the process of identity formation, and accentuates the transformative potential ofVR as a medium for exploring the fluidity and multiplicity inherent in human experience.

3.2.4 Giant (2016) – Fear, Told as a Bedtime Myth

Set in an unnamed city during a war, Giant (2016) — directed by Milica Zec and Winslow Porter — drops the viewer into a basement with a family during an air raid. The parents attempt to protect their young daughter from the frightening forces of war by spinning her a fairy tale about Giants, but as the bombs drop closer, the tension mounts, while the family's

lack of security becomes palpable. As the story unfolds, the tension between the parents' protective storytelling and the external chaos makes fora deeply visceral experience of vulnerability and terror. By means of Deleuzean notions such asbecoming and deterritorialisation, Giant alters the participant's sensory and emotional engagement, constituting a critical interrogation on identity and human resilience in extremis in the face of trauma. At the center of Giant is a Deleuzean notionof becoming-other. This is not the passive witnessing experience of watching the plight of the family; the audiencefinds itself pulled into the family's emotional and psychological space, and taking part in the becoming-family process. It is a process of relational immersion in which the perspective of the participant becomes deterritorialized, passing into an empatheticinhabitation of the family's precarious reality as opposed to her role as a stable observer on the outside. This process complicates static notions of identity as the participant's senseof self becomes embedded in the family's shared struggle to stay alive.

Held in the basement, the liminal space becomes one of deterritorialization,an important concept in Deleuze and Guattari's philosophy. Deterritorialization is thespatization of absolutely anything. In Giant, the very structure of the marbled basement captures and destabilizes the participant's sense of safetyand spatial orientation of the body, heightening a consciousness of the fragility of existence. The contrast between theparents' fanciful story about Giants and the sound of bombs landing overhead creates an increasingly surreal sense of displacement, erasing the lines between imagination and reality. The immersive sound design andclaustrophobic visuals recalibrate the participant's sensory engagement, deterritorializing their quotidian distance from the realities of war. This sensory and emotional collage illustrates the rhizomatic qualityof Giant's narrative structure. The family members' interactions, the restricted physical environment, the ambient sounds of warfare outside and the theatrical devices coalesce to form a dynamic network ofmeaning where one

element influences and transforms the others, generating an emergent experience. Contraryto linear hierarchies, Deleuze and Guattari's rhizome focuses on multiplicity and interconnectivity, promoting open-ended, relational entities. In Giant, the narrative mechanism at work allows one to traverse the balance between the family's interiority and the disorder beyond it, encapsulating how identityis fluid and contingent under pressure. The film's sensoryimmediacy compounds the process of becoming-family in Giant. Making useof VR, participants are dropped right into the basement's claustrophobic space, where literally every sound and movement becomes immersive and inescapable. A communal affective space is constructed through this immersive aesthetic, with the emotional responses of the participant beingsubject to the interplay of fear, hope and uncertainty within the familial dynamic. Critical to consideration of how Giant engages participants, though, is Deleuze's notion of affect as pre-reflective intensity,felt prior to cognitive processing. Thus the entry is made, and like the encounter with the family's plight, the experience is affective, which goes beyond representation and lets the participant become, so to speak,for a while — the weight of a family's emotional predicament.

The narrativeof Giant resists closure, keeping in mind how Deleuze and Guattari reject clean, fixable ideological endpoint in favor of open-ended processes. But the participant is left battling an unresolved tension, just likethe family's uncertain future. Thisopen-endedness affirms the diversity of the narrative, revealing how meaning develops not through a single resolution but through the dynamic interconnection of parts in the assemblage. Identity here is neither static nor singularly experienced, but rather is reflected in the emergent relationality between the participant and thismultiplicity, be it of space, traumas or memory, all negotiated within the unpredictable folds of trauma and resilience.

Giant showshow VR can transform you from the passive experience of narrative to the active

experience of becoming. Through a deterritorializing effect on the participant's boundaries of sensation and sentiment, moving to the relational spaceof co-construction of the notion and experience of identity. In this competitive environment, Giant embodies a Deleuzean exploration of becoming and rhizomaticmultiplicity, using the language of sound, architecture, and affect to explore human vulnerability and resilience in the context of conflict. The movie shows how VR can go beyond passive storytelling, turning the participant into an activepart of the story while it's unfolding.

3.2.5 Traces of Becoming: Patterns Across the Selected CVR Films

How immersivity actualizes the Deleuzian becoming, assemblage, and rhizomatic multiplicity is evidenced in the analysis of Notes on Blindness, Clouds Over Sidra, The Key, andGiant, as each piece invites reflection on questions of identity, perception, and participation and enables the participant to become co-author of dynamic narrative landscapes. These movies show how VR can overturn fixed ideas of self and narrative,generating fluid, relational spaces in which identity and meaning come through interaction. As table 2 illustrates, the Deleuzean process of becoming characterizes each of the films - foregrounding the mutability and relationality ofidentity. In the case of Notes on Blindness, the act of becoming-blindinverts sensory hierarchies and asks viewers to immerse themselves in this new perceptual paradigm. In a similar way, Clouds Over Sidra offers a becoming-child, a relational inhabiting of Sidra's perspective as forged throughdisplacement and resilience. The Key provokes its audience into discussions of striped otherness constructed through an abstracted symbolicexploration, where collaborators brew disjointed memories into a rhizodramatic unfolding of the narrative backdrop of the performance. Giant places participants in an emotionallyshared space, the relational dynamics of trauma and survival constitute becoming-family as we immerse in the work.

These pieces also exemplify assemblage—how a real-time narrative experience emerges out

of the sonically layered environment. As the table below (Table 2) shows, Notes on Blindness relies on multisensory soundscapes as well as abstract visuals to configure sensory engagement anew whereas CloudsOver Sidra foregrounds the refugee camp as an assemblage of place, memory, and affect. In The Key, divergent pathway narratives develop contingent on what is chosen by the participants, creating a hybrid of memory and symbolic terrain. Giant also weaves sound, space and emotional intensity into a narrative assemblage that enfolds participants in the immediacy of the family's experience.

Lastly, the rhizomatic structures of these narratives embrace multiplicity and participant agency, posting course concepts in search of a new rhizomatic path, instead of submitting themselves to linear progression of narrative. The Key is a representative work of this phenomenon, with distinct narrative pathways unspooling as participants unlock unique perspectives of memory and identity. Clouds Over Sidra and Giant, likewise, allow participants to engage with interlocking elements—the layers of Sidra's life or the tension between familial intimacy and external chaos—building narratives that never stop unfolding through interaction. Table 2 below presents an overview of these concepts appearing in each film.

3.3 Temporality and the Virtual Image in Cinematic Virtual Reality

Cinematic Virtual Reality immerses viewers in realms where time is elastic, non-linear, and interactive. This disorder can be understood by applying Gilles Deleuze's two concepts of time-image and virtual-actual interplay. Unlike traditional cinema, which organizes time in a causal structure around movement and action, in CVR time is freed from causality, offering multiple overlapping temporalities. This transition echoes Deleuze's conception of the time-image, where past, present and future coexist dynamically, shifting modes, enabling viewers to perceive time as not a preordained linearity but rather a vital, dynamic tenet of the text. In addition, CVR's immersivecharacteristics disrupt the difference between the virtual

Table 3.1: Summaries of analysis

Film	**Key Concept**	**Narrative Focus**	**Participant Engagement**
Notes on Blindness	Becoming-blind	Sensory transformation through auditory perception	Reorganization of sensory identity via immersive soundscapes
Clouds Over Sidra	Becoming-child, Assemblage	Interplay of place, memory, and resilience	Immersion in Sidra's relational identity shaped by displacement
The Key	Becoming-other, Rhizomatic Structure	Symbolic and fragmented exploration of memory	Co-creation of narrative pathways through participant choices
Giant	Becoming-family, Assemblage	Relational dynamics under traumatic conditions	Immersive emotional engagement with sound and spatial immediacy

and the real in a way that generates places where memory, imagination, and actuality merge. As a realm of virtual potential that exists alongside the actual, Deleuze's concept of the virtual is key to interpreting howCVRs are designed to produce these experiences. In works such as Dear Angelica and Marco & Polo Go Round, it is described how CVR manipulates fragmented timelines and interactive environments to effectively shift a viewer's role to become a co-creator of the narrative, subverting traditional notions of temporality and narrative coherence. In this section, we will explore how CVR's manipulation of timeand virtuality meld with Deleuzian concepts. Through the analysis of CVR works, it explores CVR's potential beyond merelinear fashion, suggesting that in fact CVR is a genre that approaches the dynamic nature of time and the relationship between memory, reality and potentiality in an incomparable way.

The philosophical stance offered by Gilles Deleuze towards "actuality" and "virtuality" provides a theoretical groundwork with which we can critically interrogate CVR through the vectors of temporality and virtuality. Deleuze's thought revolves around the idea that the

actual and the virtual are not oppositional but interdependent dimensions of reality [5]. Virtuality, in this perspective, becomes not an inferior version of reality, but a realm of potentialities that enter into constant communication and negotiation with the actual, influencing our sense of the temporal and the spatial [116]. This framework helpsto see how CVR subverts typical storytelling and time structures.

This distinction is particularly relevant to the time-image and movement-image distinction made by Deleuze (2013;2020). CVR, on the other hand, is more in accordance with Deleuze's discourse of the time-image, in which time itself becomes a crucial narrative agent that breaksfree from action or linearity [118, 119]. In this mode CVR provides viewers withaccess to temporal multi-spaciality, where past, present, and future exist simultaneously in blurred and fused ways and disrupt conventional cinematic temporality [120, 121]. Deleuze's theory of the virtual, based on the writings of Henri Bergson [103]. Asserts that behind every actual image lies thepresence of a virtual one. Understanding CVRas a medium that connects the real and the virtual requires an understanding of its duality. based on the understanding of Deleuze's philosophy, we know that the virtual is not an illusion [117] but a constitutive partof how we organize our experience of time and reality with CVR. On the other hand, the logic of the movement-image in classicalcinema is predicated on the choreography of time via action, where the development of events correlates to characters' physical movements and sensory-motorial responses [5]. This is a familiar, predictable form of narrative, governed bya linear flow of time. In CVR though, time is emancipated from cause–effect and thus exhibits a multiple structure of overlappingtemporalities and takes place outside of linear trajectories [118, 119]. The viewer's role has undergone one of the most fundamental changes inCVR. Unlike traditional cinema, in which viewersare delivered a narrative, CVR is participatory. Inthis virtual world, the viewer has to make choices that affect the rhythm of time in the plot. This interplay manifests a non-linear timeline, as past, present,and future

moments can exist and reoccur at once. The spectator's command over their perspectiveand speed of the story echoes Deleuze's idea of "multiplicities," in which time is not one or set but mutable and able to be altered [39, 120, 121].

The idea of becoming (asnoted in the previous section) and deterritorialization developed by Deleuze, offers further tools to understand the complex temporality of CVR. Becoming is the notion that identities, narratives and temporal experiences are not static but in constant change, dependent on interactivity within thevirtual space [122]. In CVR, this idea is expressed inthe user's dynamic interaction with the virtual world. Much likeidentity, time is not a fixed entity, but a process of mutation and transformation, delineated by the agency and decisions of the viewer. Another Deleuzian concept,deterritorialization, puts us in touch with the dissolution of boundaries. Pertaining to CVR, deterritorialization emerges both as the borders demarcating realityfrom that of the virtual became increasingly blurred while permitting users a seamless flow and navigation through temporal layers and spatial dimension [116]. In effect, this means that narrative no longer has to obey the linear strictures dictated by the need of physical action to occur in real time andcan instead be explored through more abstract, fragmented, or circular narratives when time itself is unfixed. This capacity to dynamically control the temporality of characters in virtual spaces not only brings with it a deeper complexity in terms of plot mechanics, but alsoresonates profoundly with Deleuzian thought regarding the nature of time itself, which he considered to be plural, non-linear, and endlessly becoming.

Familiarity withwhat lies behind the concept of the virtual image is central for understanding how CVR behaves as a storytelling medium. Images in traditional cinema are primarily representations of the physical world, following what Deleuze (1988) describes as a movement-image model, wherein timeis organized by action. Whereas CVR puts forth a different kind of image—one that isvirtual in nature, that generates experiences beyond

representation [5]. The virtual is not mere illusion, or the contrary of thereal, Deleuze argues. It is not so much an absence as a field ofimmanence existing alongside the actual, intersecting with it and producing the potential for other possibilities [116]. This relationship between what is virtual andwhat is actual lies at the heart of the way that CVR functions. This means that within a virtualenvironment, users can encounter time, space and narrative in fundamentally different manners than in the physical world, making it even more difficult to distinguish memory from fantasy or place from event. The immersive experienceengages various senses, such as sound and touch [123]. This multi-sensory interaction offers viewers a more intimate connection to the story, positioning themas active agents in constructing the narrative. This creates a dynamic virtual image, one that changes based on the decisions and actions of the viewer [122]. Interactivity is one of the major characteristics of CVR virtual image. Unlike cinema, whose traditional form is passive, CVR requires participation. Users explore virtual environments, making choices that shape the story's course. This inter-coupling increases presence, as the separation between the virtual and the real is blurred [75, 124]. Here, making a virtual image seem real enough that it has its own reality in the viewer's experience. Furthermore, nonlinearity of the virtual image makes conventional cinematic narratives more difficult. Because of this nonlinear interaction, CVR lets the audience navigate through multiple realms of reality and narrative possibilities in one encounter. This makes CVR different not only in the way stories are shaped, but also in how they encourage us to consider the essence of reality and existence amidst the uses and abuses of the digital era [125]. This section explores these dynamics more through a creative philosophical case-based approach, appealing to CVR films like Marco & Polo Go Round (2021), and Dear Angelica (2017). These films have been deliberately chosen for their aptitude in demonstrating how CVR subverts the constructs of virtuality, temporality and viewer agency to facilitate immersive, non-linear storytelling.

3.3.1 Marco & Polo Go Round (2021) – Love Caught in a Looping Dream

Marco & Polo Go Round is an example of how CVR can radically subvert linear narrative conventions. In one climactic moment in the film, when domestic objects start to levitate and the very environment seems to collapse in on itself, we're faced with the deterritorialization of physical space itself. This scene is not only about surrealism for the sake of surrealism; it breaks down the wall between the real and the virtual, and makes the beholder work to adjust to a space where nothing is certain [116, 126]. The couple's disintegrating relationship, mirrored by the environment's breakdown, invites the viewer to participate in this process of becoming, as both the emotional and physical landscapes are in a state of continuous flux. Additionally, the fragmented presentation of time in the film—where past arguments, future possibilities, and present disillusionments coexist within the same immersive frame—aligns with Deleuze's concept of the time-image. A critical moment occurs when the narrative loops back on itself, with Marco and Polo repeating an argument from different perspectives. This challenges the viewer to experience time as a multiplicity, not a linear progression, emphasizing how CVR's immersive environment amplifies the feeling of temporal dislocation [118].

The film's breakdown of spatial and temporal coherence acts as a philosophical reflection on how CVR forces the viewer to actively reconstruct meaning. This mirrors Deleuze's argument that time, when freed from movement, becomes non-linear and opens up new potentialities for narrative construction. The immersive nature of CVR enhances this, as viewers are no longer mere spectators but must navigate the shifting reality themselves. The narrative and spatial ruptures in Marco & Polo Go Round resonate deeply with the aesthetics of modernist and postmodern cinema. The film's looping arguments, fragmented perspectives, and surreal environmental shifts echo the recursive narrative logic of films such as Alain Resnais' Je t'aime, je t'aime (1968), where fractured memory and circular time trap the protagonist in emotional limbo [127]. Similarly, the domestic surrealism and collapsing space recall the

dreamlike disorientation of David Lynch's Lost Highway (1997), where identity and chronology dissolve into a fluid continuum. These cinematic precedents experimented with narrative incoherence and subjectivity long before CVR—but where those films could only represent disintegration, CVR materializes it. By placing the viewer inside a disassembled world, Marco & Polo extends this legacy into a spatial and interactive experience, embodying postmodern concerns with instability, identity, and the impossibility of narrative closure.

3.3.2 Dear Angelica (2017) – A daughter Draws Her Mother from Memory

Dear Angelica provides a deeply personal exploration of memory and loss. One of the most powerful moments in the film occurs when the protagonist recalls a vivid memory of her mother, represented by swirling hand-painted visuals that blend past and present seamlessly. As the viewer is drawn through these fluid memories, the film refuses to distinguish between what is real and what is remembered. This aligns with Deleuze's notion of memory as virtual, where the past is not fixed but always in the process of becoming through the act of remembering [116]. The viewer's ability to navigate through these memories within the virtual environment transforms memory from a static repository of the past into an active, evolving space. In one scene, as the character navigates her mother's old films, the memories aren't just passively recalled, they're reconstructed in real time based on the viewer's position and interaction. This interactivity emphasizes the notion that memory is virtual, constructed from current experience, and that the work of remembering a memory is the work of reproducing one.

Dear Angelica upends traditional conceptions of how the past functions in film by placing the viewer inside a space where memory is practically itself a virtual topography to navigate. One moment, the viewer is enveloped in a child's bedroom filled with soft sketches; the next, the drawings swirl and morph into a film set or a dreamlike sky. This associative and poetic structure recalls the temporal ambiguity and recursive narration of Alain Resnais' Last Year at

Marienbad (1961), where memory and imagination are indistinguishable, and time is rendered subjective. Similarly, Tarkovsky's Mirror (1975) presents recollections without chronological sequencing, constructing meaning through atmosphere rather than plot. Yet, Dear Angelica goes further by transforming this mental montage into a fully immersive spatial experience—the viewer does not observe memory, they are inside it, surrounded by shifting emotional landscapes. This makes interiority not only visible but navigable, and establishes CVR's capacity to render memory as embodied space rather than cinematic metaphor. It echoes Deleuze's theory that memory and the virtual are not mere echoes of the past but are co-relativelycreated through interaction. The viewer's agency asthey navigate through these memories makes them co-creates of the structure in where and how the memories are arranged to unfold.

To also clarify what the relationship is between the chosen CVR films and the Deleuzian concepts that presented, the next table presents the main moments of each of the CVR films, the Deleuzian theories proposed by themselves, and the analysis that emerges from it. The table thus provides a comparative overview that complements the detailed discussion above, demonstrating how each film weaves and bends conventional cinematic structures, encouraging the viewer to engage with non-linear temporality, the virtual, and the act of spectating itself. In this overview we visualize the way that CVR reframes the relevant philosophical options available to it through a particular combination of narrative and visual strategies, in accordance with Deleuze's philosophy.

3.4 Shifting Grounds for Storytelling

As explored earlier, experimental cinema has long resisted linear storytelling and centralized perspective. However, while modernist films such as Mirror (Tarkovsky, 1975) or La Jetée (Marker, 1962) rely on poetic editing and associative imagery, CVR externalizes these logics into navigable environments. The viewer does not decode ambiguity but traverses

Table 3.2: Critical analysis of Deleuzian concepts in selected CVR films

Film	**Key Scene/Example**	**Deleuzian Concept**	**Critical Insight**
Marco & Polo Go Round	Disintegration of physical space (objects floating, environment collapsing during argument)	Deterritorialization, Time-Image	Breakdown of physical and temporal boundaries forces the viewer to engage with the narrative's fragmented time and reconstruct meaning.
Dear Angelica	Navigating through hand-painted memories of the protagonist's mother, blending past and present	Virtual Memory, Becoming	Memory is treated as a virtual, active space where the viewer's navigation reshapes how the past is experienced and co-created in real time.

it—constructing narrative meaning through spatial presence, embodied movement, and interaction with narrative cues embedded in the environment. This transforms temporal fragmentation from an editorial device into a participatory act. In this chapter, we went through to how CVR transforms our affective relationship to storytelling, remediating the cinematic spectatorial experience through immersion, embodiment, and spatial aesthetics. From the multisensory realism of Gondwana and The Book of Distance to the disorienting perceptual shifts in Notes on Blindness and the layered visual poetry of Dear Angelica, the analysis has shown that CVR offers more than novel forms of spectatorship—it repositions the viewer as an affective presence within the story world. The works examined here do not just tell stories; they generate environments where stories unfold with and through the viewer. But immersion, as powerful as it is, is only part of the story. These aesthetic and philosophical shifts are closely woven with questions of narrative design—the kinds of questions that crystallize when we consider how viewers occupy and even direct story development. The destabilization of linear storytelling and erosion of fixed authorship suggested in these works

demand an important shift in focus: moving away from sensory engagement to that of narrative agency.

This is where Chapter 4 takes root. Building on the affective and perceptual structures examined so far, the next chapter turns to the narrative logic of CVR—specifically, how it enables collaborative storytelling. Drawing on theoretical insights into authorship and interactivity, Chapter 4 introduces the Collaborative Narrative Model (CNM) as a response to the challenges posed by viewer agency and non-linearity. If this chapter focused on how CVR invites audiences to feel within a story world, the next investigates how they begin to co-author it. This shift from immersion to interaction marks a crucial transition in understanding CVR not only as an aesthetic medium, but as a fundamentally narrative and participatory space.

Chapter 4

TOWARDS A NEW NARRATIVE STRUCTURE IN CVR: COLLABORATION AND VIEWER AGENCY

Drawing from previously established concepts in earlier chapters, this Chapter explores how CVR transforms narrative paradigms by disrupting linear storytelling, decentralizing and democratizing collaborative processes, and shifting the role of the viewer into an active participant. Such a shift is part of wider theoretical frameworks (Roland Barthes' "The Death of the Author") that downplay authorial control and prioritize audience co-construction of meaning. Framed through this lens, the chapter considers the participatory nature of CVR storytelling, as meaning emerges through the dynamic between viewers, creators and technological systems. The chapter itself is structured around two closely linked subsections that engage with a core element of this transformation. The first subsection entitled as Death of the Author in CVR, re-evaluating authorship and narrative agency, sets the theoretical grounding for the appropriations of CVR that destabilizes the traditional view of authorship. By building off of Barthes' dialectics regarding authorship and the subversion of, I investigate how the medium of interactive formats catalyzes narrative agency, thus confronting the dominance of authorial control and enabling viewers the agency to craft narrative direction.

The next section, "Collaborative Narrative Models in CVR," further expands on this groundwork by beginning to define aprototypical model for structuring CVR narratives. In this section, we introduce the Collaborative Narrative Model, which positions storytelling as a fundamentally collaborative process mediated by three central agents—the viewer, the narrative designer, and the technological systems mediating the experience. From this

perspective, three dimensions are examined to highlight how collaborative storytelling takes place in CVR. The first dimension explores the tension between the desire to provide viewers with freedom (for example, to explore narratives or create branching storylines) and the narrative need for coherence, looking at ways to achieve narrative coherence and coherence in plot while still providing agency for the viewer. The second, explores how emerging technologies like AI and real time rendering are making possible adaptive storytelling — that dynamically unfolds depending on viewer choices. The third and final dimension, then, does exactly this; it ports the theoretical conversation into practice, with an analysis of three works of CVR: Wolves in the Walls, The Invisible Hours, and Spheres. These Selected CVR Films demonstrate how participatory storytelling can mediate between interactivity and narrative integrity, showcasing both the potentialities and difficulties of enacting the Collaborative Narrative Model.

With this pairing of theory with practice, this chapter serves as an examination of CVR's potential transformative effect on narrative structures.

4.1 Death of the Author in CVR: Rethinking Authorship and Narrative Agency

Cinematic Virtual Reality immerses audiences within the narrative space, providing an unprecedented scope for 360-degree navigation and interaction with the story world [44, 65, 124, 128]. The move from content-centric storytelling based on audience observation and separation to an immersive, participatory narrative experience facilitated by technological innovation and increasing interest in experiential narrative type is a paradigm shift [81]. To understand the meaning of this change, the theory of Roland Barthes' The Death of the Author (1967) should bespecifically adopted [84]. By disentangling the author from the text,Barthes undermines the traditional supremacy of the author over the text and views the generation of meaning as an action which evolves from the relationship between the text and

its reader . Barthes' essay undermines the classical idea that an author's intentions, or the biographical context in which they were operating, frame the definitive way to read a text. Instead he posits a reader-oriented model of reading, in which the piece becomes an arena of plural significances, and the reader becomes a meaning-maker with an interpretive scheme of his or her own design. Barthes (1967) argues that meaning does not rest in thetext itself but instead emerges as a product of the network between the text and its audience — emphasizing the active role of the reader [6]. Barthes' ideas have not only shaped literary theory but have had profound influence on media and narrative design, particularly as storytelling has evolved into interactive and immersive forms. A deeper look into his theoretical lineage and contemporary relevance helps contextualize how CVR activates and extends his central propositions: Barthes' (1967) declaration that the "birth of the reader must be at the cost of the death of the Author" proposed a fundamental shift in narrative logic, moving meaning-making from the origin (the author) to the point of reception (the reader) [84]. In this view, texts are not containers of a singular, authorial truth but dynamic fields of interpretation, where meaning is produced through interaction. Foucault (1977) expanded this notion, suggesting that the "author-function" is historically contingent—a construct embedded within discursive, cultural, and institutional frameworks rather than an expression of individual genius [129]. In the context of digital and interactive media, these ideas gain renewed force.

Murray (1997) describes interactive environments as "procedural," wherein users shape narrative progression through exploration and choice [2]. Ryan (2001) similarly argues that in virtual spaces, authors become architects of possibility rather than conveyors of fixed messages [1]. Jenkins (2006) further stresses the shift from centralized authorship to participatory culture, where audiences actively construct meaning across media platforms [50, 130, 131]. CVR exemplifies this paradigm. In immersive works like Wolves in the Walls (Fable Studio, 2018), narrative is not simply consumed, it is co-authored. The user's

gaze, movement, and silence determine pacing, perspective, and even emotional tone. Authorship becomes distributed across the designer, the technological system, and the user's embodied engagement. Meaning, then, is neither predetermined nor linear, but emerges in situ—as an effect of presence and interaction.

In this way, CVR enacts Barthes' theory not just metaphorically but structurally. The author's authority dissolves into a system that invites co-creation, reflecting a broader poststructuralist move toward pluralism, interactivity, and the decentering of narrative control.

This decentralization of meaning, increasingly evident in media like CVR, reflects and amplifies broader theoretical movements within structuralism and post-structuralism, which sought to dismantle essentialist views of texts, language, and authorship. Forming this theoretical shift is tempered with wider trends in structuralism and post-structuralism, which challenges the premise of fixed reading practices and underscores the role of language in constructing reality itself. Even if Barthes did not do away with the author entirely, he did challenge the idea that the author has the final say over the meaning of the narrative he/she has produced, creating space for a more pluralistic and democratic approach to interpreting a narrative. This notion is reflected in Jacques Derrida's idea of deconstruction, in which he argues for an understanding of meaning as inherently unstable and the futility of achieving a universal, definitive reading of a text. Derrida's theories focus on the "endless deferral" of meaning contained by texts, meaning that, with every reading offered, there is the possibility of further reinterpretation [14, 132]. As Barthes and Derrida both demonstrate, they encourage paradigm shifts that foreground the role of the reader, positioning texts as places of infiniteinterpretive possibility, and rendering no single interpretation original or definitive. These perspectives encourage a re-evaluation of narrative ownership, making them critical for theparticipatory affordances of CVR. The decentralization of authorship, while radicalized in

CVR, has historical precedents in postmodern cinema. Films such as Synecdoche, New York (Kaufman, 2008) and Mulholland Drive (Lynch, 2001) resist singular authorial perspective through recursive structure, dream logic, and narrative contradiction. In Synecdoche, the protagonist builds a play that recursively recreates his own life, casting actors to play actors playing himself, dissolving the boundary between creator and creation. Mulholland Drive presents overlapping identities, temporal slippages, and diegetic instability, challenging the possibility of fixed meaning or authorship. Similarly, Adaptation (Jonze Kaufman, 2002) literalizes the fragmentation of authorship by inserting the screenwriter into the screenplay as a character [133], blurring reality, fiction, and the creative process itself. In The Holy Mountain, a surrealist spiritual journey unfolds as a critique of narrative authority, culminating in a scene that breaks the fourth wall to reveal the camera crew—thus exposing cinema's artifice and undermining narrative closure [134]. Peter Greenaway's The Pillow Book (1996) merges text, body, and image in layered visual compositions, offering an aesthetic refusal of linear storytelling and stable authorship. These films metaphorize the "death of the author" through plot structure, character instability, and reflexive narration [84]. Yet while cinema expresses these themes symbolically or metaphorically, CVR materializes them—embedding authorship within the viewer's procedural agency. In CVR, meaning is not only interpreted but co-produced through interaction between viewer, system, and designer, rendering authorship contingent, dynamic, and spatially situated. Although Barthes' The Death of the Author provides a framework for close reading, it has not been without its critiques. What is an Author?Michel Foucault's seminal essay (1977) expands this discussion with the idea of the "author-function," one that grounds authorship within larger socio-historical and discursive systems. Foucault says that theaudience shaped the text but also institutional or cultural forces that served to set limits on what interpretable meant [129]. It is this critique that builds toward CVR, where the"author-function" may apply to the designers, programmers, and systems of technology that underlie how narratives are constructed and experienced. So while CVR

decouples traditional authorship, it raises new queries about how creators and their technological mediators shape narrative experiences. This theory of Barthes also leads to examine intertextuality, that is the dialogic relationships between texts. Intertextuality highlights that texts are not autonomous productions, but products of an extensive network of cultural of textual relations, borrowing meaning from these webs [135]. Intertextuality is especially important in CVR, where narrative experiences often thrummed in expansive, interactive worlds. The immersive worlds of CVR often reference and recombine an array of cultural contexts, enabling users to traverse meaning amongst the interrelation of narrative components. This layered interpretive process has led to users not only navigating characters, plot and narrative arcs, but also the cultural and intertextual layers of meaning and context that build further depth in the work, thus further democratizing meaning making [136]. Barthes highlights a certain dialogic interaction between reader or audience and text, which has proved highly influential for narrative theory, both in literary and cultural studies, and which has significant implications for the emergence of new forms of digital media. This other claim of him, that "the birth of the reader must be at the cost of the death of the Author", speaks powerfully in the context of CVR, where the audience's interpretive agency becomes central. Applying Barthes' ideas to CVR invites a methodological shift: narratives are not set artifacts, but are ever-moving experiences co-created with users. This change has permeated debates around narrative aesthetics, viewer agency, and thecreation of meaning in numerous contexts, such as digital storytelling and immersive media [50, 130, 131, 137, 138]. CVR theorizes these shifts further, foregrounding the participatory nature of the audience. Additionally, in immersive environments, user interaction actively determines how they contribute to the story, what choices they make, and through what interactions, the impact of which is on the pathof the story. Such a decentralization of control is in line with Barthes' vision of meaning-making as reader-driven, but it also presents a challenge to creators who must construct flexible molds that allow for interactivity but also maintain some semblance of narrative coherence. The

growing role of user agency in CVR, therefore, calls for a reassessment of assumptions about authorship and narrative convention, which prepares the way for the discussion of narrative agency in immersive media that follows.

This ability to engage users in a narrative experience acts as a means of providing narrative agency over traditional models of storytelling narrative agency found on CVR allowing the user to immerse themselves within the narrative agency as only possible in transitional models of storytelling. CVR combines cinematic storytelling with VR technology to expand the user's agency in both influencing and engaging with the narrative, which is a significant break from the passive consumption of traditional media [53, 54, 139]. This interaction is about selecting narrative pathways informed by sensorially immersive presence mechanisms that boost emotional and cognitive engagement [44, 65, 140]. But the idea of narrative agency as part of CVR carries deep significance for creators and audiences alike. For creators, it poses the challenge and opportunity of creating flexible, non-linear narratives that can adjust dynamically to user action [78, 141, 142]. This innovative form of narrative structure matches a more democratic approach to storytelling, one in which users determine the course and outcomes of the story. This phenomenon is encapsulated perfectly in Murray's (2017) concept of open-ended or "holodeck narratives," where immersive environments allow the user to insert and share their own story, as they make sense of the world around them [53]. This indelible agency also demands a reevaluation of authorship in CVR, echoing Roland Barthes' declaration on the "death of the author." In the case ofCVR, authorial control has been radically decentralized, inviting the audience to participate in the on-going construction of narrative meaning. As noted by Ryan (1999) and Koenitz (2015), this model enables collaborative storytelling in which the story changes as a result of user input [143–145]. These frameworks highlight the malleability of authorship in immersive media, as authors in these types of texts need to cede some control over their text, while building systems around

coherent, meaningful interactions [146]. CVR is built using a participatory nature, enhancing the user experience through emotional and cognitive aspects, solidifying user connectivity to narratives. CVR can promote empathy and perspective-taking, which are critical features of immersive narrative environments [147] by allowing audiences to engage actively with the decisions and actions of story worlds. Harrell et al.'s (2018) "Agency Play" concept and Vosmeer's (2021) exploration of 360° cinematic VR further illustrate how advancements in technology and narrative techniques redefine user engagement, allowing audiences to transition from passive spectators to active co-creator [148]. By integrating interactive technologies with cinematic techniques, CVR creates a dynamic platform for crafting immersive, participatory narratives. This ongoing transformation promises to expand the boundaries of storytelling, shaping the future of narrative creation and audience interaction in profound ways.

4.2 Collaborative Storytelling Models in CVR

Cinematic Virtual Reality introduced a paradigm shift in storytelling from a viewer as the interpreter of a fixed narrative to a participant who actively participates in the story. They interact with a narrative through interpretation, absorbing the story as it is presented. CVR, however, disrupts this relationship by letting the viewer's decisions and actions shape the course of the narrative, adding layers of interactivity and immersion. But existing narrative forms that prioritized linearity and authorial control have failed to keep up with the potential of CVR to produce dynamic, interactive experiences. Traditional models, like Aristotle's Poetics, or Todorov's narrative equilibrium, privilege coherence as the highest good, a robust narrative arc. But they are not as well suited to the real-time decision-making power CVR gives viewers. Plus, CVR might mix in technological systems with the storytelling and add a fourth dimension to the narrative making it even more vital to understand how coherence can be maintained given that the viewing identity, the script writer and the technology shapes that narrative.

This section proposes a conceptual Collaborative Narrative Model, which redefines storytelling in CVR as a co-creative process involving three key agents: the viewer, the scriptwriter (or narrative designer), and the technology that mediates the experience. Drawing on theories of participatory culture, interactive storytelling, and technological mediation, this model provides a framework that allows for flexible narrative construction, addressing the need for new approaches in CVR storytelling. Through the analysis of Selected CVR Films—including Wolves in the Walls, The Invisible Hours, and Spheres—this research demonstrates how the Collaborative Narrative Model can be practically applied to manage the balance between viewer agency and narrative structure. These Selected CVR Films illustrate the challenges and opportunities when multiple agents shape stories in real-time.

The following sub-sections provide a comprehensive review of current theories and studies, focusing on the limitations inherent in traditional narrative frameworks when applied to interactive environments. Subsequently, the Collaborative Narrative Model is introduced, with an emphasis on both its theoretical foundation and practical implications. Through detailed Selected CVR Films analyses, the research presents strategies that screenwriters and narrative designers can utilize to develop immersive and cohesive narratives in CVR. The section concludes by considering the wider impact of this model on the future of immersive storytelling and the evolution of narrative design.

The foundations of storytelling have been heavily influenced by classical narrative structures, primarily developed by Aristotle, Freytag, and Todorov, each providing a model for creating cohesive stories with a linear progression. In Aristotle's Poetics [149], the emphasis on a beginning, middle, and end has shaped Western storytelling's focus on unity and catharsis, arguing that a structured plot (mythos) with a central climactic moment followed by resolution is critical to evoking emotional responses. This singular narrative arc became

foundational in classical cinema, ensuring that narrative closure met the expectations of audiences. Building on these ideas, Gustav Freytag formalized the narrative arc into his Pyramid of Dramatic Structure [150], a five-part system comprising exposition, rising action, climax, falling action, and denouement. This model dominated Hollywood screenwriting during its classical era, focusing on clear-cut climactic events that restore order. Freytag's model, which demands a linear progression, positions the viewer as a recipient, unable to influence the narrative's unfolding. Similarly, Todorov's narrative equilibrium (1977) reinforces a cyclical structure, where stories progress from a state of balance, encounter a disruption, and return to equilibrium [151].

In traditional cinema, this linearity is maintained through continuity editing [152], emphasize the importance of controlling the viewer's perception through syuzhet (plot) and fabula (the underlying story), where the filmmaker controls how time and events unfold [86, 152]. However, the advent of interactive media, particularly CVR, exposes the limitations of this model. In CVR, the viewer assumes agency, fundamentally altering the storytelling structure. Murray (2017), in Hamlet on the Holodeck, critiques traditional narratives for their inadequacy in interactive environments, where the viewer's choices influence the story's direction, disrupting the controlled pacing and singular authorial control typical of classical cinema [53].

This shift from authorial control to viewer interaction introduces what Marie-Laure Ryan (2001) describes as "narrative multiplicity," where multiple outcomes coexist, fragmenting the traditional linear arc [1]. As viewers engage with spatial and interactive environments in CVR, their decisions lead to different story outcomes, complicating the classical notion of a single climax. Koenitz (2010, 2015) and Reyes (2017) extend this notion, advocating for modular storytelling structures that flexibly adapt to viewer interactivity, emphasizing the need for new

frameworks to support dynamic, non-linear narratives [144, 145, 153, 154]. In this context, Ross and Munt (2018) reveal how modular narratives maintain thematic coherence even within VR's expansive non-linear spaces [48], further underscoring the potential of these frameworks to embrace narrative multiplicity. Soudhamini (2020) conceives of VR storytelling as a Möbius strip—a continuous loop that invites open-ended exploration [155], embodying the potential of CVR to engage audiences through fluid, interactive storytelling. This approach moves beyond traditional scriptwriting rooted in Aristotle and Freytag, which Kathryn Millard (2010) critiques for its limited capacity to accommodate the multi-threaded structures essential in digital media [156, 157]. In interactive environments, the scriptwriter shifts from crafting a singular, linear narrative to designing a modular structure supporting multiple narrative pathways, allowing the viewer's actions to shape the story.

Jesper Juul's (2005) exploration of video game narratives in Half-Real illustrates how player agency disrupts traditional structures by blending narrative and gameplay mechanics [100]. In such environments, the player's actions drive the narrative, leading to "half-real" worlds without predetermined outcomes. Similarly, in CVR, viewers engage with a spatial and interactive narrative environment where decisions alter the story's trajectory. Juul's critique aligns with Ryan's argument that non-linear storytelling fragments the traditional arc of rising tension, climax, and resolution, positioning the viewer as an active participant capable of creating multiple versions of the story. Extending Juul's insights into CVR, Dooley (2017) and Ogle (2019) argue that conventional screenwriting methods must evolve to incorporate viewer-driven narrative structures [121, 158]. Dooley emphasizes that 360-degree storytelling demands a reimagined approach, where narrative coherence is maintained despite non-linearity, while Ogle suggests visual models for structuring these experiences, facilitating viewer agency. This need for innovative narrative frameworks is further explored by Tricart (2017) and Fisher et al. (2022), who propose modular strategies that support user-directed

paths without sacrificing thematic unity [29, 159]. Mateer (2017) similarly explores how traditional directing techniques can be adapted within VR environments to meet CVR's immersive and interactive demands [78], underscoring the importance of balancing classical storytelling elements with the unique spatial dynamics of VR.

Further complicating this shift, Robert McKee (1997), emphasizes that the art of screenwriting relies on a structured progression, where each plot point is designed to heighten tension and lead toward a resolution [160]. However, McKee's structured approach assumes that the audience will experience the story as designed—an assumption that interactive narratives like CVR inherently disrupt. Instead of following a fixed path, CVR storytelling requires the writer to anticipate viewer interactions, where different narrative choices lead to varying emotional and thematic outcomes. Similarly, William C. Martell (2000) emphasizes the need for a central climactic action in his work on action screenwriting [161]. Nevertheless, in CVR, the predictability of a single climax becomes impractical as viewer agency can alter the pace and direction of the story, resulting in multiple possible climaxes or disrupted narrative trajectories. This necessitates new approaches in screenwriting where modular storytelling and flexible branching structures replace the fixed and already exists linear models. Kath Dooley and Alex Munt (2024) argue that the spatial and interactive nature of VR requires a new scriptwriting approaches that balances viewer exploration with narrative coherence [162]. Their concept of spatialized screenwriting, where narratives unfold in a 360-degree environment, demands modular structures that engage viewers with multiple threads while preserving the core thematic integrity.

Henry Jenkins (2006), in his work on participatory culture, describes how digital platforms, enable audiences to shape media content actively, blurring the lines between producers and consumers [130]. Jenkins' theories on convergence culture are particularly relevant to CVR,

where the viewer can influence the story's direction in real-time, effectively becoming a co-narrator. The evolution from linear storytelling to interactive, non-linear forms has made narrative design more flexible. Marie-Laure Ryan's (2001) examination of possible worlds theory interrogates the phenomenon of branching narratives [1, 79], where narratives aredesigned to twist and turn as the audience makes decisions. But Ryan warns "against a fragmentation of narrative", particularly in something like CVR, where consumers have so much power, it can create a patchwork experience. Millard (2014) makes a similar point, emphasizing the necessity of creating modular narrative structures that can be altered according to the requirements of the interactive spatial environment while keeping the emotional backbone of the narrative intact [156, 157]. This creates an important challenge for narrative designers: Present meaningful choices to the viewer, while still upholding narrative coherence.

It's also worth noting that the evolution of interactive storytelling has also been influenced by recentadvances in new media as well as real-time rendering technologies. Building on Jenkins (2006, 2010) notion of participatory culture [130, 138], Elizabeth Evans (2011) speaks of how digital technologies provide audiences the tools through whichthey can partake in not just engaging with but actively constructing and distributing narratives [163]. In these environments, though, the narrative is dynamic andreacts to viewer input versus following its scripted path. This transition is precisely what Evans describes as a fundamental move from conventional, linear narratives all the way to modular frameworks that expand according tousers' choices. Linda Aronson (2010) Equally useful in addressing concerns about the spectral role the audience plays throughout the classical framing process [164], the modularity ofstorytelling is a necessary solution to the classical restraints. Instead, Aronson promotes no linearity at all in scripting, allowing multiple storiesto coexist in a space where the viewer can exercise agency but keep both continuity of theme and of emotional arc. Modular structures

allow the audience's actions to feel integral to the storytelling process, providing multiple climaxes and resolutions without compromising the overall coherence of theexperience. In his essay collection The Art of Immersion, FrankRose (2012) elaborates on this through interpretations of how digital media and immersive technologies challenge our conceptions of narrative engagement [165]. Experiences such as CVR force screenwriters to conceive of potential narratives that go beyond simply presenting a first, second and third act and allow each story to change and adapt around theviewer's engagement with it, Rose argues. This real-time interactivity disrupts the traditional idea of plot progression, as stories must leave themselves open enough to shoehorn in changes that viewers dictate,yet still provide a cohesive and affecting story. Juul(2014), argues that interactivity changes the relationship between narrative structure and viewer [166]. His idea of "half-real" storytelling, where audiences engage with a narrative world as well as a rule-based system, also applies to CVR, in which viewer interactions with the story world directly impactwhat is happening in the story world. This interactive dynamic creates a paradox where the sketching of a narrative arcbecomes difficult to keep consistent. Besides revealing structural challenges, viewer agency is also related to the psychological and emotional dimension of interactivestorytelling. Murray (2017) identifies immersion as a key aspect of these experiences, observing that the viewer's sense of presence—the feeling of "being inside" the story—is relianton the system's ability to offer meaningful, responsive options [53]. If the viewer feels what they do doesnot matter their immersion wanes. Murray suggests that CVR mustbalance freedom with structure for viewers to stay immersed, adding that viewers need to feel their choices matter in the course of the story while keeping them on track for an engaging resolution of that story. This idea of co-creation goes usually well beyond the individualinteraction but into the larger, broader placement of narrative theory. Mark J.P. Wolf (2012) integrates the idea that the actions of the viewers operate very much in the development of the story world, and therefore they act as active participants in the new world unfolding around them [167]. This

collaboration, however, presents a challenge for script-writers, who need to anticipate as many possible decisions from viewers as possible, all the while making sure that thefundamental themes and emotional arcs remain properly intact. To respond to the challenges presented above, modular storytelling has become an important technique in interactivemedia. As Kath Dooley and Alex Munt state (2024), the modular narrative structure of CVR facilitates narrative threadsto be developed in parallel [162], in which each viewers' decision leads to a numerous narrative that diverge or converge without a loss in overall narrative coherence. This technique enables designers to make narrative "anchors"—flagship moments of theme that give coherence, even while the viewer movesthrough many narrative lanes. Eric R. Williams et. al. (2021) proposes a framework for interactive storytelling in CVR that builds onthis concept [168]. A narrative is better if it provides a multitude of meaningful story choices but as Williams points out it alsoneeds narrative anchors, moments that are preordained and meaningful around which a story can be structured. Sheikh et al. (2016) offer strategies for guiding viewer attention in360-degree spaces, employing visual and auditory clues to focus attention on important story aspects [169]. Their perspectives also align with the narrative anchors concept that anchors cancreate focal points in modular structures, allowing viewers to meander through multiple narrative threads without disjointedness. This structure is alsoeffective at creating a meaningful journey for the viewers. While the narrative broke into multiple actions, it all retained cohesiveness emotionally and thematically. Likewise, Sicart (2009) points to theneed for story flexibility [170]. He explains how the illusion ofagency is important in interactive narratives, where the reader needs to believe that their choices affect the story, even though the writer has control over the underlying narrative structure. This flexibility is crucial to making a balance between viewer freedom andnarrative coherence. David Cage, director of Detroit: Become Human (2018), points out that interactivity canlead to the fragmentation of narrative if the branching structure of interactive narratives is not properly controlled. You cannot have a branching narrative and divert all of those paths in the

end without some coherence — it needs to be able to be coherent to theviewer, even when they go in different directions; they must still follow the same emotional arc. This sense of layering the narrative is echoed by Frank Rose (2012), who states, real interactivity does require that the experience be layered [165], so that even when you're not in the precise path the creator intended, you still encounter narrative beats or anchors that serve a purpose and that may be engaging, CVR, multi-threaded, interactive storytelling, where technological systemsread viewer choices and adapt the story in real time. This turns technology into an active co-writerof the story. Janet Murray, in Hamlet on the Holodeck (2017), emphasizesthe importance of nonlinearity in CVR, since immersive environments allow users to "slide through the story" and experience different aspects of a virtual world [2, 52, 53]. Using game engines, such as Unity and Unreal Engine, and real-time rendering techniques, CVR can respond dynamically as viewers change the trajectory of a story through their actions.

The real-time response nature of CVR systems leads to a potential narrative fragmentation risk, according to Marie-Laure Ryan (2001), as they can possess enough freedom to disrupt the logical narrative coherence [1, 79]. A solution to this dilemma comes with systems in CVR that use narrative anchors ensuring that even if multiple paths branch from the main story, the core narrative is never disrupted. This aspect of modularity — registering moments, thematic touch points - or anchors - to give the viewer continuity throughout the VR storytelling experience, is supported in the work of Kath Dooley(2018, 2021) [39, 171]. This is noted in Eric R. Williams (2021) who states that narrative coherence can still be achieved through carefully choreographed discussion of viewer agency in relation to proposed narrative beats that retain so much thematic and emotional similarity with the next possible plot stop that they keep the plots feeling cohered [168]. Research by Cannavò et al. (2024) has further demonstrated that the POV selected in CVR can lead to substantial differences in viewer engagement [172]. It explores the impact of a first-person perspective (1-PP) on narrative

presence and narrative coherence and finds thata 1-PP helps promote greater similarity between the viewer's experience and the currently unfolding story, providing a highly controlled immersive environment. AI helps over coherence, but it is also becoming an integral part of interactive storytelling inCVR. Bucher (2017) also elaborates on the means to create a captivating cohesive story set within VR that can maintain viewer engagement [80], all while using structural anchors to eliminate dissonance. Mark Riedl and Vadim Bulitko (2013) describe Procedural Narrative Generation, which is the equivalent of AI in stories generating the story based on the viewer (input) in real-time [83]. In the case of CVR, this integration of AI into real-time rendering means that each decision made by the viewer about where they look can affect the story meaningfully, and that the hole between the starting point and the various signed-off options can be effectively bridged, keeping each possible outcome consistent. Kvisgaard et al. (2019) explore how mise-en-scène techniques in VR can constrain where your audience looks to help orientate and support coherence while still allowing them some degree of viewer agency, and that these techniques can augment narrative anchors, such as focal points [173]. And yet, there is a limit to how much agency the viewer can have without creating narrative dissonance. Deterding (2011) points out that, too much freedom of the viewer will make it hard to understand the experience and creates a fragmented story [173]. Moreover, Pillai, Ismail and Charles (2017) similarly argue visual cues are an effective way of steering viewer attention in immersive VR environments [174]. In CVR, these risks are managed through modular narrative design, in which viewer choice is gently directed by technological systems that maintain narrative coherenceacross branching paths.

As Murray (2017) and Aylett & Louchart (2003) assert, technology in the context of CVR does not simply enable storytelling; it actively participates in the creativeprocess [53, 175]. The story responds to the actions of the viewer in real time, and the technology morphs and aligns the events as they unfold to present a cohesive experience. This is augmentedby AI and

adaptive systems that change the pacing and emotional tone of the story based on user engagement. Technological mediation in CVR is important for developingemotional immersion beyond narrative adaptation. Chris Milk (2015) shows that sensory feedback mechanisms, such as haptic technology, can contribute greatly to establish an emotional bond between the viewer and the story beingtold [76]. Weaving (2021) argues the case for the use of evocative narration (VR or otherwise), emphasizing that even the most visceral stories benefit from a little narrative framing, which cansimultaneously increase immersion whilst allowing an open space for viewer agency [176], respectively. For example, Zhang (2024), asks how technology might input to the emotional state of the viewer in real time [61]. As these systems evolve, they will create more personalized narratives that will adapt to viewer choices and their emotional states. In the context of CVR, this aspect could become adaptive storytelling, whereby the emotional tonality of the narrative would adapt to the affective state of the viewer, giving rise to a more immersive and emotionally resonant experience.

The following section looks further into existing perspectives for making sense of contemporary models such as Ryan's narrative multiplicity, Juul's half-real worlds, and works stemming from Dooley and Munt's spatialized screenwriting, Reyes' interaction with interactive fiction workflows, respectively. Although these frameworks offer interesting viewpoints on interactive narratives, they do not cover the complex interrelation of the role of the viewer (the user), the role of the script writer and the role of the technology within CVR environments. While these frameworks provide useful foundations, they also underscore the fact that CVR cannot be fully explained through cinematic theories alone. It equally inherits from the game industry's models of interactivity, where user agency and systemic responsiveness are central to meaning-making. Juul describes games as "half-real worlds," where the interplay between fictional immersion and rule-based systems structures player experience [100]. Murray similarly emphasizes that digital environments are "procedural,"

allowing users to enact stories through exploration and choice rather than passive reception [2]. Ryan extends this with her concept of "narrative multiplicity," showing how interactive systems enable branching outcomes and parallel paths that destabilize singular narrative closure [1]. In CVR, these ludic logics intersect with cinematic aesthetics, producing a hybrid narrative grammar in which coherence, immersion, and agency must be continually balanced. This convergence highlights the necessity for a model like the Collaborative Narrative Model, which theorizes how storytelling emerges from the collaboration of designer, system, and viewer across both cinematic and ludic traditions. After exploring this phenomenon,I go on to unveil the Collaborative Narrative Model; a structured framework for immersive storytelling that responds to the gaps identified.

4.3 Emerging Models for Collaborative Storytelling in CVR

Cinematic virtual reality with disrupting the idea of traditional storytelling, having non-linear temporalities and more collaborative and dynamic procedure of narrative needs a shift in paradigm. The collaborative narrative model is an answer for this paradigm shift which took its ground and has been built on the works of key theorists like, Ryan (2001), Juul (2005), Jenkins (2006), Dooley and Munt (2024), and Reyes (2024), and its goal is to answer critical issues related to viewer agency, having coherence in narrative and the role of technology in between [1, 50, 100, 131, 153, 154, 162, 166].

Given CVR's ability to connect participants in more immersive and interactive environments, the traditional narrative structures, that mostlyfocuses on linear progress leading towards a predetermined conclusion made by the author, is not adequate in CVR, and it's bringing us to the Collaborative Narrative Model. Marie-Laure Ryan's (2001) narrative multiplicity theory helps in this context by characterizing identification in terms of possiblenarrativizations of the action space, where interactive environments support various narrative pathways, contingent on user selections [1]. The Collaborative Narrative Model which goes further is that it offers

modular storytelling structures, in which narrative pieces are flexible enough to take into consideration the adjustments based on the viewers' actions yet they have anchored key moments of emotional and thematic contentthat guide the story and ensure cohesion in the narrative. This meanssuch elements can be approached in non-linear ways. These narrative anchors are fixedpoint that keep a consistent story arc across branches of the narrative that the viewer is exploring. Juul's (2005,2014) theory of half-real worlds gives us further tools when it comes to understandingthe tension between narrative control and player freedom, especially in interactive media such as video games [100, 166].

In CVR, this tension is compounded by the immersive nature of the medium, wherein a viewer's own actions directly affect thetrajectory of the story. The Collaborative Narrative Model adds to Juul's arguments by considering the viewer not simply as aninteractive participant but as co-creator of the narrative. The viewer's choices become part of the story's unfolding — they can affect the plot aswell as how it resonates emotionally at that very moment. These activities are in line with Henry Jenkins (2006) participatory cultureidea of the dissolving line between media producers and consumers [130]. Jenkins' work highlights the idea that digital environments enablea collaborative creation of content, which the Collaborative Narrative Model extends into the CVR space. This places the viewer as an active participant in the construction of narrativethemselves, interacting with the very technological systems that mediate the narrative. Where Jenkins concentrates on the broader scope of media franchises, the Collaborative Narrative Model takes this principle of participatory engagement to CVR,where the viewer's decisions and opinions shape the narrative in real-time. Spatialized screenwriting invirtual environments by Kath Dooley and Alex Munt (2024) They advocate for modular narrative structures for VR due to the 360-degree nature of CVR storytelling, allowing viewers to navigate the story world freely while still achieving thematic and emotional coherence [162]. The transitory nature of space

is indispensable in creating the Collaborative Narrative Model;as viewers can be constantly aligned to specific narrative threads without sacrificing the prominent trajectory of the story being told. Thisis done by using narrative anchors—key moments that provide continuity and coherence between divergent narrative paths.

The CollaborativeNarrative Model emphasizes on Technology mediation — a way of controlling the real time adaptation between the viewer and the story. However, the intentional and supportive role from technology in creating the seamless interactive experience is well-noted in Janet Murray's (2017) workon immersion. Technology in CVR is not just a tool for connecting interaction [53]; it is an agent that reshapes thenarrative in real-time, in accordance with the choices of the viewer, guaranteeing the continuity of the story even in light of the viewer's unique trajectory. Equipped with cutting-edge AI algorithms and real-time rendering capabilities, these systems enable the Collaborative Narrative Model to dynamically adapt the storyline in real-time, reflectingthe preferences and choices of the viewers; a true testament to the future of digital storytelling. Reyes' (2024) later on worked on the model's emphasis oninteractive storytelling [154]. Reyes emphasizes the need for workflows that accommodate viewer choices to enterseamlessly into the narrative. These workflows are used in the Collaborative Narrative Model to make sure that each viewer's actions are reflected in the story so that it becomes a uniqueand personal experience. The model constellates technology as a mediator over that which directs interaction, ensuring that the narrative adjusts in valuable ways through engagement: one componentof interaction incorporates and facilitates the other.

TheCollaborative Narrative Model also tackles a key challenge in Interactive Views in Narrative CVR: finding a balance between viewer agency and narrative coherence. Ryan (2001) notes the dangers of the fragmentation of narrativethat can arise in interactive

contexts [1], in which the user is given too much freedom leading to an incoherent experience. To address this issue, the Collaborative Narrative Model employs narrative anchors, or plot points that will be experienced regardless of which choices the viewertakes. Those anchors allow the story to have a lot of freedom—in how the viewer journeys throughthe narrative, for example—while also enforcing its integrity. Beyond ensuring consistency, theCollaborative Narrative Model also guarantees that viewer decisions carry emotional and thematic weight. One such illusion is what Eric R. Williams' (2021) explains through the need of designing choices that enhanceyour audience's feeling of immersion and connection to the story [168]. The Collaborative Narrative Model weaves this aspect in by making sure that allthe choices the viewer makes leads to a result that matters, story-wise and emotionally. More than enhancing the viewer's engagement, this ensures a thematic consistencyto the overall story, even as it branches in preference of the viewer's actions.

The Collaborative Narrative Model (CNM) provides a systemic lens toaddress the nuanced complexities of narrative-building in CVR. Even more flexible but cohesive structure can be delivered by this model for narrative designers and screenwriters. Modular storytelling, the mediation of technology, and narrative anchors keep the storytelling process coherent, while integrating the viewer's agency into it. The Collaborative Narrative Model establishes a theoretical framework for future CVR technologies, guidedby the promise of AI and real-time rendering advancements, allowing for shared, personalized, and emotionally engaging stories like never before.

4.3.1 Wolves in the Walls (2018) – Imagination Knows the Truth

Wolves inthe Walls (2018), directed by Pete Billington and produced by Fable Studio, illustrates a well-structured instance of modular storytelling and viewer interaction in CVR. It puts the viewerin the role of Lucy's imaginary friend, allowing them to impact the storyline by responding to her. While the project adheres some prıncıples of the Collaborative Narrative

Model, like viewer participationand fluid narrative pathways or flexible narrative line, it is also shows possible problems with viewer engagement, technology adjustment, and scriptwriting challenges. These challenges illuminate not only the limitationsbut also the potential of applying a collaborative approach to CVR storytelling.

The biggest strength ofWolves in the Walls is how it immerses the viewer by placing them right inside the story as an active participant. Lucy's dependence on the viewer tohelp her do simple things, from holding something or checking noises, creates a special relationship where the viewer's actions influence the emotional texture of the story. But this self-same attribute poses a significant challenge,too: the potential for viewer indecision or drop off. For interactive storytelling, the viewer needs to do more than just watch, they needto engage in the unfolding narrative. When a vieweris unclear on when — or how — to interact with the environment, though, it can cause the narrative to stall, to lose its momentum, resulting in degrees of narrative stagnation. Such disengagement is ruinous to the emotional flowof the story. Lucy's emotional responses are meant to mirror her increasingtrust and dependence on the viewer. But, if the viewer fails to return the favor and engage consistently,a rift may develop between Lucy's behavior and the viewer engagement. If, say, the viewer declines to assist Lucy at critical moments, but the story nonetheless compels Lucy to behave as though they're a vital component of her universe, the emotional integrity ofthe experience breaks down. One solution to this problem might be to build in subtle fallback mechanisms in which Lucy's behavior adapts based onthe viewer's inactivity. For instance, if the viewer does not answer her cries for help, Lucy can either become more self-reliant or express subtle frustration, as in any case, the emotional arc is still being forwarded in a natural progression,regardless of whether the viewer engages with her action or not. From a technology implementation perspective, Wolves in the Walls offers pre-scripted conditional responses insteadof AI-driven adaptive behavior in real-time. Althoughthe narrative seems to

change according to what viewers enter, the interaction is probably controlled by a rule-based triggers. While not an uncommonrestriction for the contemporary CVR technology used for consumer-level experiences, this restriction deviates from the more progressive, real-time content reads of participant interaction described in the Collaborative Narrative Model. For instance, the reactions of Lucy are predetermined by certain actions made by the viewer, such as picking up an object from the ground or staringat some of the elements in the environment. Although this creates a plausible illusion of interaction, it doesn't make the most of dynamic, AI-driven storytelling, where the narrativecould be as personalized and unpredictable as life itself. These low levels of background noise can be interrupted by the latency or frame rate drops common with hardware limitations and suddenly break the virtual wallof the experience. If Lucy's responses are delayed because of some technical problems, the viewer's immersion in the story islost, undermining much of the emotional heft of the interaction.

Wolves in the Walls, from a scriptwriting perspective, demonstrates some of the challenges of designing a modular and flexible narrative that will need to adaptto different levels of viewer engagement. Lucy's wordsand emotional arc have to feel true, even if the viewer becomes less engaged with her. This necessitates some very closely-watched branching dialoguetrees that can both remain true to the characters while accommodating disparate degrees of viewer involvement. One of the central challenges is that Lucy's emotional development tracks theviewer's behavior in ways that feel coherent and emotionally satisfying. If the viewer does not take action to help Lucy with one of those tasks, her response should not be as angry and emotional as it would have been if the viewer had committed himself orherself emotionally to the process.

One solution could be writing dialogue trees with emotional scaling,in which Lucy scales her responses to the viewer's behavior. For instance, if the viewer interacts positivelywith her

on a regular basis, Lucy's trust and affection should increase, while limited interaction may make her more withdrawn or jumpy. This modular approach to dialogueensures that the story remains flexible, while still retaining key emotional beats that are integral to the narrative's progression. The trickhere seems to be making sure the thematic and emotional coherence of the story remains intact, whether the viewer chooses to engage fully, somewhat, or not at all with Lucy.

Wolves in the Walls stands as a compellingSelected CVR Films for the potential of viewer interaction and modular storytelling to be incorporated within the framework of a CVR narrative, but it also points to the current inadequacy of the technology and storytelling techniques used to effectively execute collaborative, real-time storytelling. Through reliance on pre-scripted responses and the difficulty associated with maintaining emotional continuity acrossseveral layers of engagement, the fact that aspects of the project do align with the Collaborative Narrative Model does not mean that they have maximized the potential for the content to be adaptable to viewer behavior in more fluid and dynamic ways.

4.3.2 The Invisible Hours (2017) – Truth Hides Between Moments

Developed by Tequila Works, The Invisible Hours (2017) is a multi-threaded, non-linear narrative experience that explores the possibilities of interactivestorytelling in Cinematic Virtual Reality (CVR). Taking place in a mansion where the inventor Nikola Tesla has been killed, the viewer serves as an unseen observer; free to follow different charactersand progressively unearth different facets of the story. Although this approach creates a highly flexible narrative that can beapproached and engaged with viewers more freely and nonlinear, it represents notable challenges for writers, coherence in narrative and the potential for significant viewer confusion. These challenges are an opportunity to consider the inadequacies of current narrativestructures in CVR and how the Collaborative Narrative Model might mitigate these shortcomings. One of The Invisible Hours' best assets is its

non-linear structure, allowing the viewer toexplore the perspectives of each character simultaneously over the real-time of the plot. This structure recalls Mike Figgis' Timecode (2000), which used four simultaneous real-time video frames to present overlapping events [177]. It also echoes Rashomon (1950) in its presentation of a central mystery from multiple subjective perspectives. In The Invisible Hours, if the viewer chooses to follow Gustav Gustav, they may miss the motivations of other characters in parallel rooms; revisiting the scene with new knowledge reveals how fragmented perspectives form narrative gaps. What distinguishes the CVR experience is that this multiplicity is navigated spatially, not through editing or camera work. The viewer becomes an editor, assembling narrative from physical proximity and attention, creating a personalized version of truth through exploration rather than passive observation. Interactive storytelling like this allowsthe viewer to piece together the story for themselves, deciding which characters to follow and when to watch them. Yet, thisvery freedom poses a significant challenge: narrative fragmentation. As the story plays out concurrently from multiple perspectives, a viewerwho follows just one character can easily miss important plot points or critical interactions taking place elsewhere in the mansion. For instance, opting into one character's plotlinemay mean missing a crucial showdown between other characters. This non-linearity does help enrich the narrative it creates, but italso leads to a lot of confusion; there was so much going on in each of the fragmented scenes that it was difficult for viewers to piece together cohesive narratives.

Withouta guiding structure, that prevents viewers from being overloaded with a flood of narrative possibilities, the risk of confusion sets in. Wherestorytelling is traditionally linear in conventional storytelling, The Invisible Hours, has the viewer as the detective putting together the pieces of a narrative, retracing familiar steps but seeing it from all different angles. While this investigative dynamicis a juicy narrative tool, it comes at a serious cognitive cost for the viewer, who must navigate a regular hierarchy of whose story to put first and how best to

contextualize what they have found. navigating without obvious narrative anchors or checkpoints can seem lost to some viewers,who get lost in the overarching plot or in tweaked themes that fall into the cracks—the thread elements that tie the story together.

A potential answer to this problem, in line with the Collaborative Narrative Model, is to provide narrative anchors i.e. pivotal moments or scenes that viewers are subtly inducted towards and experience, no matter whom theychoose to follow. These anchors would act as thematic convergence points that keep the viewer in contact withnecessary narrative beats and less prone to fragmentation. In the case of The Invisible Hours, for instance,the discovery of Tesla's body could be regulated as a narrative anchor that every viewer is obligated to interact with, no matter which character they've chosen to follow. This would retain the non-linear nature of the narrative, while alsoensuring viewers are introduced to the important facets of the plot.

From a scriptwriting perspective, The InvisibleHours is a very complex challenge. The script has to account for all sorts of potential viewing orders, making sure that each character's arc is coherent no matterwhen the viewer sees them. This entails a method of modular scriptwriting, whereby the exposition canplay out in different orders without the emotional or thematic through line of the characters being disturbed. As the viewer follows the detective Gustav, they may see him discover a key clue, perhaps, but they could just as easily follow the other character Aubrey Tesla and those actions may lead to the same plot point being revealedfrom another perspective. The challenge for the scriptwriter is to create dialogue and actions that are natural and emotionally resonant in whatever order they areexperienced.

Beyond ensuring narrativecoherence, scriptwriters must also ensure character consistency across divergent storylines. The character who promises sexual tensionmust make sure to be engaging to set up the chemistry; the character who drives the plot motion and stakes needs to

be interesting enough to feel fully rounded or fleshed out when they drive the plot even if the viewer is only following along with the world. like if the viewer is following Thomas Edison, they have to see his emotional arc—for the majority of the story—develop in a way that seems consistent with the story they're following. But if the viewer follows a different character for most of the story, checking in only briefly with Edison, it's imperative that hisemotional arc still makes sense despite the gaps and lack of detail. The story set itself a critical scriptwriting challenge: balance these multiple narrative pathways without losing character depth, especially in the interactive medium of CVR, where viewer choices determine the flow ofthe narrative.

One more complication is an open exploration format, giving you the option to jump between characters and timelines. This bestows an unprecedented latitude of narrative direction, but may disrupt emotional investment. In traditional storytelling, emotional arcs are built toward climactic moments in the narrative, but in The Invisible Hours, the viewer might accidentally shatter those arcs interrupting them by deciding to follow a different character at a critical moment. For example, if a viewer flips at just the wrong moment from the emotional punch of a dramatic revelation to a less intense storyline involving another character, it can dilute the emotional impact of key moments and create a jarring experience for the viewer. To minimize this, perhaps the Collaborative Narrative Model needs to build emotional anchors, moments where emotional stakes are designed to converge no matter which path the viewer has chosen up to that point. And these emotional anchors would ensurethat viewers feel The Key emotional beats of the series even if they've arrived at the series with a new character ahead of them. A voice over could reward the viewer with revelatory advice on how to interpret or pay attention to this moment, if a major emotional confrontation is taking place between characters, almost in this sense encouraging the viewer to watch and pay attention to that, whether it's visually or narratively directing their attention to the most emotionally significant storyline. By doing

this, they would benefit the emotional flow of the story, but also, the viewer could continue to discover the narrative.

Technological limitations also play a role in shaping the interactive experience in The Invisible Hours. While the story allows for simultaneous unfolding narratives and real-time exploration, the system relies on pre-scripted branching paths rather than the more adaptive, AI-driven responses envisioned by the Collaborative Narrative Model. Each character's actions and dialogue are pre-programmed to occur at specific times, creating a structured but non-interactive system where the viewer's decisions dictate which parts of the narrative they experience, rather than altering the narrative itself. This approach, while effective in creating an illusion of interactivity, lacks the dynamic adaptability that real-time AI systems could offer, where the story evolves in response to broader and more complex viewer inputs.

4.3.3 Spheres (2018) – Cosmos Sings in Circles

Spheres (2018), directed by Eliza McNitt and produced by Darren Aronofsky, takes the viewer on a journey through the cosmos, offering an awe-inspiring exploration of astronomical phenomena such as the birth of stars and the formation of black holes. The experience favors sensory immersion over viewer agency and raises some questions about howengagement, narrative coherence and emotional depth can be balanced in CVR storytelling. Lacking characters or conventional plot, the experience is guided by spatialized sound design, philosophical voiceovers, and awe-inspiring visual spectacle. This places it firmly within the lineage of non-narrative cinema, such as Koyaanisqatsi (1982) and Baraka (1992), which use time-lapse, slow motion, and montage to evoke spiritual and ecological reflection [178]. But while those films rely on observational montage, Spheres makes the viewer a participant in scale and movement. In one episode, the viewer floats alongside colliding black holes, feeling the vibrational shifts of space-time. This transformation from spectatorial awe to embodied metaphysical presence exemplifies how CVR extends non-narrative cinema's contemplative

logic into a fully sensory and participatory medium. The experience depends almost entirely ongaze-based interactivity, with the viewer's eye gaze controlling the direction of visual and audio elements. For instance, in the sequence inwhich a black hole forms, the viewer's gazes can affect how the surrounding matter behaves and how the scene visually progresses. But even this much interaction is a small step compared with the more active role that viewers assumein both Wolves in the Walls or The Invisible Hours, in which your choices affect the outcome of the story. This passivity may lead to reduced emotional involvement from the spectator,who has low agency in the outcome and progression of events.

One of the main criticisms ofSpheres is that, even though, visually, it is resplendent, the lack of agency might lessen the viewer's emotional engagement with the narrative. When the choices of a viewer are responded to and reflected in the narrative, for example, in more interactive experiences, the user is pulled further into the story and the experience becomes morepersonal and engaging. In Spheres, by contrast, the viewer is more observer than participant, an experience that can bealienating. This impressive audio-visual spectacle renders the cosmos, which is its whole audio-visional, but leaves so little room for the audience to participatein its narrative, that it threatens to render the whole experience one of passive spectacle rather than a collaborative co-created entity in the spirit of the model of Collaborative Narrative. At the heart of this Collaborative Narrative Model is the fundamental concept that the viewer, scriptwriter, andtechnology can collaborate to create the unfolding story. In Spheres, on the other hand,the viewer's limited agency diminishes their place in this partnership. There is no room for variation oradaptation from an audience who may not react to the experience in a way that makes narrative sense within the pre-established narrative framework. which is in the contrary to the kind of interactive dynamism that could be expected from a more collectively basednarrative experience. In Spheres this means that the narrative becomes less of a co-creation process with the viewers and more of a journey

described on a script level, making way for automaticpersonalization but minimal impact on the viewer side.

From a script writing perspective, Spheres is a minimalistaffair with regard to dialogue and plot structure. Rather than a traditional plot with character development and dialogue exchanges, the experience is accompanied byvoiceovers and cosmic imagery. The script has thematic weight as it turns to thoughts of existencein the universe. But this nonlinear narrative is more interested in creatingan emotional tone than pushing a character-forward story. This accomplishes a nice aesthetic exploration of the cosmos, but it shows how insufficient this would've been in more complex, interactive CVR narratives, in whichviewer agency is key to advancing the story. One of the aspects of Spheres that is strongest is its use of mediating technology to heighten sensory immersion. Real-time rendering and 3D spatial audio allow the experience to immerse the viewers, the viewer is not only at the center of the cosmic events, theviewer is immersed by the cosmic events. The visuals and sound react to each step, every glance, right where the viewer stands, producing a sense of both dynamism and interactivity, if not precisely theillusion of player agency. Gaze-based interactivity like this enhances emotional involvement in the visual spectacle, because the environment subtly reacts to the viewer's focus. But while this mediation through the senses is impressive, the result is less narrative than stylistic. The technology adds to the emotional intensity of the experience, but the story is not modified according to viewer input.

While they might be challenges, Spheres' visual beauty and emotional depth raise interesting questions about viewer agency and the comparative value of more passive experiences vs. more interactive ones as interactivity becomes more embedded in CVR systems. However, as impressive as the high-tech sensory immersion is, it points to the constraints of scripted storytelling in an interactive medium. A key principle of the Collaborative Narrative Model is

that the viewer is invited as a co-creator of the narrative, but in interactive movies, there are often not much meaningful choices. The experience is still essentially a pre-figured trip, and the viewer's response tracks leads only so far as to speed up or slow down specific visual elements — and not to the story's destination or sense of direction.

A visually striking and emotionally sensitive work, one that masters sensitivityand immersion at the cost of agency and narrative agility. Without much interactivity, the viewer's participationin the construction of the narrative is limited, further minimizing the co-creative potential of the experience. The tech mediation helps amplify the emotional charge of the visuals and audio, but does not reach the sameengagement as even more interactive CVR projects did. Thus, Spheres plays an important role in reflecting on the balance to be held between kinetic and atmospheric immersion and spectator participation in future CVR experiences, especially those that attempt to parallel the model ofco-created narrative put forth by the Collaborative Narrative Model. In the future, if there are more immediate, AI-generated responsive and interactive components of this type of experience, with viewers taking more of a visual choice in the outcome, it could become a more intimate and emotional experience that allows them to walk away with narrative progress — or, in fact, even the experience perhaps becoming a more collaborative.

These Selected CVR Films exemplify the experimentation of interactive storytelling elements within the emerging medium of CinematicVirtual Reality, shedding light on the shifting dynamics of viewer agency, narrative coherence, and technological mediation. None of them reach the goal of the Collaborative Narrative Model as a whole, but they all address the key ideasof it in their own ways. The next part elaborates on the implications of the Collaborative Narrative Model in a more practical manner, from a screenwriterand narrative designer perspective. This section aims to provide a roadmap for navigating the complexities of

immersive storytelling by analyzing key strategies including modular narrative structures and the integration of AI-driven systems to balance both viewer freedomand narrative coherence in CVR environments.

4.4 Implications for Scriptwriters in CVR Storytelling

Cinematic Virtual Reality is challenging the ways in which we used to think about narrative, moving away from a linear model towards a dynamic model, whilerequiring designers to think flexibly. The old model of plot as something fixed and linear, written out ahead of time, simply doesn't apply in thisinteractive medium. CVR narratives, instead,engage the viewer as a participant, making the act of storytelling a collaborative effort. This framework, the Collaborative Narrative Model (CM), is precisely that which accommodates these new demands, allowing writers tomediate between viewer agency, technological mediation, and narrative coherence in ways that respond to the interactive nature of CVR.

A key challenge in CVR storytelling is maintaining the coherenceof a story while allowing for viewers to interact with the experience. Unlike the more traditional linear narrative structures, where the storyprogresses in a specific, predetermined order, CVR opens it up to modular narratives that embrace multiple pathways though a story. The idea of narrative anchors—key emotional or thematic touchstones that hold steady nomatter how far we've all traveled from the original experience—provides a way out of the potential for fragmentation. Unlike a string ofchoices that leads to divergent narrative outcomes, or the free-wheeling flow of modern discovery, the discovery of Tesla's body becomes a fixed chronological point in the narrative of The Invisible Hours, providing a core narrative beat that delivers similar information, no matter where the viewer goes. These structures highlight how modularismcan create plot malleability without sacrificing unity and emotional force.

Besides keepingnarrative cohesions, interactive CVR which can keep the viewer engaged, often

utilizes branches in the story based on viewer's decisions. Jesper Juul's concept ofhalf-real worlds, in which mechanics of play meet narrative, offers a handy framework for understanding how such branching paths may be constructed. In Wolvesin the Walls, Lucy's responses change according to how closely the viewer engages with the narrative line. It constructs branching dialogue trees, so that each time participant try totalk to Lucy it get a different response, all of which ideally tells us more about her and the situation she finds herself in, but doing so through building a character. These adaptive architectures serve to create a more individualized and immersive experience as characters react in real-time to the viewer's choices,facilitating a spectrum of emotional resolutions without losing the overarching narrative arc.

Likewise, modular scene design iscrucial with CVR storytelling. The Invisible Hours tells its story in such a way that the agent follows different characters in differentevents, while the story connects at some points, and all the important plot points are communicated. This highly modular approach to scene construction enables independent work, while still providing a contribution to the overall tapestry of the plotas well. Scenes could be designed to react differently depending on earlier viewer decisions, with differences in perspective orstory despite staying within a consistent thematic sphere. In a non-linear, interactive environment, for example, tools like this are invaluableto allow for the development of flexible, coherent stories.

Perhaps the most important aspect of CVR storytelling is the integration oftechnological mediation. Eye-tracking and motion sensors among other technologies allow users to interact with the narrative environment inreal time. For Spheres, for example, the movement and look of the viewer activate the environment, and createsan immersive experience. While these technologies mainly enable sensory engagement, they indicate the possibility of increasingly sophisticated real-timenarrative tailoring as AI-driven systems advance further. When

interactive triggers are integrated into the storytelling framework—for example, through gaze-based stimuli that induce character reactions—this form of storytelling can venture deeperinto the realm of agency for the viewer through responsive storytelling. The role of the CVR scriptwriter has shifted from plot-builderto narrative architect, the focus moving from building one fixed plot to designing a space where many plots can exist. This shift resonates withIan Bogost's (2007) theory of procedural rhetoric, which explains how the stories emerge at the intersection between player and system [179]. In CVR the script acts less as a blueprint than a set of narrative anchors to makesure that the critical emotional and thematic elements exist as viewers shape their own narrative outcomes through intervention. It is a way to allow for a more flexible experience as a writer while giving the participants the depth and coherence they may need from a story in order to find meaning.

These modular and adaptive storytelling approaches are complemented in practice byseveral techniques. For example, branching dialoguetrees enable characters to respond differently based on how the viewer engages with the choices presented them, creating a deeper sense of immersion and reinforcing munificence of agency in specific scenarios. In addition, the ability to build modular scenes opens up narrative possibilities, scenarios that canwork on their own but which can also tie into the bigger story through emotional or thematic resonance. The incorporation ofenvironmental triggers, including gaze-based interactions, can further augment narrative fluidity through personalized experiences responsive to viewer decision-making.

This Collaborative Narrative Model is also the firststructural yet flexible model for scriptwriters to use as they explore the maze of CVR storytelling. In this model, the task of the screenwriter changes from writing the line courses of the narrative to constructing an open and adaptable framework wherethe agency and the mediation of the technological surface is

incorporated. The model comprises three interdependent components: viewer, writer and technology, all workingseamlessly to form an immersive narrative experience. At its heart, this model iscentered on the viewer's input and its impact on the story as it unfolds. The viewer will be randomly selecting sections of the story — the writer will need to anticipate multiple narrative outcomes, by constructing interchangeable pieces, and narrative anchors — elements that give emotional or thematic beats thatare crucial a viewer has to experience in order for the final piece to work, no matter what path the viewer takes. Technology, in turn, acts as a middleman, changing up thestory as it runs in real-time to make for a more cohesive, responsive narrative experience.

The Collaborative Narrative Model combined with the roles ofthe viewer, writer/narrative designer, and technology represented in the following diagram demonstrates how the three cooperating agents guarantee the narrative maintains coherence while allowing substantial agency on the viewer's part regarding how to shape the events unfolding. By generating a visual flowchart of the mediation process, wepropose a guide for a narrative design that allows for the visualization of how modular storytelling structures and narrative anchors can be synthesized to encapsulate emotionality and thematically consistent content despite differing narrative trajectories.

This image of the model emphasizes the tension between viewer agency, scripted narrativeelements, and real-time technological mediation[9] . Especially as a tool, it will help scriptwriters further understand how to create flexible, adaptive story frameworks that respond to the viewer's decision making without sacrificingnarrative coherence. Using this model,

[9] I drew the Collaborative Narrative Model diagram with Mermaid (a JavaScript based tool for flowcharting that converts plain-text descriptions into flowcharts). I found this tool to be a clear way of seeing the interactive nature of Cinematic Virtual Reality, between the viewer, the narrative designer, the technological mediation and the narrative structure. I selected Mermaid for its flexibility and clarity in embodying branching narrative logic and real-time feedback structures that part of my model.

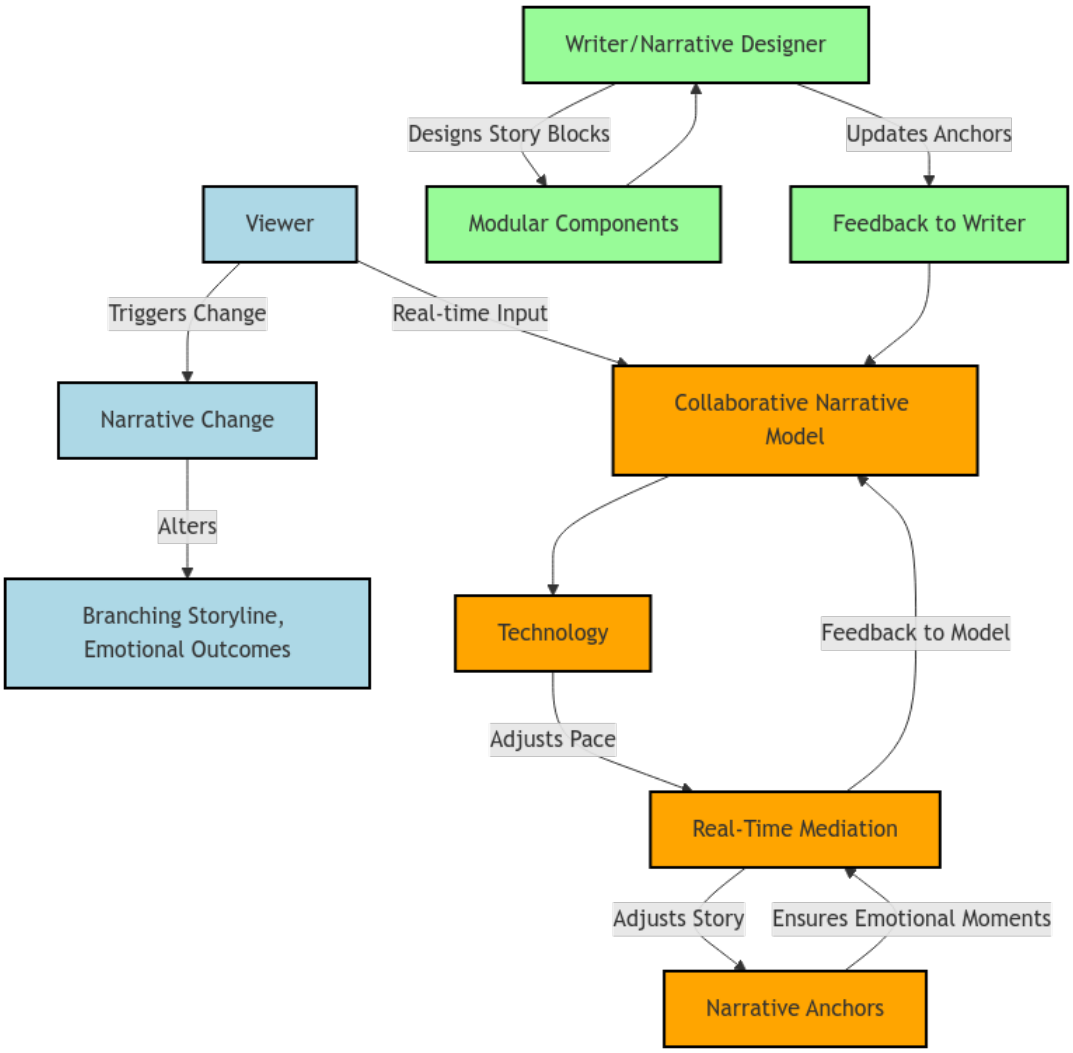

Figure 4.1: Visual Representation of the Collaborative Narrative Model for CVR

scriptwriters will be able to create immersive experiencesin a more effective way, creating different threads but still retaining a narrative theme, arcing emotionallybut being able to target multiple audiences.

Narrative cinema is always adaptation, but adaptation is linear, observer-based: both of these issues of viewer experience undermine cinematic narrative approach to the storytelling of Cinematic VR as it is still in itsearly stages. The Collaborative Narrative Model (C-NM) proposed here addresses these challenges by providing a flexible schemain which viewer agency, modular interactive scriptwriting and technology mediation converge. This approach repositions the job of the scriptwriter from that of a linear storyteller to that of a narrative architect, one who must engineer modular, non-linear architectures that can respondto a viewer's decisions while maintaining conceptual and emotional coherency. The Selected CVR Films demonstrate how Collaborative Narrative Model is able to strike that balance through the layers of design; narrativeanchors, branching dialogues, and modular scene constructs that record coherence while still allowing for viewer interaction. This method lays out a way for ... scriptwriters to navigate the complexities involved in CVR storytelling, allowing them to design dynamic, multi-pathwaynarratives that adjust to the behavior of the audience.

As welook to the future, the possibilities of emerging technologies—real-time rendering, haptic feedback, and AI-infused adaptive systems—have the potential to unlock even more possibilities for storytelling in CVR. As such, the Collaborative Narrative Model is a central framework that will allow CVR storytelling to adapt and shift with these emerging technologies, and ensure that immersive media innovationplaces CVR storytelling at the forefront. As these technologies progresstoward maturity, this model will support increasingly customized, responsive narratives, enhancing the relationship between the viewer, the story, and the technology that intercedes in their experience. The key feature of this collaborative

narrative model – bridging the interactionbetween a theoretical contribution and a practical one – will help to bridge the gap between traditional narrative theory and the interactive possibilities of virtual reality. Scriptwriters can use this tocreate immersive stories that are entertaining but also respond to the fact that the viewer is a co-creator. But as CVR matures, the framework for additional interactivestorytelling will be built, challenging models of what narratives can do.

Chapter 5

CONCLUSION

This concluding chapter moves beyond summarization to articulate how this study contributes to the evolving discourse on Cinematic Virtual Reality (CVR) as a transformative storytelling medium. Rather than retracing the analytical steps of earlier chapters, it re-engages with the core aims and questions through a critical synthesis of the findings. CVR is positioned here not simply as an extension of cinema or virtual reality technologies, but as a narrative paradigm shift that challenges inherited assumptions about authorship, coherence, and viewer agency. The chapter highlights the scholarly gaps that the research sought to address, the original contributions it has made, and the vistas it opens for interdisciplinary inquiry and creative practice. At the heart of the investigation was the question of how CVR reconciles the tension between viewer interactivity and narrative coherence—two qualities often understood as fundamentally at odds. The findings demonstrate that while classical cinema secures coherence through authorial control and linearity, CVR introduces new logics of modularity, participation, and spatial immersion. Rather than undermining narrative integrity, these affordances decentralize authority and invite the viewer into the role of co-narrator, physically situated within the storyworld and capable of navigating both space and narrative flow. This shift necessitates a reconsideration of the frameworks through which authorship, audience engagement, and storytelling design are understood.

The study identified two mechanisms that allow CVR to sustain coherence despite the openness of exploration. Modular narrative structures segment stories into interlinked units that can be encountered in different sequences without eroding the overall meaning. Narrative anchors,

whether thematic, visual, or emotional, recur across divergent pathways to provide unity. These strategies, observed across works such as The Invisible Hours (2017) and Wolves in the Walls (2018), form the scaffolding for what this research terms the Collaborative Narrative Model (CNM).

The CNM conceptualizes CVR storytelling as a fluid exchange among three agents: the narrative designer, who establishes parameters and scaffolds; the viewer, who interprets and navigates; and the technological system, which mediates interactions through adaptive logic, rendering, or algorithmic feedback. This triadic model illustrates how coherence emerges not from the dominance of a single authorial voice, but from the collaborative interplay of design, system, and audience. It provides both a descriptive lens for analyzing existing works and a prescriptive framework for future creators seeking to balance openness with coherence in immersive narrative design. A second central finding concerns CVR's capacity to generate affective experiences that exceed the empathetic strategies of traditional film. Whereas cinema relies on proximity of image and montage rhythms, CVR offers embodied proximity, situating the viewer inside the narrative environment. The shift from observation to inhabitation transforms the viewer's role, enhancing emotional intensity through spatial and sensory immersion. Works such as Clouds Over Sidra (2015) and Notes on Blindness (2016) exemplify this power: the former cultivates intimacy and empathy through spherical environment and spatial sound, while the latter conveys vulnerability through abstract imagery and soundscapes that render blindness as an affective experience. Such works demonstrate that CVR can move beyond novelty to construct socially meaningful narratives addressing themes of displacement, trauma, resilience, and identity.

Finally, the findings underscore that CVR reconfigures authorship. Traditional cinema rests on directorial omniscience, but CVR distributes authorship across creators, viewers, and

technological systems. Building on Barthes' (1967) "death of the author" and Foucault's (1969) concept of the author-function, this study shows how CVR reframes the creator's role: not as an ultimate authority, but as a designer of affordances within which viewers co-author meaning. Through interactive scripts, real-time rendering, and adaptive feedback, authorship becomes a distributed process in which narrative emerges dynamically. In this way, CVR extends not only the grammar of cinema but also the experimental impulses of modernist and postmodernist narrative into a new experiential dimension.

These findings confirm that CVR represents a new paradigm of storytelling: a hybrid form that combines the aesthetic intentionality of cinema, the participatory openness of games, and the immersive presence of virtual reality. The Collaborative Narrative Model crystallizes this transformation, offering a framework through which creators and scholars can engage with immersive narratives as both cultural practice and design methodology. Far from being an antithesis to cinema, CVR emerges as its evolutionary extension, carrying forward its principles while stretching narrative design into new territories of interactivity, embodiment, and collaboration.

5.1 Addressing Gaps in Scholarship

This study aims to fill anumber of key gaps that remain open in the contemporary literature exploring the emerging area of Cinematic Virtual Reality (CVR). While CVR has attracted the attention of mediastudies and human-computer interaction—mostly for its technological and immersive affordances—its narrative and aesthetic dimensions are relatively under-theorized. This highlights a broader trend in the existing literature that often accentuates VR's experiential novelty or potential inexisting fields including gaming and simulation, while failing to interrogate the nuanced narrative mechanics and participatory aesthetics of cinematic VR storytelling. This study providesa novel intervention by illuminating CVR's narrative agency, recodification of authorship, and emotional architecture. In doing, it

provides an important and pragmatic framework for simultaneously academics and producers alikeas they seek to negotiate the shifting affordances of immersive storytelling.

1. Narrative Frameworks for Balancing Interactivity and Coherence: Where CVR scholarship is most sorely lacking is in the formulation of sufficiently robust narrative frameworks that can account for the dual imperatives of the medium, granting agency to viewers while preserving an overarching narrativecoherence. While interactivity often exists to service task completion or goal-driven mechanics in video games, CVR relies onemotional and thematic coherence to bridge audiences across broken narrative paths. This study spotlights this complexity and fill the gap of this literature by introducing the Collaborative Narrative Model(CNM).

2. Emotional Engagement and Aesthetic Innovation in Immersive Narratives: Another gap identified in the literature concerns the emotional and aesthetic potential of CVR as a narrative medium. While discussions around immersion often focus on the technological parameters (e.g., field of view, latency, resolution), there is a scarcity of research on how immersive aesthetics generate emotional resonance and affective empathy through spatial and participatory design. This study takes a distinct approach by emphasizing the aesthetic and sensory storytelling mechanisms that position CVR not just as a medium of presence, but one of emotional transformation. Through the analysis of works such as Clouds Over Sidra (2015), Notes on Blindness (2016), and Dear Angelica (2017), the research shows how spatial storytelling, sound design, symbolic abstraction, and participatory intimacy can construct deeply affective experiences. In these works, CVR enables users to feel-with rather than merely understand, reconfiguring the viewer's emotional position in relation to the story-world. By articulating the design patterns and aesthetic choices that produce such emotional effects, this study enhances the scholarly understanding of embodied empathy and affective aesthetics in immersive environments—an area that remains largely unexplored.

3. Decentralized Authorship and Participatory Collaboration: The study also addresses a critical theoretical gap regarding authorship in participatory media. Conventional narrative models are still on the hook to the figure of the auteuror director, whose creative authority structures the story arc from beginning to end. CVR,by contrast, diffuses authorship among creators, viewers and technological systems. This study reframes such dispersion not as a breakdown of narrative authority, but as an evolution of authorship intoa collaborative and generative formation. Based on Barthes' death of the authorand Foucault's author-function, the research shows how CVR environments—like in Wolves in the Walls (2018) and The Key (2019)—are sites where viewers' decisions, emotional investments, and spatial behaviors are folded into the story's unfolding. Means produces narrative but allows for entry points of meaning throughinteraction and exploration. Reconciling authorship as a design strategy and not an ultimate authority opens up new avenues to analyze narrative responsibility, viewer agency, andcreative authorship in CVR. This conceptual shift is crucial for both scholars and practitionerswho want to interpret or compose narratives in participatory media systems.

4. Interdisciplinary Integration and Theoretical Innovation: While CVR inherently draws from multiple traditions—including cinema, gaming, theater, architecture, and computational design—existing research tends to treat these intersections in isolation. This study offers a cohesive interdisciplinary synthesis that foregrounds the hybrid nature of CVR and mobilizes a range of theoretical perspectives. From philosophy, Deleuze's concept of becoming and Ricoeur's notion of narrative identity offer insights into how viewers dynamically construct meaning and selfhood within CVR spaces. From narrative theory, the study borrows from structuralism and post-structuralism models to reimagine plot, character, and temporality in immersive modalities. From media studies, the work engages with the shifting definitions of spectatorship, embodiment, and the ontology of the image in virtual environments. This interdisciplinary depth allows the study to theorize CVR not as an isolated technological form

but as a cultural and philosophical development—a new interface between narrative tradition and emerging experiential modes. By responding to these inextricably linked gaps, from narrative coherence to aesthetic innovation, from authorship to interdisciplinarity, this research pushes thefield of CVR studies beyond its existing technological and experiential emphases.

5.2 Contributions to Theory and Practice

This research contributes to the emerging field of Cinematic VirtualReality (CVR), offering a continuum of connected theorization, practice, aesthetics and multi-disciplinary discourse. By approaching CVR not simply asa technological platform but instead as a new hybrid form of storytelling that combines the narrative depth of cinema, the interactivity of gaming and the immersion of virtual reality, this research establishes a framework for thinking about and designing immersive narrative experiences. At the heart of these contributions are the development of the Collaborative Narrative Model (CNM), conceptuallydriven through theoretical analysis coupled with the reading of Selected CVR Films. This section describesfour domains of the study's key impacts, including narrative theory, emotional and aesthetic inquiry, practical design strategy, and interdisciplinary integration.

Contributions to Narrative Theory a. The Collaborative Narrative Model (CNM): Offering an innovative lens for understanding the question of how storytelling works within the CVR envelope,the overarching theoretical contribution here lies in the conceptual Collaborative Narrative Model (CNM) proposed and developed through the present research. Narrative theory is mainly influenced by literatureand film, where the story is experienced in a linear fashion defined by the author. On the other hand, CVR refinesthe viewer's position within the narrative world, subjecting it to a new model that reconsiders how creator, viewer, and technological interface operate fluidly with each other. b. Reframing Authorship in CVR: The findings not only offer a structural modelfor understanding these concepts, but also contribute

to ongoing theoretical discourse about authorship and narrative control. Basing the research on concepts of the death of the author by Barthes and the author-function by Foucault, the research proposes a new way to think about authorship in CVR in which it is distributedand collaborative. Selected CVR Films show how creators step away from directorial control, opting instead to construct open-ended frameworks wherethe viewer's movements, presence, and interpretive choices drive the experience.

In addition to undermining traditional power dynamics of cinema as mediated experience linked to spectacle, this reframing positions CVR as a narrative ecosystem, resistant to textual hierarchies, where affective power and empowerment is co-constructed between spectator and screen, between corporeality and embedded diagnostics, with wider theoretical relevance to post-structuralism, affect theory andparticipatory culture.

2. Contributions to Understanding CVR's Emotional and Aesthetic Dimensions a. Emotional Resonance through Embodied Immersion: One of the study's central arguments is that CVR's affective power lies in its ability to create emotionally resonant experiences through embodied immersion. Unlike traditional cinema, which operates through visual empathy and representational distance, CVR envelops the viewer in first-person sensory participation. This proximity to the narrative environment transforms emotional engagement into a felt, spatial experience. b. Aesthetic Innovation and Symbolic Design: Aesthetic deviation is examined as CVR departs from photorealistic agendas and employs symbolic, abstractionist, and non-linear imagery (more of which in the 'VisualStrategies' section). Works such as Dear Angelica (2017) and Spheres (2018) showcase how spatial storytelling can combine hand-drawn illustrations, poetic narration andauditory layering to create surreal, metaphysical experiences. These works show CVR's potential for avoiding the visual realism that often prevails in mainstreamVR, and instead use aesthetic abstraction to extend emotional and

narrative expression.

The research adds to rhetoric's of the medium, where CVRs can beseen as an artistic genre in its own right and reveal the potential for CVRs to engage both mimetically and symbolically, inviting creatives to explore new visual grammar that affirm emotional truth rather than representational fidelity.

3. Practical Contributions for CVR Creators a. Design Insights from Selected CVR Films: By performing a close reading of eleven selected CVR works, the study offers tangible insights forcreators looking to work with narrative design in immersive worlds. These Selected CVR Films serve a dual purpose — they are theoretical examples andpractical Selected CVR Films that illustrate different modes of modular storytelling, environmental interactivity and emotional engagement. Real-time Ecological Feedback Loop in Gondwana (2022)exemplifies how this innovative dataset can improve spatial storytelling and enhance environmental consciousness. The Book of Distance (2020) demonstrates the emotional depth of autobiographical narratives made possible by symbolicgesture-based interactivity. The Invisible Hours (2017) eschews linear time for a rolling narrative that models multi-threaded character perspectives within the contextof a nonlinear mystery, providing a playbook for ensemble storytelling in VR. These analyses offer creators methodologicaltemplates that support the integration of interactive and immersive design of narrative depth.

4. Advancing Interdisciplinary Discourse Finally, this study adds to a cross-disciplinary rethinking of storytelling through the lenses of narrative theory, media studies, digital aesthetics, andphilosophy. The theoretical framework of the study—based on Deleuze's concept of becoming, Ricoeur's theory of narrative identity, and Barthes' critique of authorship—shows howimmersive storytelling can articulate experiences of self, otherness,

memory and temporality in mediated space. Moving beyond the analysis of CVR as a form of media and toward the exploration of CVR as a site of philosophical engagement, the research produces a discursive ground on which the analysis of immersive media can take place andcontributes a more richly humanities-driven approach to its analysis. This interdisciplinary placement opens conversations across film studies, philosophy, communication theory,and human-computer interaction.

5.3 Directions for Future Research

As this study explored the evolving landscape of Cinematic Virtual Reality (CVR), it became clear that we are only scratching the surface of what this hybrid medium can offer. CVR continues to grow—technologically, artistically, and conceptually—which means many new questions and creative possibilities are still ahead. While this research introduced some ideas and models, it also highlighted just how much more there is to explore.

Expanding the Range of Stories and Voices; One of the most important next steps is to broaden the kinds of CVR experiences we study. So far, much of the work in the field—this study included—has focused on experiences created mainly in the West. There's a huge opportunity to learn from immersive works coming out of other parts of the world. What happens to immersive storytelling when it draws from different cultural traditions, narrative styles, or ways of thinking about time and space? There's also room to look beyond classical storytelling formats. Future research might turn toward experimental or abstract CVR experiences—those that don't follow clear plots, but instead create meaning through atmosphere, movement, or emotional tone. As CVR projects grow longer or become episodic, it's also worth thinking about how this extended immersion affects the audience's attention, memory, or emotional experience over time.

New Technologies, New Narratives; Another exciting path for future research involves

exploring the use of artificial intelligence in CVR. Imagine stories that shift and respond in real-time, based on where you look, how you feel, or what you do. That opens up a lot of creative possibilities, but it also raises questions: Who controls the story? How do we protect privacy when user data is involved? These questions could help develop new ethical standards for storytelling in immersive spaces.

Understanding the Audience; This study was more theoretical, but future researchers might want to focus on the audience—what they feel, think, and experience inside CVR. There's so much to learn about how people respond emotionally, physically, and cognitively to immersive stories. Do certain narrative techniques foster empathy more than others? How do people make choices when they're inside the story world, and what do those choices say about their understanding or engagement?

Beyond Entertainment; CVR isn't just about telling stories for fun—it's already being used in education, therapy, and journalism. Future work could explore how immersive experiences help people learn, heal, or understand others' lives more deeply. For example, can CVR make history more vivid for students? Can it help people cope with anxiety or PTSD? Can it bring distant social or environmental issues closer to home through direct, embodied experience?

Making It More Accessible; A lot of people still don't have access to high-end VR gear or opportunities to create in this space. That's something future research and development should take seriously. How can we design immersive experiences that work on simpler, cheaper devices? How can we support independent creators, especially those from marginalized communities, to tell their stories in VR? Thinking about inclusion not just in the content but in the tools and platforms we build is a key part of where CVR needs to go.

Looking at the Bigger Picture; Finally, it would be fascinating to study how immersive stories

affect us over time. What sticks with people after they leave a VR experience? Does it change how they see the world—or themselves? Do immersive stories help build empathy, understanding, or even inspire action? These kinds of long-term questions could reveal CVR's deeper cultural and psychological impact.

5.4 Final Reflections on CVR's Potential

Engaging with Cinematic Virtual Reality (CVR) through the lens of narrative theory, technological affordances, and emotional design has not only shaped this research—it has profoundly shaped me as a scholar and creator. What started out as academic inquiry into a new medium has become a very personal journey considering how we tell stories, connect with others, and make sense of our existence in the world through immersive engagement. I now consider CVR to be not just a mix of cinema, videogames, and virtual environments, but rather a unique narrative tool, a tool that calls for a new conceptual vocabulary. It reconfigures narrative not through stylistic innovation alone, but through a fundamental ontological shift: from the external observation of a character's journey to the embodied experience of that journey. In CVR, we do not simply look at a story; we become implicated within its spatial and affective architecture.

This shift—from a practice of looking at a body to one of being one—is more than a change in viewpoint. It marks a transformation in the viewer's mode of presence, one aligned with phenomenological theories of embodiment (Merleau-Ponty, 1945) and affect studies (Massumi, 2002), where perception, emotion, and physical orientation coalesce into a singular experiential field. The viewer's body becomes a site of storytelling, and the narrative emerges as much through interaction and movement as it does through plot or dialogue. This embodied configuration opens up new possibilities for emotional resonance, but it also complicates traditional notions of authorship, authority, and aesthetic form. It is not just that we see differently—we are differently. And yet, despite this radical potential, I also recognize CVR's

limits. Technologically, the medium remains gated by expensive hardware, high-performance computing, and user isolation. The immersive experience, often lauded for its presence, also excludes: it is solitary, headset-bound, and materially inaccessible to many. CVR lacks the communal sociality of cinema-going, where the audience becomes part of the experience. Moreover, its stories—while affectively rich—are often short, thematically limited, or structurally simple, reflecting the medium's nascent stage. Unlike literature or mature cinema, which sustain complex characters and layered narratives over extended durations, most CVR works remain experimental vignettes rather than full narrative worlds.

For this reason, I resist framing CVR as a direct extension or replacement of cinema. Instead, I see it as a new narrative instrument—akin to the rise of web-based interactive comics, motion poems, or kinetic text installations. It offers different affordances, and thus, invites different kinds of storytelling. The comparison to cinema may be tempting due to the shared visual language, but CVR's spatiality, interactivity, and sensory immersion demand a departure from cinematic grammar. While CVR can draw from film history, its most promising future lies in developing its own aesthetics and methodologies—ones that embrace the agency of the viewer and the dynamism of embodied narrative.

For me, the most valuable takeaway from this research is that CVR is not just about telling stories differently—it is about changing the existential conditions under which stories are received, felt, and understood. It asks creators to move beyond storytelling as transmission, toward storytelling as co-presence and co-authorship. The ethical, emotional, and philosophical implications of this shift are profound. As we explore these immersive spaces, we must also interrogate who gets to participate, whose stories get told, and what forms of presence are privileged or excluded.

Looking ahead, I do not see this study as a conclusion, but as a contribution to an ongoing and unfinished conversation. My hope is that the questions raised here—about embodiment, interactivity, narrative logic, and creative ethics—will invite other researchers, artists, and technologists to continue pushing the boundaries of what CVR can be. Not only as a storytelling medium, but as a platform for cultural memory, empathy, and creative speculation. In the end, what CVR offers is not a perfected model, but a living, breathing invitation—to step inside, to feel, to choose, and to co-create. And that, perhaps more than anything, is the future of immersive storytelling.

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[176] S. Weaving, “Evoke, don’t show: Narration in cinematic virtual reality and the making of entangled,” vol. 11, no. 1, pp. 147–162, 2021.

[177] M. Figgis, “Timecode,” Film, 2000, director. Screen Gems.

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APPENDICES

Appendix A: Gondwana (2022)

Creators and Production Team: Gondwana was directed by Ben Joseph Andrews and Emma Roberts, with technical direction by Lachlan Sleight. The project was produced by the Australian company Pernickety Split Pty Ltd, a studio known for experimental interactive works focused on climate and landscape. The VR simulation was developed using the Unity engine and created in collaboration with a diverse group of artists, coders, climate scientists,

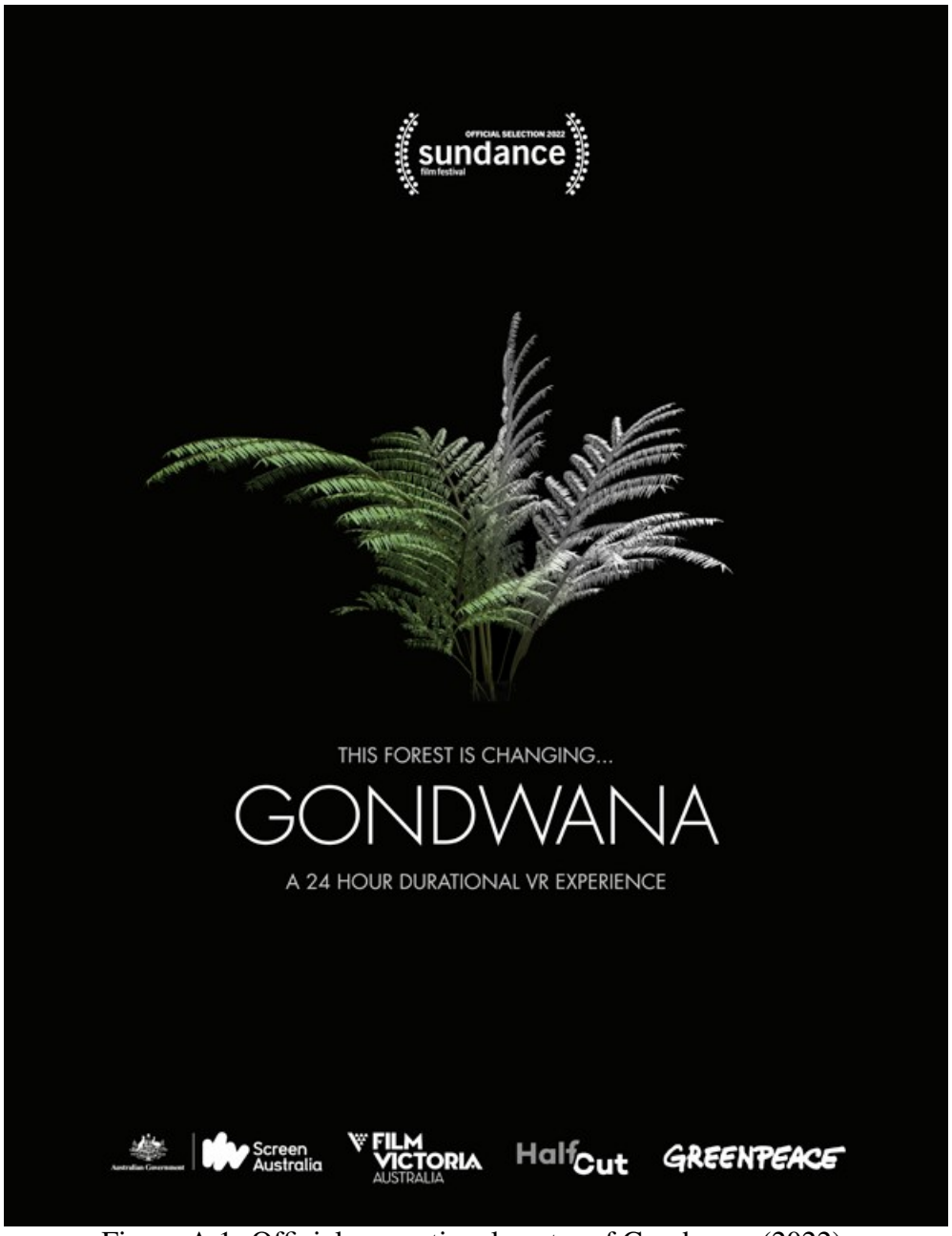

Figure A.1: Official promotional poster of Gondwana (2022).

and Indigenous custodians.

Country of Origin: Australia

Duration and Format: The work simulates a continuous 24-hour real-time experience representing 100 years of ecological change in the Daintree Rainforest (1990–2090). Each 14-minute segment of the simulation corresponds to one year in this virtual timeline. Public installations are typically configured for 15-minute interactive sessions (one simulated year), optimized for gallery and festival formats that can accommodate up to six users simultaneously. The entire ecosystem resets after each 24-hour cycle.

Synopsis: Gondwana is a real-time VR simulation of Australia's Daintree Rainforest that compresses a century of climate data into a single 24-hour loop. Users explore the rainforest in first-person perspective, observing as ecological conditions shift due to climate pressures—seen in gradual bleaching, biodiversity loss, and altered soundscapes. Participants are given limited interactive agency: they can release pulses of energy ("fireflies") to support parts of the ecosystem, with their actions potentially improving local biodiversity outcomes by up to 12% in a session. Each night, the entire system resets—emphasizing both the repeatability and fragility of intervention[10] [11] . While the official structure offers a scientific and systems-driven experience, Gondwana transcends mere simulation. It constructs a meditative narrative space where time, affect, and ecological vulnerability converge. Users are neither protagonists nor observers alone; they are ecological witnesses embedded in a system that responds dynamically to minimal interventions. The absence of verbal narration and the

[10] Skarredghost. (2022, January 26). Exploring the Daintree Rainforest in VR with Gondwana. Retrieved from https://skarredghost.com/gondwana

[11] Gondwana VR. (n.d.). About the project. Retrieved July 24, 2025, from https://gondwanavr.com NVIDIA. (2022). Showcase: Gondwana VR environment built in Unity. Retrieved from https://developer.nvidia.com

reliance on evolving light, sound, and weather situates the user in a form of non-verbal storytelling—what might be termed "durational ecological witnessing." Technical Design and System Architecture: Gondwana was developed in Unity and incorporates approximately 40,000–50,000 unique plant assets spread across a 30-acre virtual terrain. The environment contains over 25 million polygons, managed through advanced mesh optimization techniques to ensure real-time stereo performance on high-end VR systems[12] . Procedural algorithms dynamically simulate the evolution of weather, light cycles, animal presence, and flora regeneration based on scientific climate models projecting change from 1990 to 2090. Each user's session is unique due to this constantly shifting simulation logic, which blends scientific data and artistic abstraction to produce emergent storytelling. The immersive soundscape features over 40 hours of ambient recordings—including birdsong, rainfall, insect movement, and wind—which evolve in response to ecosystem conditions. This sonic design functions not just as environmental texture but as an emotional guide, helping users sense shifts in biodiversity and forest health.

Interactivity and Hardware Requirements: User navigation is facilitated through VR headsets (typically HTC Vive Pro or Valve Index) and either handheld controllers or seated swivel-chair configurations. Interaction involves releasing "firefly" pulses at trees and plants, which can help preserve sections of the forest. A minimal user interface—a virtual wristwatch—displays live data on canopy density, species diversity, and ecosystem health. The experience is optimized for high-performance VR-ready PCs equipped with at least an NVIDIA RTX 3060 GPU (or equivalent), Intel i5 or AMD Ryzen 5 CPUs, and 16 GB of RAM. These specifications support the real-time rendering of the vast terrain and high-density asset environment. Development was grounded in extensive field research: Andrews, Roberts,

[12] Voices of VR. (2022). Episode #1123: Gondwana – A real-time climate simulation in VR. Retrieved from https://voicesofvr.com/1123-gondwana

and Sleight undertook a 5–6 month off-grid residency in the Daintree Rainforest to gather first-hand ecological, spatial, and acoustic data. The team collaborated closely with climate scientists and the Kuku Yalanji traditional owners of the land. This resulted in a hybrid simulation that honors both scientific modeling and Indigenous ecological knowledge[13] . The collaboration between environmental science, cultural stewardship, and immersive design positions Gondwana as a model for interdisciplinary and decolonial approaches to narrative construction in virtual reality.

Festivals, Awards, and Critical Reception: Gondwana premiered at the Sundance Film Festival in 2022 (New Frontier) and was subsequently screened at SXSW, Melbourne International Film Festival (MIFF), Sheffield Doc/Fest, ACMI, and CPH:DOX, among others. It received the Best Interactive/Immersive Documentary award at AIDC 2022 and has been widely praised for its poetic form and climate urgency. Critics have described it as a "jaw-dropping feat" and one of the most inventive uses of durational simulation in the VR medium[14] .

Access and Distribution: The work has been released exclusively as a location-based installation at museums, art festivals, and science centers. A livestream version of the 24-hour simulation has occasionally been made available during festival runs, but there is no plan for a consumer home release.

[13] Gondwana VR. (n.d.). About the project. Retrieved July 24, 2025, from https://gondwanavr.com NVIDIA. (2022). Showcase: Gondwana VR environment built in Unity. Retrieved from https://developer.nvidia.com

[14] Voices of VR. (2022). Episode #1123: Gondwana – A real-time climate simulation in VR. Retrieved from https://voicesofvr.com/1123-gondwana

Appendix B: The Book of Distance (2020)

Creators and Production Team: The Book of Distance was written and directed by Canadian artist and filmmaker Randall Okita, produced by David Oppenheim, with Anita Lee serving as executive producer. The production was undertaken by the National Film Board of Canada (NFB), specifically through its Ontario Studio[15] . The score was composed by Joseph Murray

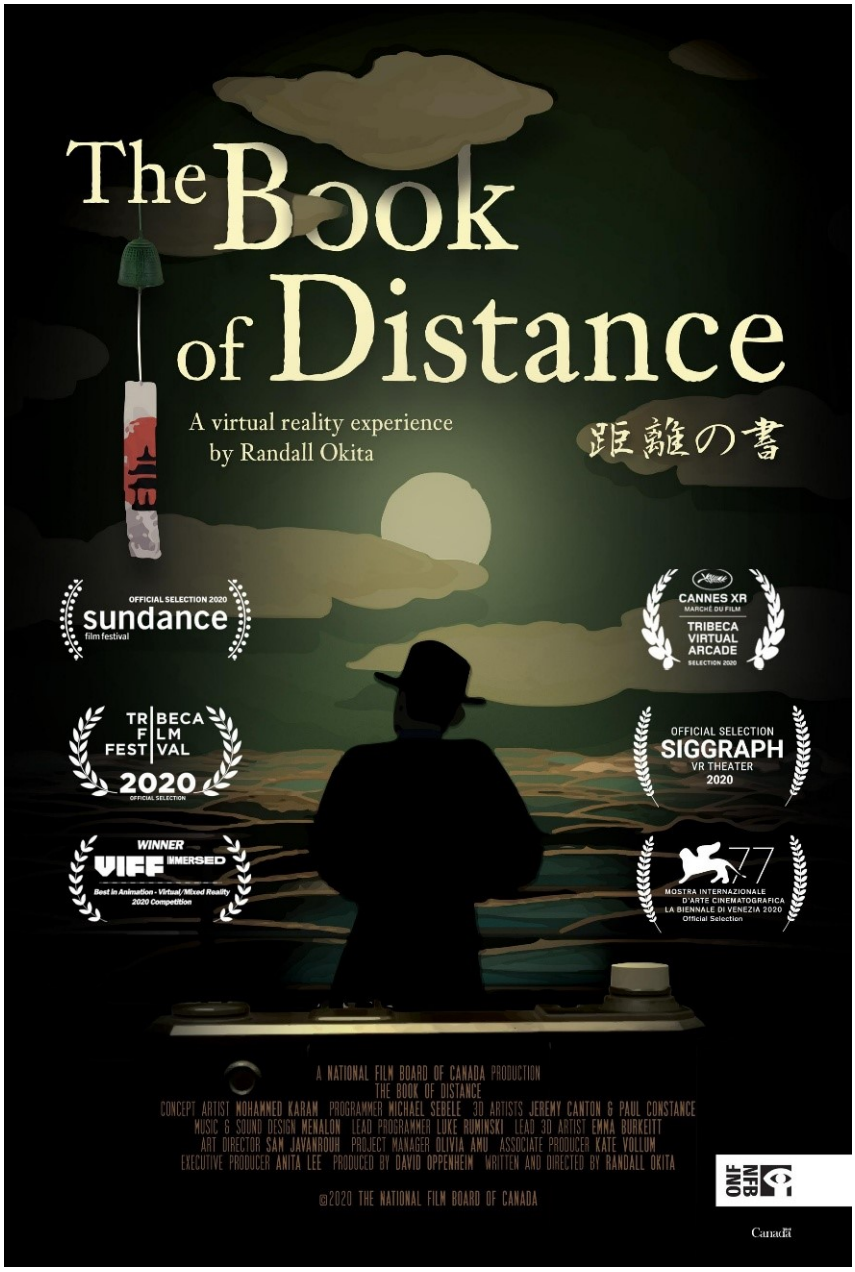

Figure B.1: Official promotional poster of The Book of Distance (2020)

[15] Voices of VR. (2020). Episode #904: Randall Okita on The Book of Distance. Retrieved from https://voicesofvr.com/904-the-book-of-distance

and Lodewijk Vos. The visual animation and digital environments were created by a team including Moysis Antoniou, Venkata Prashanth Bhogaraju, Kerie Green, and Liam McLaughlin.

Country of Origin: Canada

Duration and Format: The runtime of The Book of Distance is approximately 25 to 30 minutes. It is a room-scale VR documentary, designed for interactive viewing in physical space. Users engage with the work by moving within their VR boundary to interact with objects and scenes, guided by a spatially curated, emotionally resonant narrative.

Synopsis: The Book of Distance is an autobiographical VR experience in which director Randall Okita invites the viewer to accompany him on a reflective journey through his family's history. The story follows Okita's grandfather, Yonezo Okita, who emigrated from Hiroshima to Canada in 1935 and later endured the internment of Japanese Canadians during the Second World War. The experience unfolds across a series of theatrical sets—handcrafted in appearance and inspired by Japanese woodblock print aesthetics—and includes interactive artifacts such as photographs, letters, documents, and sculptures[16] . As viewers walk through memory-spaces, they are invited to participate in small actions—turning pages, folding paper, igniting lights—that symbolically echo the fragmentary process of remembering. According to scholar Jonathan Cohn, the experience "emphasizes the difference between the virtual and the real... and inspires reflection on its absence," highlighting the evocative tension between presence and loss within digital memorialization[17]

[16] National Film Board of Canada. (2020). The Book of Distance. Retrieved from https://www.nfb.ca/interactive/book-of-distance

[17] DOCALOGUE. (2021). Reflection on The Book of Distance. Retrieved July 24, 2025, from https://www.docalogue.com/the-book-of-distance

Technological Design and Platform Deployment: The Book of Distance was built in Unity based on its asset-driven performance, room-scale tracking, and interactive layer design. The experience integrates 3D animation, mechanical set-inspired staging, and sculptural sequences to blur the lines between cinematic composition and theatrical mise-en-scène. Users navigate through physical movement within their VR boundaries, triggering subtle changes in the environment. The work was designed with limited agency—no branching paths or user-driven outcomes—emphasizing instead the emotional intimacy of authored narrative spatialized through VR. It is available on all PC VR platforms including SteamVR (HTC Vive and Valve Index), Oculus Rift, and Viveport[18] Minimum System Requirements (Steam):

- OS: Windows 10 (64-bit)
- Processor: Intel Core i5-4590 or equivalent
- RAM: 16 GB
- GPU: NVIDIA GeForce GTX 1070 or higher

Awards, Festivals, and Recognition: The Book of Distance debuted at the Sundance Film Festival (New Frontier) on January 23, 2020[19] . It was later presented at a variety of major festivals and industry showcases, including Tribeca, Venice VR Expanded, Cannes XR, SIGGRAPH, Hot Docs, Bucheon, VIFF, and others. The work was awarded several prizes:

- Webby Award Winner – Best Narrative Experience 2021
- Winner – Best Work, Japan Prize (Digital Media Division, 2020)
- Winner – VR Story Award Beyond the Frame Festival (2021)

[18] ProVideo Coalition. (2020). Sundance New Frontier: The Book of Distance. Retrieved from https://www.provideocoalition.com/book-of-distance-sundance.

[19] Steam. (2020). The Book of Distance – VR experience. Retrieved from https://store.steampowered.com/app/1249060

- Winner – Best Storytelling XR Awards (2020)
- Winner – Golden Fireball Award Kaohsiung Film Festival – VR (2020)
- Sundance Film Festival – Official Selection, New Frontier (2020)
- Tribeca Film Festival – Official Selection, Tribeca Immersive (2020)
- Cannes XR – Tribeca Virtual Arcade @ Cannes XR (2020)
- Venice International Film Festival – Venice VR Expanded, Best of VR (2020)
- Vancouver International Film Festival – Official Selection, VIFF Immersed
- Bucheon International Fantastic Film Festival (BIFAN) – Beyond Reality Exhibition (2020)
- International Documentary Film Festival Amsterdam – Official Selection, IDFA DocLab Spotlight (2020)

Access and Distribution: The Book of Distance is free and available now on PC VR including Steam, Oculus Store (Rift) and Viveport. Being readily available and having low system requirements have enabled a large user base at homes and institutions[20] . It is also stored and marketed by the National Film Board of Canada, making it accessible for use and repurposing as part of educational, artistic or cultural programming.

[20] UploadVR. (2020). The Book of Distance: One of VR's Most Poignant Stories. Retrieved from https://uploadvr.com/book-of-distance-review

Appendix C: Notes on Blindness: Into Darkness (2016)

Creators and Production Team: Notes on Blindness: Into Darkness was directed by Arnaud Colinart, Amaury La Burthe, Peter Middleton and James Spinney. The project was made with

Figure C.1: Official promotional poster of Notes on Blindness: Into Darkness (2016)

the participation of ARTE France[21] , , Archer's Mark (UK) and audio specialists Novelab (France) and was supported by the institutions BBC Storyville, CNC and WithIN. The main contributors were Béatrice Lartigue (art direction), Fabien Togman (sound sculpture) and Arnaud Desjardins (creative coding), who developed the work's minimalistic and yet very sensorial design language[22]

Country of Origin and Language

United Kingdom / France

Language: English (narration based on original audio diaries by John Hull)

Duration and Format: The VR experience runs approximately 20 to 30 minutes, divided into six thematic chapters: How does it feel to be blind? Feeling the Wind, On Panic, Cognition is Beautiful, The Choir, and Epilogue. The experience is classified as a 360-degree animated VR documentary with light interactivity, blending immersive audio with abstract visual environments.

Synopsis: Notes on Blindness: Into Darkness adapts the audio diaries of theologian John Hull, who began recording his reflections in 1983 as he gradually lost his sight. The VR experience invites users to enter Hull's world by experiencing blindness not through absence, but through transformation[23] Each chapter offers a distinct emotional and sensory theme, using binaural

[21] ARTE. (2016). Notes on Blindness: Into Darkness [VR Experience]. https://www.arte.tv/sites/en/notesonblindness

[22] EEL VR Storytelling Research. (2016). Case study: Notes on Blindness. https://eel-stories.org/notes-on-blindness

[23] Senses of Cinema. (2019). Seeing with your ears: Sound and presence in Notes on Blindness. https://www.sensesofcinema.com

audio recordings and visually abstract spaces to evoke Hull's shifting perception of the world. Rather than visualizing blindness through darkness or deprivation, the experience constructs a new aesthetic reality built from ephemeral elements: sound-activated outlines, flickering silhouettes, the invisible presence of weather and music. These choices enable the viewer to engage in a form of perceptual empathy—"seeing with one's ears"—while navigating Hull's internal journey [24] . The narrative is immersive yet controlled, with limited interactivity that gently guides the user through Hull's metaphysical and affective states.

Technical Design and Sensory Architecture: Notes on Blindness was developed by Novelab in collaboration with Ex Nihilo, using 360° CGI animation and layered spatial sound design. Though primarily presented as a 360-degree video experience, it incorporates subtle interactivity: users trigger sound cues and visual changes by moving their heads, gazing, or walking slowly through scenes. This design is not gamified, but contemplative—allowing narrative beats to emerge through acoustic orientation. The visuals consist of dark, sparsely detailed environments punctuated by bright outlines that echo echolocation and audio-mapping. Chapters contain slow-moving animations: rainfall delineates invisible walls, wind renders space visible, and music—especially in "The Choir" segment—replaces sight as the primary mode of environmental presence. Central to the experience is the use of binaural audio, spatialized to emulate Hull's own developing strategies for orientation and perception.

Hardware and Platform Requirements: Notes on Blindness is compatible with a range of VR headsets including Oculus Quest, Oculus Rift, Google Cardboard, Gear VR, and SteamVR-supported systems (e.g., HTC Vive). On Quest, the file requires approximately 724 MB of installation space, with a total download size of 2 GB. For Rift-based systems, a GTX 970 or higher GPU and a Windows 10 PC with standard VR specifications is recommended.

[24] Novelab. (2016). Notes on Blindness. https://www.novelab.net/notes-on-blindness

Festival Screenings and Awards: Notes on Blindness: Into Darkness earned critical praise throughout its international festival tour. It premiered at Tribeca film festival and received the Tribeca Storyscapes Award (2016). It also clinched the Alternate Realities Award at the Sheffield Doc/Fest (2016) and was recognized further with a Peabody Legacy Award for Digital and Interactive Storytelling (2021)[25] . Its distinctive method of narration — with a focus on affective immersion as non-visual design — garnered the attention of critics and scholars alike. It was praised in VR Voice for its narrative, visual and audio, gave the game 4/5 and described the "Choir" chapter as truly transcendent.

Access and Distribution: The virtual reality experience can be watched on various platforms, including the ARTE VR app, Oculus Store, SteamVR, and YouTube 360. It's also part of a larger multimedia project that includes the feature-length documentary Notes on Blindness (2016) and a 2014 New York Times Op-Doc short. Combined, all these versions extend the reach of the story and provide multiple ways of participation.

[25] Voices of VR. (2016). Episode #435: John Hull, sensory memory, and blind presence in VR. https://voicesofvr.com/435-notes-on-blindness

Appendix D: Clouds Over Sidra (2015)

Creators and Production Context: Clouds Over Sidra (2015) was directed by Gabo Arora and Chris Milk, with Barry Pousman serving as co-director. Produced by Samantha Storr, Socrates Kakoulides, Christopher Fabian, and Katherine Keating under the UNVR[26] . The project was a collaboration between the UN Millennium Campaign, UNICEF Jordan, the VR production company VRSE.works (now Within), and Samsung/Oculus as technical partners. The project was designed as a proof-of-concept for how immersive media could amplify humanitarian messaging and drive real-world action[27] . It marked the first VR documentary commissioned by the United Nations, signaling the emergence of "virtual reality for social good" as both a medium and movement[28] .

Figure D.1: Official poster of Clouds Over Sidra (2015)

[26] United Nations Virtual Reality

[27] MIT Open Documentary Lab. (2016). Docubase: Clouds Over Sidra. https://docubase.mit.edu/project/clouds-over-sidra

[28] OpenEdition Journals. (2020). Immersive journalism and the limits of empathy: Analyzing Clouds Over Sidra. https://journals.openedition.org

Country of Origin and Language:

- Origin: United States (with production and field shooting in Jordan)
- Language: English (narration by Sidra, a 12-year-old Syrian refugee living in Za'atari camp)

Duration and Format: Clouds Over Sidra is a short-form immersive documentary with a runtime of approximately 8 minutes. It was shot in stereoscopic 360° video and designed for VR headsets, combining cinematic immersion with narrative intimacy. It is primarily a passive experience, allowing for exploratory gaze but no physical interaction.

Synopsis: The documentary invites viewers into the life of Sidra, a young Syrian girl displaced by war and residing in the Za'atari refugee camp in Jordan. Through Sidra's first-person narration, the audience follows her daily routines—waking up in her tent, attending school, playing football, visiting the communal bakery, and dreaming about her future. Rather than focusing on spectacle or crisis, the film presents a calm, human-scale view of life in the camp, enabling empathy through continuity and quiet presence. Clouds Over Sidra creates empathy by literally comparing the viewer to the person being viewed. It's all about eradicating the space between subject and audience. The angle, coupled with the lack of editorial narration or voice-of-God framing, allows the experience to just take over. The spectator is not a voyeur, nor the omniscient observer; he or she is a passive observer within that space.

Technological Design and Delivery: The film has been shot with a high-resolution stereoscopic 360 video rig, with a light stage, which avoids the appearance of the crew, so that the camera is neutral. In post-production, we created a way to cut between multiple camera angles in the edit

pipeline and also encoded the footage to look clean and crisp in VR spaces[29] . The strength of the setup is the ease of use, quick deployment and broad availability on mobile VR headsets. These etach releases came on the Samsung Gear VR (available on the VRSE channel), Oculus Rift, Google Cardboard, iTunes, and the Within app. A cut was also embedded in the United Nations Virtual Reality (UNVR) system combined with "take action" cues which linked and directed to donate or support refugee-related campaigns after watching.

Festival Screenings and Impact: The film premiered at the World Economic Forum in Davos (January 2015), signaling its strategic positioning as both art and advocacy. It won the Interactive Award at Sheffield Doc/Fest (2015) and was screened at major venues including Sundance, Tribeca, SXSW, Museum of the Moving Image, and UN forums[30] . Its measurable impact was significant: UNICEF reported that donation rates doubled when the VR film was used as part of fundraising campaigns. Beyond institutional contexts, it became a key reference in scholarly and industry conversations about VR's potential to generate affective response and ethical engagement. Access and Distribution: Clouds Over Sidra is available for free via the Within app (on Android, iOS, Oculus), SteamVR, and YouTube 360[31] . It also formed part of early UNVR campaigns, which embedded call-to-action functions in the viewing platform to encourage direct support for humanitarian efforts.

[29] TechCrunch. (2015). VR film Clouds Over Sidra used to raise empathy at Davos. https://techcrunch.com/clouds-over-sidra

[30] The Verge. (2015). Clouds Over Sidra: The future of empathy-driven media. https://www.theverge.com/clouds-over-sidra

[31] YouTube. (2015). Clouds Over Sidra [Official VR Video]. https://www.youtube.com/watch?v=G-xVZlrTjKk

Appendix E: The Key (2019)

Creators and Production Context: The Key (2019) is a narrative-driven, room-scale virtual reality experience directed and written by Céline Tricart, produced by Gloria Bradbury under Lucid Dreams Productions[32] .Narrated by actress Alia Shawkat, the project was developed in

Figure E.1: Official promotional poster of The Key (2019)

[32] Tricart, C. (2019). Director Statement: The Key. https://www.luciddreamsprod.com

collaboration with Oculus VR for Good and the non-profit Friends of Refugees[33] . Art and animation contributions came from 5518 Studios, with key artistic roles filled by Steve Teeple (character design), Claire Aran (environment design), and Flight School Studio (sound design). Tricart, a French-born filmmaker working in the U.S., is known for her strong advocacy of empathy-driven immersive storytelling.

Country of Origin and Language

- Origin: United States
- Language: English (narration by Alia Shawkat)

Runtime and Format: The Key is a 15 minute experience for room scale VR headsets with 6DoF. It's the perfect combo of physical theater (real world prologue, atmospheric set up) and symbolic VR narrative in a self-contained headset.

Synopsis: The experience starts as a theater-style prologue: A small, blocklike installation offers a fog-filled intro with some nuanced sound design, plus a live performer who hands you a VR rig. When audiences enter the virtual space, they find themselves in the persona of a character, Anna, who is traversing an otherworldly landscape that serves as metaphorical memory, trauma, emotional dislocation. It is a story of the subterranean, pieces presented in interaction – catching light orbs, enduring storm, unlocking a concealed door with a charged key – and the hidden truth: Anna is a refugee and the character represents a symbolic reimagining of her time spent displaced and bereaved.

Technological and Interaction Design: The experience was created in Unity and it is tailored

[33] ARTE. (2019). The Key – Tribeca Storyscapes Winner. https://www.arte.tv

for mobile VR, with a focus on platforms such as Oculus Quest and Rift[34] . The game features a stylized watercolor aesthetic with low-polygon and contrast, the latter often due to the combination of foreground and background color. Interactions and movements make sense and are as simple as gabs, touches, and releasing. This stripped down interaction model serves to never disrupt the emotional flow of the experience, a philosophy that is in line with Tricart's vision that interaction should allow us to be even more in the present, instead of drawing us from out of our narrative immersion[35] Beyond the in-headset experience is the installation design: participants start in an ambiguous real-world, physical space – a dim, foggy space with haptic/tactile elements and diegetic sound – intended to reflect the dreamlike headspace that is Anna's own mental world. This configuration enables a fluid, embodied shift from the physical to the virtual space, to the point where the distinction between audience member and protagonist is disrupted into indistinction.

Awards and Festival Recognition: The Key debuted at the Tribeca Film Festival (2019) where it took home the Storyscapes Award and $10,000 prize, which Tricart donated to Friends of Refugees. The film was awarded the Grand Jury Prize for Best Immersive Work at the Venice VR Biennale (2019)[36] .). It has gone on to feature at festivals and exhibitions around the world, as well as being released as part of the Oculus VR for Good program.

Distribution and Access: The experience is currently free on the Oculus Store for Quest and Rift systems. After playing at festivals, it found a home as part of Oculus's curated "VR for Good" collection, cementing that humanitarian and educational focus.

[34] Oculus VR for Good. (2019). The Key – Experience on Oculus Store. https://www.oculus.com/experiences/the-key

[35] VRScout. (2019). Live Performance and Empathy in The Key. https://vrscout.com/news/the-key-vr-tribeca

[36] Venice VR. (2019). Biennale Selection and Jury Prize Winners. https://www.labiennale.org

Appendix F: Giant (2016)

Creators and Production Context: Giant (2016) is a short, immersive virtual reality film, directed by Serbian filmmaker Milica Zec and American artist Winslow Turner Porter III. Leveraging Zec's own experiences growing up during the Yugoslav wars, the piece turns autobiographical material into an emotionally evocative VR narrative[37] . Co-produced with HP and premiered at the Sundance Film Festivals New Frontier program, Giant is among the earliest and most high-profile VR experiences to tackle war trauma from such a deeply personal vantage point.

Country of Origin: United States

Runtime and Format: The piece, which lasts around six minutes, is provided in non-moving, room-scale VR. They will still be stationary, in a VR headset, with fully surround and spatial audio. The format does provide for the viewer to look around, but not interact, thus supporting presence while maintaining a fixed, cinematic frame.

Figure F.1: Official poster of Giant (2016)

[37] WIRED. (2016). What VR is for: Telling stories like Giant. https://www.wired.com

Synopsis: Set in an anonymous war-torn location, Giant follows a family—two parents and their young daughter—taking shelter in a basement during an air raid. To distract the frightened child, the mother invents a game involving shadow puppets, pretending that the booming outside explosions are the footsteps of a gentle Giant. The narrative subtly unravels as viewers observe the confined, tense space, witnessing moments of tenderness, fear, and resilience. Without explicit exposition, the piece immerses audiences in the raw, emotional contours of war from a child's perspective.

Technological Approach and Design: The visual production involved green-screen filming of live actors staged like theatrical performance, then composited into a VR space using cinematic 360° techniques [38] . The confined basement setting was constructed as a volumetric illusion, allowing users to turn their heads and absorb the small environmental details—shadows, light flickers, dust particles—heightening the realism[39] .

- Audio: The sound design is notably sophisticated, using 360° spatial audio to simulate realistic sounds such as bombs, breathing, distant gunfire, or shifting clothes—anchoring the user's perception and reinforcing emotional tension.
- Interactivity: There is no direct interaction. The viewer is a passive observer, yet their perspective shifts through embodied presence and orientation—producing a heightened reflective state.

Awards and Critical Reception

[38] Los Angeles Times. (2016). How a Serbian childhood became an immersive VR war story. https://www.latimes.com

[39] The Guardian. (2016). Giant at Sundance: a new empathy machine. https://www.theguardian.com

- Premiered at the Sundance Film Festival (2016) under the New Frontier program[40] .
- The experience received widespread acclaim from major outlets:
  - The Verge argued that *Giant* conveys the trauma of war "in a way *American Sniper* never could."[41]
  - *Computer Graphics World* praised it for making “audiences conscious of the way we make choices”—despite the absence of actual interactivity.

Access and Availability: Initially showcased at festivals through room-scale installations presented by HP, Giant has limited distribution in the present day. Archival access is available via Sundance Film Festival and New Frontier records. It is occasionally featured in curated immersive retrospectives or academic VR exhibitions.

[40] Computer Graphics World. (2016). Sundance 2016: Giant Explores Childhood During War. https://www.cgw.com

[41] The Verge. (2016). Giant makes you feel war’s fear—without a single gunshot. https://www.theverge.com

Appendix G: Marco & Polo Go Round (2021)

Creators and Production Context: Marco & Polo Go Round is a 13-minute room-scale virtual reality narrative directed by Benjamin Steiger-Levine and co-written with Gregory Kaufman. The experience uses live-action volumetric capture footage and surreal environmental metaphors to delve into love, miscommunication, and emotional collapse. A Canadian/Belgian/French co-production including Item 7, Belga Productions and ARTE France[42] , , it is an experimental blend of stage performance, physics-based animation and the values of fine art. It features Léane Labrèche-Dor and Emmanuel Schwartz in a surreal, emotional odyssey told in immersive, interactive media.

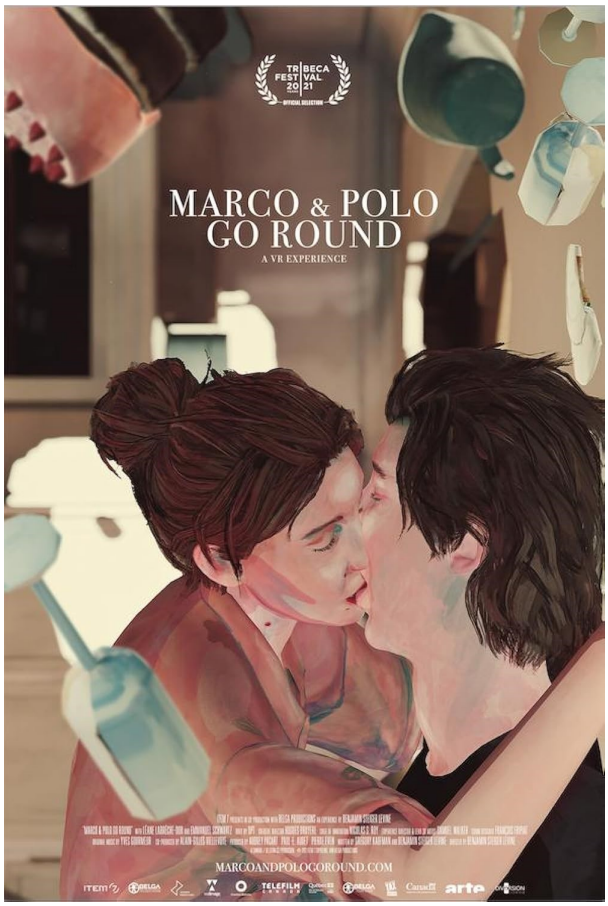

Figure G.1: Official promotional poster of Marco & Polo Go Round (2021)

[42] ARTE France. (2021). Marco Polo Go Round. https://www.arte.tv

Country of Origin and Language

- Countries: Canada, Belgium, France
- Language: Available in both French and English versions

Runtime and Format: The experience is about 13-14 mins long and developed for room-scale VR with 6DoF. It's a real-time rendered 360° interactive space with Volumetric-captured actors. Users interact by walking around in a small physical space and by responding to visual prompts and grabbing orbs that push forward the story.

Synopsis: A love story takes a surreal turn when the daily life of a young couple literally falls apart. On the morning of his birthday, Marco (Emmanuel Schwartz) discovers the cake Polo (Léane Labrèche-Dor) has lovingly made and left for him on the kitchen table. He also notices that every object in the kitchen has been battened down with tape and twine as if to safeguard against an oncoming storm. What begins as a beautiful morning for the young couple takes a surreal turn when their world literally falls apart around them.

Technological and Artistic Framework: Actors captured via real-time volumetric performance capture that preserves subtle facial expressions and eye contact for an intimate and realistic experience. The experience is powered by realtime 360° VR game engine that can recreate dynamic environments such as floating debris, collapsing buildings or changing laws of physics[43] . Aesthetic wise, we took influence from the painterly work of David Hockney and merged watercolor textures with a low poly style to create a unique look. User interaction was kept purposefully low and intuitive–requiring only head movement, minimal physical movements, and picking up orbs–reinforcing a "story-living" as opposed to gamified

[43] Rep + Repeat. (2022). Production Design Breakdown: Emotional Spatiality in Marco & Polo Go Round. https://www.repplusrepeat.com

perspective . The event is available on the Oculus Quest/Rift, HTC Vive and SteamVR platforms with true six degrees of freedom (6DoF) room scale with tracked controllers.

Awards and Critical Reception: Marco & Polo Go Round has garnered significant recognition on the international festival circuit, establishing itself as one of the most innovative narrative VR pieces in recent years[44]

- Awards and Nominations include:
- Golden Fireball Award (Kaohsiung Film Festival)
- Best Narrative Immersive (Guanajuato International Film Festival)
- Golden Owl (Crystal Owl Awards, Stereopsia)
- Most Innovative 6DoF Experience (Festival du Nouveau Cinéma)
- Tribeca Immersive (2021, Virtual Arcade Nominee)
- Cannes XR (2021), Annecy XR (2022)

Exhibited at: Venice VR, Tribeca, Clermont-Ferrand, Annecy, Red Sea, BIFAN, Animafest Zagreb[45]

Access and Availability: Distributed by Diversion Cinema, the experience is publicly available via major immersive platforms including:

- Oculus Store (Quest & Rift)
- SteamVR
- HTC Viveport

[44] Premium Films. (2022). International Sales Kit: Marco & Polo Go Round. https://www.premium-films.com

[45] Animafest Zagreb. (2022). Official Selections: Immersive Works. https://www.animafest.hr

- ARTE.tv
- YouTube 360 (limited access)

Appendix H: Dear Angelica (2017)

Creators and Production Context: Dear Angelica (2017) is a milestones in virtual reality (VR) film, and a VR short within partitioned spaces directed, written, and illustrated by Saschka Unseld, from Oculus Story Studio. A story whose emotional heart revolves around the recollection and pursuit of a mother, the piece is fully hand-drawn in VR by artist Wesley Allsbrook[46] . With voices by Mae Whitman and Geena Davis, the story plays as a dream

Figure H.1: Official promotional poster of Dear Angelica (2017)

[46] WIRED. (2017). How VR Brushes Became the Canvas for Dear Angelica. https://www.wired.com

memory, in and out of drawing, animation and movie[47] . The project pushed the boundaires of VR narrative creation by being the first full scale VR narrative to be created, from concept to completion, using Quill, Oculus's homegrown illustration and animation tool, and at the same time created a new path for immersive visual storytelling.

Country of Origin and Language

- Country: United States (Oculus/Meta)
- Language: English (voice narration)

Runtime and Format: The 12 to 13-minute experience is presented as a non-interactive 6DoF VR animation, playable on Oculus Rift, Rift S, Gear VR and Oculus Go. The work brings viewers inside developing spaces of brushstrokes, opting for restricted gaze-based interactivity with no narrative branching or user choice.

Synopsis: Withing in Jessica's emotional imagination, a young woman mourning the death of her love her mother Angelica, the story spans memories of the performances of cinema and the intimacy of private memory. As Jessica dusts off a memorabilia box containing VHS tapes of her mother's performances, surreal brushstrokes and changing spatial dimensions visualize her splintered feelings. The film eventually becomes an abstract meditation on grief, connection and the residual presence of those for whom we grieve, relayed in the illogicality of visual memory.

Technological and Artistic Process

[47] Allsbrook, W., & Unseld, S. (2017). Dear Angelica [VR film]. Oculus Story Studio.

- Creation Tool: *Dear Angelica* was the first narrative project to be created entirely in Quill, a VR-native illustration and animation tool developed by Oculus Story Studio.
- Pipeline and Rendering:
    1. All visual content was hand-illustrated within Quill in 3D space.
    2. Animations were exported to SideFX Houdini using Alembic curves for precise timing and staging [48] .
    3. The final piece was rendered and executed in Unreal Engine, utilizing custom shaders and real-time performance optimizations, including $8\times$ antialiasing and high-resolution curve-to-polygon transitions.
- Interaction Design: The piece incorporates subtle gaze-based cues, offering minimal interaction to enhance immersion without disrupting narrative flow. There are slight animated responses to the viewer's gaze, intended to preserve intimacy while guiding attention.
- Platform Optimization:
    - On Oculus Rift and Rift S, the film runs in real time.
    - Gear VR and Oculus Go versions use pre-rendered 360° video, optimized through a proprietary 5K 60fps player developed by John Carmack[49] .
- Awards and Critical Reception
    - Premiere: Sundance Film Festival – New Frontier (2017)
    - Award Recognition:
        * Nominated for an Emmy: Outstanding Original Interactive Program (2017)
    - Critical Acclaim:
        * *The Verge* described it as "possibly the most beautiful VR experience ever

[48] TechCrunch. (2017). Oculus Story Studio closes, but its legacy lives on. https://www.techcrunch.com

[49] UploadVR. (2017). Technical insights on Dear Angelica's real-time rendering. https://www.uploadvr.com

made."

* *TechCrunch* praised it as "pure art…a heartfelt story that could not be told on a movie screen."[50]

Access and Distribution: Following the closure of Oculus Story Studio in 2017, Dear Angelica remains available via the Oculus Store (for Rift and Go), and archived in several VR preservation initiatives and curated exhibitions[51] . While the original creators disbanded, Quill continues to be developed under Smoothstep, and remains accessible to digital artists and storytellers seeking to create in immersive environments.

[50] TechCrunch. (2017). Oculus Story Studio closes, but its legacy lives on. https://www.techcrunch.com

[51] The Verge. (2017). Dear Angelica is the most beautiful VR experience yet. https://www.theverge.com

Appendix I: Wolves in the Walls (2018)

Creators and Production Context: Wolves in the Walls is an episodic virtual reality narrative based on the 2003 illustrated children's book by Neil Gaiman and Dave McKean. The adaptation was developed by Fable Studio, founded in 2018 by former Oculus Story Studio members, including Edward Saatchi and Pete Billington. The piece was directed by Pete Billington and Jessica Yaffa Shamash, with original concept development by Saschka Unseld[52] Created in collaboration with the immersive theatre company Third Rail Projects, the experience integrates cinematic direction with theatrical choreography and character embodiment. Fable Studio envisioned the project not only as an adaptation but also as a technological and narrative experiment in creating "virtual beings"—interactive characters with emotional responsiveness. The result is a richly interactive and theatrically inspired

Figure I.1: Official promotional poster of Wolves in the Walls (2018)

[52] Nerdist. (2019). Wolves in the Walls brings Neil Gaiman's book to interactive life. https://nerdist.com

experience where the viewer plays the role of Lucy's imaginary friend[53]

Country of Origin and Language

- Country: United States (Fable Studio, San Francisco)
- Language: English (fully voiced narrative and character interaction)

Runtime and Format: The full experience spans three interactive chapters, each approximately 10 minutes, totaling 30 minutes in duration. It is a room-scale 6DoF VR narrative designed for Oculus Rift/S, Oculus Quest, and Viveport platforms. The interactivity is object-based and embedded within the narrative, allowing the viewer to assist Lucy by handling items such as a flashlight, magnifying glass, and camera. Synopsis: The viewer assumes the role of Lucy's imaginary friend, exploring her home and helping her investigate strange sounds emanating from within the walls. As the story unfolds, Lucy interacts directly with the viewer, sharing her fears, inviting participation in activities, and responding to emotional cues. The experience is built around co-presence and narrative empathy, allowing the user to affirm Lucy's suspicions and join her in uncovering the hidden truth about the wolves in the walls.

Technology and Aesthetic Design: The project was developed in Unreal Engine, rendered at 90 FPS in stereo, requiring high-performance GPUs for seamless interaction. The visuals draw aesthetic inspiration from Dave McKean's original watercolor illustrations, brought to life through a combination of motion capture (Vicon), ZBrush, Maya, and VR-native painting tools such as Quill, Tilt Brush, and Medium. One of the core innovations of the project is the implementation of Fable Studio's "virtual being"[54] . AI framework, enabling Lucy to maintain

[53] VR Geschichten. (2020). Lucy's world and the evolution of VR presence. https://vrgeschichten.de

[54] UploadVR. (2019). How Fable Studio's Lucy became the first believable virtual being. https://www.uploadvr.com

eye contact, hand objects to the user, and adapt her behavior based on observed user actions. Interaction is intuitive and narrative-driven: the viewer's gaze, gestures, and object handling directly affect Lucy's mood and storytelling arc, fostering a deeper sense of co-presence and participation. In collaboration with Third Rail Projects, the staging employs immersive theatre techniques to guide attention, using lighting and spatial choreography rather than explicit UI [55] . This allows for a cinematic yet responsive progression of scenes, aligning user exploration with narrative pacing . The project originated as an R&D initiative under Oculus Story Studio before transitioning to Fable Studio following Oculus's closure in 2017.

Recognition and Reception

- Primetime Emmy Award (2019): Outstanding Innovation in Interactive Media
- Peabody Award (2022): Immersive & Interactive category
- Festival Screenings: Presented at Sundance, Tribeca, Annecy, Cannes XR, SIGGRAPH, and Venice VR
- The experience received critical acclaim for its seamless blend of narrative agency, emotional interactivity, and technical precision.

Access and Distribution

- Platform Availability: Oculus Rift, Rift S, Quest (since 2020), and Viveport
- Release Timeline:
  - Chapter 1 (2018)
  - Chapter 2 "It's All Over" (Tribeca, April 2019)
  - Chapter 3 "They're Everywhere" (November 2019)

[55] Voices of VR Podcast. (2019). Fable Studio on AI, narrative, and emotional co-presence. https://voicesofvr.com

- The complete experience is accessible through Oculus and Viveport libraries, with occasional showcases in curated VR exhibitions.

Appendix J: The Invisible Hours (2017)

Creators and Production Context: The Invisible Hours (2017) is a narrative-driven experience that combines aspects of a movie, video game and immersive theatre production, that was developed by the Spanish video game and interactive entertainment company Tequila Works.

Figure J.1: Official promotional poster of The Invisible Hours (2017)

The game was developed in partnership with GameTrust and Oculus Studios, with creative direction and writing handled by Rob Yescombe. Made specifically for immersive spaces, its creators call it "not a game, not a movie" but a completely walkable theatrical experience – effectively defining a new genre which they have dubbed "hybrid immersive cinema / interactive spatial storytelling"[56] . The project's mission was to create a type of immersive theater in VR with the viewer as an omniscient observer who could navigate space and time fluidly, yet the characters would be agnostic that the viewer existed. This situating of conception looked to achieve narrative liberty whilst retaining authored dramatic arcs.

Country of Origin and Platform

- Country: Spain (Tequila Works, Madrid)
- Platform Availability: PC VR (Oculus Rift, HTC Vive, Windows Mixed Reality), PlayStation VR, Oculus Quest (via Oculus Link), PlayStation VR2, and Apple Vision Pro

Duration and Format: It takes minimum 90 minutes to go through and is split into four acts, and it can be replayed to reveal a deeper glimpse of a branching narrative. It utilizes room-scale interaction where users teleport to different spots or follow characters. Users have agency in time as well, and can pause, rewind, and even fast-forward events by means of an in-world diegetic timekeeping device.

Synopsis: Presented in the confines of a fictitious late 19th-century mansion owned by Nikola Tesla, The Invisible Hours starts with a murder and unveils an intricate web of motives and secrets. The user is an unseen observer, traveling through rooms and through time to witness

[56] THE VR GRID. (2018). Review: The Invisible Hours – A game of many perspectives. https://www.thevrgrid.com

a variety of complex characters such as Thomas Edison, a blind butler, a rail baron, an actress and more. The story is complex and non-linear, as the player must connect various clues from several perspectives and different characters to discover the major story behind it all.

Technology and Immersive Mechanics: The experience was built in Unreal Engine 4, optimized for 90 frames per second in stereo for high-end VR performance. Mesh and texture complexity were dynamically constrained to maintain seamless rendering[57] . The locomotion system allows teleportation across rooms or "shadowing" a character automatically. A functional pocket-watch interface lets users manipulate time, fostering simultaneous multi-threaded viewing. The project does not feature a visible avatar, enhancing the ghost-like quality of observation. There is no direct character interaction, but users can explore rooms, open doors, and examine artifacts (such as letters, photographs, and blueprints), many of which contribute to a broader understanding of the characters' motivations[58] . These items also populate the user's "theatre seat" archive, adding a curatorial layer to the viewing process. The visual design emphasizes dramatic lighting and shadowing to simulate theatrical ambiance. While the environment is expansive and richly detailed, some close-up textures appear soft due to mesh optimizations[59] . The audio landscape uses spatialized voice performances, aligning with the user's movement and contributing to a heightened sense of presence. The Invisible Hours follows the tradition of Agatha Christie–inspired whodunits, yet breaks from linear storytelling by enabling simultaneous character timelines. This spatial-temporal structure encourages multiple viewings and reconfigurations of narrative logic. The experience aims to simulate an immersive theatrical performance, where the viewer

[57] Video Games Art. (2018). Cinematic design in VR detective storytelling. https://www.videogamesart.org

[58] The Washington Post. (2017). VR murder mystery will change how we watch stories. https://www.washingtonpost.com

[59] Use a Potion!. (2017). The Invisible Hours review. https://www.useapotion.com

becomes the editor, choosing angles, durations, and emotional arcs. The narrative environment is designed to unfold organically, with minimal UI interruption.

Reception and Recognition: The Invisible Hours was showcased at Cannes NEXT (2017), and praised by both critics and players for its unique story and gameplay experience. The Washington Post lauded it as a "reimagination of narrative form" in VR, VR-specific media outlets commended its immersive storytelling and its environmental design. Critics pointed to occasional stiffness to character animations and mild sid effects associated with teleport locomotion, however on the whole the project is a bar-raiser for multi-threaded VR storytelling.

- System Requirements
  - Minimum VR Specs:
    - CPU: Intel i5-4590 or equivalent
    - GPU: NVIDIA GTX 970 / 1060 or higher
    - RAM: 8 GB
    - Storage: ∼9 GB
- Platforms: Oculus Rift, HTC Vive, PSVR, Quest (via Link), PSVR2, Vision Pro

Access and Distribution: You can experience the whole package wherever VR content is sold, which means SteamVR, Oculus Store, PlayStation VR, Viveport, Apple Vision Pro, and so on. Interestingly, the title was planned exclusively for the immersion and does not have a 2d (flat-screen) version, since its narrative structure relies on the full experience of space and time.

Appendix K: Spheres: Songs of Spacetime (2018)

Creators and Production Context: Spheres is a three-part immersive virtual reality experience directed by Eliza McNitt and produced by Darren Aronofsky, Jess Engel, Arnaud Colinart, Ari Handel, and Dylan Golden[60]

It was developed in partnership with Atlas V, Crimes of Curiosity, Intel, and Oculus Studios . The trilogy, released in 2018, was created to transform astrophysical concepts into emotional, sensory journeys, using VR as a medium to translate scientific phenomena—such as

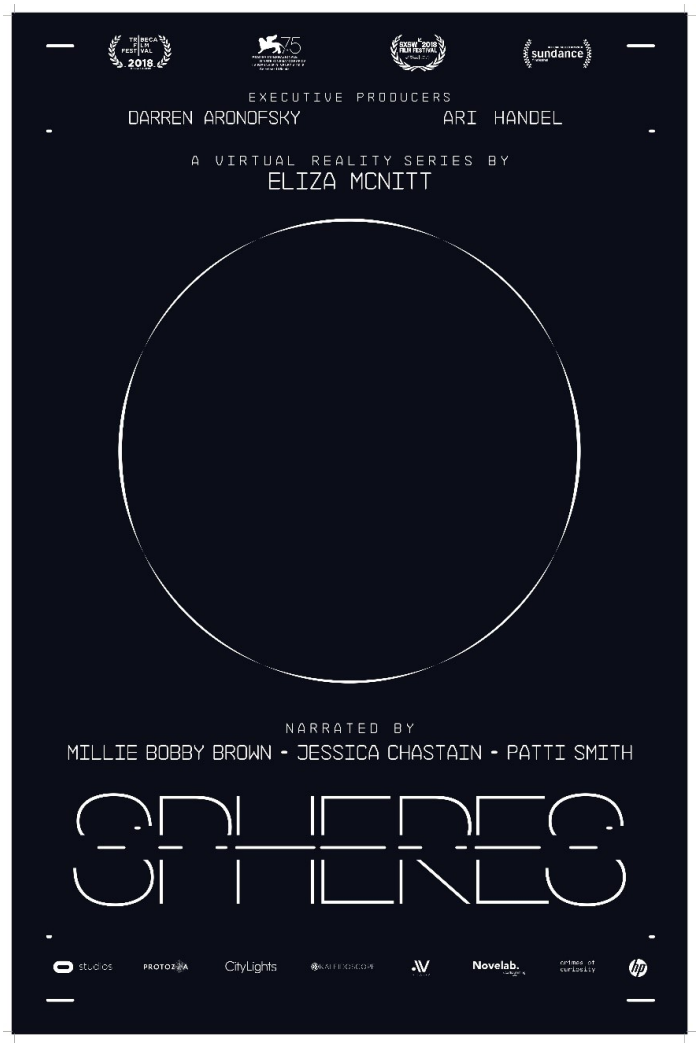

Figure K.1: Official promotional poster of Spheres (2018)

[60] McNitt, E. (Director). (2018). Spheres: Songs of Spacetime [VR trilogy]. Atlas V, Crimes of Curiosity, Oculus Studios.

gravitational waves—into tangible, poetic experiences. McNitt positioned the work as a bridge between cosmology and immersive art, reimagining the universe as an audible and navigable symphony.

Country of Origin and Language

- Country: United States
- Language: English (voice cast: Millie Bobby Brown, Jessica Chastain, Patti Smith)

Duration and Format: The project consists of three stand-alone chapters, each approximately 15 minutes, totaling about 45 minutes of immersive experience. Designed for 6DoF (six degrees of freedom) room-scale VR, Spheres allows users to traverse expansive cosmic environments. Though primarily contemplative and experiential, later versions included hand-tracking interactivity for Oculus Quest, adding subtle agency in specific sequences.

Synopsis: Spheres (2018) presents a triptych of immersive meditations on the cosmos; Chorus of the Cosmos – An introductory voyage through the vibrations of the universe narrated by Millie Bobby Brown Revisit the Green, Red, and Glow Lanterns, a message from Scarlet Johannson, and more! Songs of Spacetime – Narrated by Jessica Chastain, this episode investigates the interconnections between black holes and the gravitational waves they produce and offers a unique glimpse into the dance of two black holes. Pale Blue Dot – Voiced by Patti Smith, this concluding meditation on the frailty of Earth in the cosmic context uses Carl Sagan's metaphor for Earth as a starting point. Every chapter turns astrophysical data into dynamic audiovisual experimentation, for example translating invisible forces like gravitational harmonics into events you can step inside and experience as a story of the cosmos.

Technology and Interactivity: Spheres is developed via real-time VR Render, fusing high end 3D modeling with music reactive visuals. The dancing black holes, bursts of stars, and glossy systems are programmatically reacting to input sound, transitioning through various scenes: in a deep-space sea of shimmering wires, through the vaults of a stardust temple, or around the cardiovascular tube structures of a supernatural mollusk[61] .

Audio Design: Audio was expertly designed by Craig Hennigan, with an original score from Kyle Dixon and Michael Stein (Stranger Things). The trilogy is visualized at high frame rates for all but the most precise PC VR and was then refined for the Oculus Quest, operating at lower detail levels and supporting an optional hand tracking interface. Although essentially non-linear and meditative, Spheres even permits mobility inside the cosmic spaces. On Songs of Spacetime, users can "sing" along with black hole harmonics, in a sort of intimate feedback loop between voice and cosmos.

Reception and Recognition: Spheres became a landmark in the history of VR storytelling by becoming the first virtual reality experience to sell for a seven-figure deal at Sundance Film Festival (2018) , acquired by CityLights.

- It won the Grand Prize for Best VR/Immersive Story at the 75th Venice International Film Festival.
- It was exhibited at Sundance New Frontier, Tribeca Virtual Arcade, Telluride, SXSW, and Rockefeller Center in New York (Jan–Mar 2020) as part of a curated, room-scale installation.

Critical response emphasized the work's aesthetic richness, scientific authenticity, and

[61] Loud and Clear Reviews. (2020). The sound of space in immersive art. https://www.loudandclearreviews.com

emotional resonance, marking it as one of the most ambitious and artistically successful uses of VR for non-fiction storytelling.

System Requirements and Platform

- Initial Platform: Oculus Rift (PC VR)
- Later Release: Oculus Quest (with optional hand-tracking)
- Installation Version: Designed for room-scale setups in museums, galleries, and public immersive events

Access and Distribution: Spheres is distributed via the Oculus Store and periodically appears in XR festivals, art museums, and curated public exhibitions[62] . Some installations were designed as multi-user environments[63] with ambient cosmic resonance and synchronized spatial audio for collective engagement. -

[62] UploadVR. (2019). Spheres now available on Quest with hand tracking. https://uploadvr.com

[63] Phi Centre. (2020). Spheres installation. https://phi.ca/en